

# **Society for Research on Nicotine and Tobacco (SRNT) Europe 20<sup>th</sup> Conference – Online**

**17<sup>th</sup>-18<sup>th</sup> September 2020**

## **Programme**



**SRNT**  
**EUROPE**

<https://srnt-e.org/>

# Table of contents

Welcome messages	3
Committees	4
Keynote speakers	5
Conference information	7
Timetable Thursday, 17 <sup>th</sup> September 2020	8
Timetable Friday, 18 <sup>th</sup> September 2020	9
Scientific programme Thursday, 17 <sup>th</sup> September 2020	10
Scientific programme Friday, 18 <sup>th</sup> September 2020	13
Announcement SRNT-E 2021	16
Poster session Thursday, 17 <sup>th</sup> September 2020	17
Poster sessions Friday, 18 <sup>th</sup> September 2020	18
Abstracts	21



# Welcome messages

## Dear colleagues

Welcome to the 2020 SRNT-E conference. It has been a pleasure to take on the Organising and Scientific Chair. A year like no other, I speak for all involved, when I say it has remained an important goal to make sure we provide a platform for the important scientific advances from our field.

Despite being apart, I am particularly proud that this year we have great representation from our early career researchers and we also welcome many new speakers from across the globe. Of course, the agenda includes COVID-19 and nicotine sessions, but in addition we host some of the most important developments in relation to tobacco health inequalities - studies which I am sure will help to steer future research in the right direction.

I would like to extend my thanks and gratitude to the SRNT-E board for asking me to lead preparations, and to all of you for joining in and taking part. As always, be kind, respect others, and be prepared to change your mind. See you (virtually) soon.

**Dr Sharon Cox**

**Chair, Scientific & Organising Committee**



## Dear participants

We are delighted to have been asked to collaborate with the organizers of the SRNT Europe Conference and to support them in creating their first online event. We hope that you enjoy the Conference and that you are able to take advantage of the recorded sessions, to be able to watch the event in its entirety in time, and not miss concurrent sessions! Do take a few minutes to look around the app and familiarise yourself with the agenda before we start – a guided tour and useful guide can be found here: <https://whova.com/pages/whova-app-user-guide/>. You can email us for support on the day on [info@smooth-events.com](mailto:info@smooth-events.com).

**Amanda Strange and Heidi Williams**

**Directors, Smooth Events ([www.smooth-events.com](http://www.smooth-events.com))**



## Dear friends and fellow tobacco researchers

On behalf of the board of SRNT-E, I would like to welcome you to the society's 20<sup>th</sup> annual conference - the first one to be held online! We live in strange and uncertain times and so I am particularly pleased that we have managed to put together a programme under testing (!) circumstances. This year we received over 70 submissions from all across the globe.

This is a first for all of us at SRNT-E, so please bear with us as we try to bring to you recent insights in the field of nicotine and tobacco research, including the latest on the association of smoking with COVID-19. Please do make the most of our conference platform at Whova and don't forget the posters can be viewed both in the 'documents' tab, and also in the session against which their Q&A is scheduled. We hope you will enjoy what's on offer and that we will be able to meet in person again soon, at the next SRNT-E conference.

**Prof. Lion Shahab**

**President, SRNT-E**



# Committees

## SRNT-E Board

President	<b>Lion Shahab</b> (United Kingdom)
Past President	<b>Daniel Kotz</b> (Germany)
President-elect	<b>Carole Clair</b> (Switzerland)
Honorary Secretary	<b>Marcus Munafò</b> (United Kingdom)
Secretary	<b>Ute Mons</b> (Germany)
Treasurer	<b>Lynne Dawkins</b> (United Kingdom)
Communications officer	<b>Mirte Kuipers</b> (The Netherlands)
Representative for Europe in SRNT	<b>Caitlin Notley</b> (United Kingdom)

## Scientific & Organising Committee

Chair	<b>Sharon Cox</b> (United Kingdom)
Co-chairs	<b>SRNT-E Board members</b>
Scientific reviewers	<b>Anna Blackwell</b> (United Kingdom)
	<b>Richard Holliday</b> (United Kingdom)
	<b>Catherine Kimber</b> (United Kingdom)
	<b>Felix Naughton</b> (United Kingdom)
	<b>Gemma Taylor</b> (United Kingdom)
	<b>Yael Bar-Zeev</b> (Israel)

## Smooth Events

Director	<b>Amanda Strange</b> (United Kingdom)
Director	<b>Heidi Williams</b> (United Kingdom)



# Keynote speakers

## Linda Bauld

### Public Health/Policy



Linda Bauld is the Bruce and John Usher Professor of Public Health in the Usher Institute, College of Medicine at the University of Edinburgh. Linda is a behavioural scientist with a PhD in social policy whose research focuses on two main areas: the evaluation of complex interventions to improve health, and how research can inform public health policy. Since 2014, she has combined her academic role with a secondment to Cancer Research UK where she holds the CRUK/BUPA Chair in Behavioural Research for Cancer Prevention. Linda is a Fellow of the Royal College of Physicians of Edinburgh, the Royal Society of Edinburgh, the Academy of Social Sciences and the Faculty of Public Health. She leads SPECTRUM, a multi-university, multi-agency Consortium that is the successor to the UK Centre for Tobacco and Alcohol Studies, and TCCP, a tobacco control capacity building programme in Africa and South Asia. In 2020 TCCP expanded to focus on how tobacco control programmes in low and middle income countries were affected by and responding to the Covid-19 pandemic.

**Keynote:** "COVID-19 and tobacco control: aligning communicable and non-communicable disease responses"

Thursday, 17<sup>th</sup> September 2020 | 12:00 – 12.45 (Live)

## Daniel Kotz

### Epidemiology



Prof. Dr. Daniel Kotz is professor in addiction research and clinical epidemiology at the Institute of General Practice, Centre for Health and Society, Medical Faculty of the Heinrich-Heine-University Düsseldorf, Germany. He also holds research affiliations with Maastricht University, University College London, and the University of Edinburgh. He was trained as a physiotherapist, health scientist, and epidemiologist. His main areas of research are tobacco addiction (use of tobacco and alternative nicotine delivery systems in populations, effectiveness and safety of behavioural and pharmacological treatments in clinical care), chronic obstructive pulmonary disease (prediction modelling, early detection, prevention) and clinical epidemiology (research methodology and reporting). He has published over 130 scientific articles in international peer-reviewed journals (H-Index = 24), including leading journals in the categories general medicine (Lancet, JAMA Internal Medicine), respiratory medicine (Lancet Respiratory Medicine, Thorax, Chest, European Respiratory Journal), and substance abuse/public health (Addiction, Tobacco Control). He is Senior Editor of Addiction, Editorial Board member of the Journal of Clinical Epidemiology, Past-President of the Society for Research on Nicotine and Tobacco (SRNT) Europe, and member of the International Primary Care Research Leadership Programme.

**Keynote:** "Sources of bias in tobacco research trials and recommendations for reporting and mitigation"

Thursday, 17<sup>th</sup> September 2020 | 15:15 – 16.00 (Live)



# Keynote speakers

## Konstantinos Farsalinos



### Basic Science/Pre-clinical

Konstantinos Farsalinos, MD, MPH is a physician and senior researcher at the University of Patras and the School of Public Health-University of West Attica in Greece. He has been conducting laboratory, clinical and epidemiological research on smoking, tobacco harm reduction and e-cigarettes as principal investigator since 2011. He authored the first systematic review on e-cigarette safety/risk profile, published in 2014. Additionally, he has performed researched and published studies on heated tobacco products. His findings have been presented in major international scientific congresses and his studies were used in preparing the regulatory framework on e-cigarettes by the European Union. As of early 2020, he has published more than 85 studies and articles in international peer-reviewed scientific journals about smoking, tobacco harm reduction and alternative-to-smoking nicotine products. He was the handling editor and author of a book titled "Analytical assessment of e-cigarettes", published by Elsevier in 2017. He was recently declared a Highly Cited Researcher 2019 by the Web of Science, a list of researchers with the highest impact in global science in 21 scientific fields in the past decade.

**Keynote:** "Nicotine and COVID-19: a possible, unexpected link?"

Friday, 18<sup>th</sup> September 2020 | 12:00 – 12.45 (Live)

## Billie Bonevski



### Clinical

Billie is a health behaviour scientist and Women in Science Chair at the University of Newcastle, Australia and Conjoint Professor at the University of Queensland. She is also the current elected AAOLA (Africa, Asia, Oceania, and Latin America) representative on the SRNT Board and was the Founding President of the SRNT Oceania chapter. Billie is interested in developing ways to reduce smoking among populations with high smoking prevalence rates in Australia including Aboriginal and Torres Strait Islander people, and people who experience mental ill health, other substance use and homelessness. Her research is supported by large nationally competitive grants, international collaborators, and partnerships with service providers. She is passionate about all forms of equity and currently leads her university's Athena SWAN program for gender equity.

**Keynote:** "Encouraging the provision of smoking cessation support in mental health and drug and alcohol clinics: mission impossible?"

Friday, 18<sup>th</sup> September 2020 | 15:15 – 16.00 (Pre-recorded)

# Conference information

## Time zone

Please note the timetable and all live sessions are scheduled in Central Europe Summer Time/CEST (BST+1; GMT+2; EDT+6; CDT+7; PDT+9; BT/AWST-8)

## Netiquette

As we have all learnt over the past months, online interactions can be fraught with difficulties. For this reason, we would ask all participants to adhere to standard network etiquette. 1) Remember that you are dealing with humans at the other end of the line, so please be respectful and use appropriate language in interactions; 2) Adhere to the same standards of behaviour online as you would in real life; 3) Respect other people's time and bandwidth; 4) Respect other people's privacy; 5) Be forgiving of other people's mistakes (this is all new to us!). During live Q&A sessions and interactions on the app (see below), we would ask you to adhere to these rules.

## Online conference platform

This conference will be delivered via the Whova platform. You will be able to register for the conference on a desktop/laptop via their website ([https://whova.com/portal/webapp/seac\\_202009/](https://whova.com/portal/webapp/seac_202009/)) as well as via their event app (scan QR code to download from appstore to your mobile<sup>1</sup>)

Whova allows participants to browse the programme easily, to personalise the agenda and rate sessions, interact with other attendees and engage in Q&As, to watch pre-recorded presentations as well as join in live events, facilitated via Zoom through Whova.

You will also receive important announcements through the app and website so please familiarise yourself with Whova before the start of the conference. As most presentations (other than live Q&As and keynotes) will be available pre-recorded, you can access these at your own convenience at any time.



Android OS



Apple OS

# Timetable | Thursday, 17<sup>th</sup> September 2020

CONFERENCE DAY 1		
TIME (CEST)	Virtual Room 1	Virtual Room 2
11:45 – 12:00	<b>Opening Ceremony</b> Dr. Sharon Cox and Prof. Lion Shahab	
12:00 – 12:45	<b>Keynote: Prof. Linda Bauld</b> COVID-19 and tobacco control: aligning communicable and non-communicable disease responses <i>Chair: Prof. Lynne Dawkins</i>	
12:45 – 13:00	<b>Coffee Break</b>	
13:00 – 14:30	<b>Symposium 1</b> Evaluating the process and outcomes of implementing a national smokefree prisons policy across Scotland: study findings and lessons for other jurisdictions and high smoking prevalence groups <i>Chair/Discussant: Prof. Linda Bauld</i>	<b>Session 1</b> Contemporary issues in e-cigarette research <i>Chair: Prof. Marcus Munafò</i>
14:30 – 15:15	<b>SRNT-E AGM</b>	<b>Lunch Break</b>
15:15 – 16:00	<b>Keynote: Prof. Daniel Kotz</b> Sources of bias in tobacco research trials and recommendations for reporting and mitigation <i>Chair: Prof. Ute Mons</i>	
16:00 – 16:15	<b>Coffee Break</b>	
16:15 – 17:45	<b>Session 2</b> Smoking cessation interventions: from development to evaluation <i>Chair: Prof. Ute Mons</i>	<b>Session 3</b> Tobacco control science: Marketing, messaging and packaging <i>Chair: Dr. Olivia Maynard</i>
17:45 – 18:30	<b>Poster Session 1</b> Smoking cessation interventions: from development to evaluation <i>Chair: Dr. Mirte Kuipers</i>	<b>Meet the Editors (Prof. Marcus Munafò &amp; Prof. Robert West)</b> Publishing research on COVID-19 and tobacco: discussion with journal editors - <i>Chair: Dr. Yael Bar-Zeev</i>





# Timetable | Friday, 18<sup>th</sup> September 2020

CONFERENCE DAY 2		
TIME (CEST)	Virtual Room 1	Virtual Room 2
12:00 – 12:45	<b>Keynote: Dr. Konstantinos Farsalinos</b> Nicotine and COVID-19: a possible, unexpected link? <i>Chair: Prof. Lion Shahab</i>	
12:45 – 13:00	<b>Coffee Break</b>	
13:00 – 14:30	<b>Symposium 2</b> Smoking, vaping and COVID-19 <i>Chair/Discussant: Prof. Jamie Brown</i>	<b>Session 4</b> Clinical and economic correlates of tobacco use and treatment <i>Chair: Prof. Carole Clair</i>
14:30 – 15:15	<b>Poster Session 2</b> Factors influencing policy and regulation of tobacco and non-combustible nicotine products <i>Chair: Prof. Lynne Dawkins</i>	<b>Lunch Break</b>
15:15 – 16:00	<b>Keynote: Prof. Billie Bonevski</b> Encouraging the provision of smoking cessation support in mental health and drug and alcohol clinics: mission impossible? <i>Chair: Prof. Caitlin Notley</i>	
16:00 – 16:15	<b>Coffee Break</b>	
16:15 – 17:45	<b>Symposium 3</b> Understanding and treating tobacco dependence through translational and mixed methods approaches <i>Chair/Discussant: Dr. James Thrasher</i>	<b>Session 5</b> Tobacco dependence and specialist groups: health inequalities and disadvantage <i>Chair: Prof. Daniel Kotz</i>
17:45 – 18:30	<b>Poster Session 3</b> Smoking cessation interventions: from development to evaluation <i>Chair: Dr. Richard Holliday</i>	<b>Poster Session 4</b> Tobacco dependence and health and social inequalities <i>Chair: Dr. Gemma Taylor</i>
18:30 – 19:00	<b>Closing Ceremony and Poster Prize</b> Dr. Sharon Cox, Prof. Lion Shahab and Prof. Carole Clair	

11:45-12:00	<b>Opening Ceremony</b>	Virtual rooms 1 and 2
<b>Welcome, introduction and housekeeping</b> Dr. Sharon Cox Chair of the Scientific & Organising Committee  Prof. Lion Shahab President, SRNT-E		
12:00-12:45	<b>Keynote Lecture (L Bauld)</b>	Virtual rooms 1 and 2
<b>Public Health &amp; Policy</b> <b>COVID-19 and tobacco control: aligning communicable and non-communicable disease responses</b> <b>Chair: Prof. Lynne Dawkins</b>		
12:45-13:00	<b>Coffee Break</b>	
13:00-14:30	<b>Symposium 1</b>	Virtual room 1
<b>Evaluating the process &amp; outcomes of implementing a national smokefree prisons policy across Scotland: study findings and lessons for other jurisdictions and high smoking prevalence groups</b> <b>Chair/Discussant: Prof. Linda Bauld</b>		
<b>Paper 1</b> <u>Ashley Brown / Stirling, United Kingdom; Douglas Eadie; Richard Purves; Danielle Mitchell <i>et al.</i></u>		
<b>Paper 2</b> <u>Kate Hunt / Stirling, United Kingdom; Kathleen Boyd; Nicola McMeekin; Ashley Brown <i>et al.</i></u>		
<b>Paper 3</b> <u>Catherine Best / Stirling, United Kingdom; Ashley Brown; Rachel O'Donnell; Douglas Eadie <i>et al.</i></u>		
13:00-14:30	<b>Session 1</b>	Virtual room 2
<b>Contemporary issues in e-cigarette research</b> <b>Chair: Prof. Marcus Munafò</b>		
<b>Association of the US outbreak of vaping-associated lung injury and perceived harm of e-cigarettes compared with cigarettes</b> <u>Harry Tattan-Birch / London, United Kingdom; Jamie Brown; Lion Shahab; Sarah Jackson</u>		
<b>Use and purchasing of e-cigarettes among Scottish and English youth: a repeat cross-sectional evaluation of Scotland's ban of e-cigarette sales to minors and retail register</b> <u>Katherine East / Waterloo, Canada; Jessica L. Reid; David Hammond; Sara Hitchman</u>		
<b>Youth use of e-liquid flavours – a systematic review</b> <u>Caitlin Notley / Norwich, United Kingdom; Sarah Gentry; Sharon Cox</u>		
<b>The characteristics of people who vape, but who have never regularly smoked: findings from a nationally representative survey in England</b> <u>Robert Calder / London, United Kingdom; Leonie Brose; Ann McNeill; Jamie Brown</u>		
<b>Developing an e-cigarette ontology</b> <u>Janna Hastings / London, United Kingdom; Sharon Cox; Caitlin Notley; Robert West</u>		

# Scientific programme | Thursday, 17<sup>th</sup> September 2020

14:30-15:15	<b>SRNT-E Annual General Meeting</b>	Virtual room 1
<b>Members only</b>		
14:30-15:15	<b>Lunch Break</b>	
15:15-16:00	<b>Keynote Lecture (D Kotz)</b>	Virtual rooms 1 and 2
<b>Epidemiology</b> <b>Sources of bias in tobacco research trials and recommendations for reporting and mitigation</b> <b>Chair: Prof. Ute Mons</b>		
16:00-16:15	<b>Coffee Break</b>	
16:15-17:45	<b>Session 2</b>	Virtual room 1
<b>Smoking cessation interventions: from development to evaluation</b> <b>Chair: Prof. Ute Mons</b>		
<b>A pragmatic two-arm cluster-randomised controlled trial on training general practitioners in providing brief stop-smoking advice according to the 5As and the ABC methods</b> Sabrina Kastaun; Verena Leve; Jaqueline Hildebrandt;...; <u>Daniel Kotz / Dusseldorf, Germany</u>		
<b>Evaluating level of adherence to nicotine replacement therapy and its impact on smoking cessation: A systematic review and meta-analysis</b> Amanual G. Mersha / <u>Newcastle, Australia</u> ; Parivash Eftekhari; Michelle Bovill; Daniel N. Tollosa; Gillian S. Gould		
<b>Smoking cessation among adolescents in Europe: an exploration of the role of schools</b> Aukje E.J. Mertens; Anton E. Kunst; Vincent Lorant;...; <u>Mirte Kuipers/ Amsterdam , Netherlands</u>		
<b>Smokers' perceptions of incentivised smoking cessation programmes: examining how payment thresholds change with income</b> Rachel Breen / <u>Hobart, Australia</u> ; Stuart Ferguson; Matthew Palmer		
<b>Developing a smokefree homes intervention for neonatal Intensive Care unit families</b> Caitlin Notley / <u>Norwich, United Kingdom</u> ; Tracey Brown; Amy Nichols; Linda Bauld <i>et al.</i>		
16:15-17:45	<b>Session 3</b>	Virtual room 2
<b>Tobacco control science: Marketing, messaging and packaging</b> <b>Chair: Dr. Olivia Maynard</b>		
<b>Reactions to, and trial intentions for, three dissuasive cigarette designs: a cross-sectional survey of adolescents in Scotland</b> Danielle Mitchell / <u>Stirling, United Kingdom</u> ; Nathan Critchlow; Crawford Moodie; Linda Bauld		
<b>Reactions to standardised cigarette packs with varying structural designs, and the association with smoking susceptibility: a post-implementation cross-sectional survey with never-smoking adolescents in Scotland</b> Danielle Mitchell / <u>Stirling, United Kingdom</u> ; Nathan Critchlow; Crawford Moodie; Linda Bauld		

## Session 3 continued

**Tobacco retailers' support for point of sale tobacco control policies in the UK and the association with tobacco sales and contact with the tobacco industry.**

Tessa van Deelen / Amsterdam, The Netherlands; Deborah Arnott; Sara Hitchman; Bas van den Putte; Anton E. Kunst, Mirte Kuipers

**Evaluating the impact of introducing standardized packaging with larger health warning labels in England: findings from adult smokers within the EUREST-PLUS ITC Europe Surveys**

Sarah Aleyan / London, United Kingdom; Pete Driezen; Ann McNeill; Máirín McDermott *et al.*

**Smokers' and Young Adults' Perceptions of Quantitative Modified Risk Claims for Snus and E-cigarettes**

Olivia A. Wackowski / New Brunswick, United States; Destiny Diaz; Richard J. O'Connor

17:45-18:30 **Poster Session 1**

Virtual room 1

**Smoking cessation interventions: from development to evaluation**

**Chair: Dr. Mirte Kuipers**

For more information see Poster session on Page 17

17:45-18:30 **Meet the Editors**

Virtual room 2

**Publishing research on COVID-19 and tobacco: a discussion with Prof. Marcus Munafò (Nicotine & Tobacco Research) and Prof. Robert West (Addiction)**

**Chair: Dr. Yael Bar-Zeev**

12:00-12:45	<b>Keynote Lecture (K Farsalinos)</b>	Virtual rooms 1 and 2
<b>Basic Science/Pre-clinical</b> <b>Nicotine and COVID-19: a possible, unexpected link?</b> <b>Chair: Prof. Lion Shahab</b>		
12:45-13:00	<b>Coffee Break</b>	
13:00-14:30	<b>Symposium 2</b>	Virtual room 1
<b>Smoking, vaping and COVID-19</b> <b>Chair/Discussant: Prof. Jamie Brown</b>		
<b>The association of smoking status with SARS-CoV-2 infection, hospitalisation and mortality from COVID-19: a living rapid evidence review</b> David Simons; Lion Shahab; Jamie Brown; <a href="#">Olga Perski / London, United Kingdom</a>		
<b>The association between smoking and hospitalisation during the COVID-19 outbreak: a case-control study in a single UK hospital site</b> <a href="#">David Simons / London, United Kingdom</a> ; <a href="#">Olga Perski</a> ; Lion Shahab; Jamie Brown; Robin Bailey		
<b>COVID-19, smoking, and inequalities: a study of 53,002 adults in the UK</b> <a href="#">Sarah E. Jackson / London, United Kingdom</a> ; Jamie Brown; Lion Shahab; Andrew Steptoe; Daisy Fancourt		
<b>The impact of COVID-19 on e-cigarette use in the UK: Findings from the HEBECO study</b> <a href="#">Dimitra Kale / London, United Kingdom</a> ; Aleksandra Herbec, Sarah E. Jackson; Jamie Brown; Lion Shahab		
13:00-14:30	<b>Session 4</b>	Virtual room 2
<b>Clinical and economic correlates of tobacco use and treatment</b> <b>Chair: Prof. Carole Clair</b>		
<b>Tobacco smoke exposure and healthcare resource utilization among pediatric emergency department patients</b> <a href="#">Ashley L. Merianos / Cincinnati, United States</a> ; Roman A. Jandarov; Judith S. Gordon; Michael S. Lyons; E. Melinda Mahabee-Gittens		
<b>Cost-effectiveness of a digital smoking cessation intervention for cancer survivors: health economic evaluation within a randomized controlled trial</b> <a href="#">Ajla Mujcic / Utrecht, The Netherlands</a>		
<b>Cytisine's lower potency at 5-HT3 receptors may explain its lower incidence of nausea and vomiting than varenicline</b> Sarah Lummis; Kerry Price; <a href="#">Anthony Clarke / Seattle, United States</a>		
<b>Smoking status and risk of coronavirus infection and illness in a highly controlled challenge study from the United Kingdom</b> <a href="#">Melanie Dove, Davis / United States</a> ; Bruce Leistikow; Nossin Khan; Elisa Tonk		

14:30-15:15	<b>Poster Session 2</b>	Virtual room 1
<b>Factors influencing policy and regulation of tobacco and non-combustible nicotine products</b> <b>Chair: Prof. Lynne Dawkins</b>		
For more information see Poster session on Page 18		
14:30-15:15	<b>Lunch Break</b>	
15:15-16:00	<b>Keynote Lecture (Billie Bonevski)</b>	Virtual rooms 1 and 2
<b>Clinical</b> <b>Encouraging the provision of smoking cessation support in mental health and drug and alcohol clinics: mission impossible?</b> <b>Chair: Prof. Caitlin Notley</b>		
16:00-16:15	<b>Coffee Break</b>	
16:15-17:45	<b>Symposium 3</b>	Virtual room 1
<b>E-cigarettes and the clinical encounter: characterizing smoker-physician discussions about e-cigarettes and their consequences</b> <b>Chair/Discussant: Dr. James F. Thrasher</b>		
<b>Primary care physician perspectives on recommending e-cigarettes to smokers: a best-worst discrete choice experiment</b> <u>Ramzi Salloum / Gainesville, United States; Jennifer LeLaurin; Ji-Hyun Lee; Jennifer Elston Lafata et al.</u>		
<b>Receipt of GP advice on e-cigarettes by smokers in England: prevalence and association with quit attempts</b> <u>Sarah E. Jackson / London, United Kingdom</u>		
<b>Smoker-physician communication about e-cigarettes and associated transitions in smoking-vaping at 18-month follow-up</b> <u>Yoo Jin Cho / Columbia, United States; James F. Thrasher; Shannon M.L. Gravely; Anthony Alberg et al.</u>		
<b>Evaluation of a smoking cessation patient decision aid that integrates information about e-cigarettes</b> <u>Scott Strayer / Lexington, United States; Kollath-Cattano Christy; Ramzi Salloum; Andrew Albano et al.</u>		
16:15-17:45	<b>Session 5</b>	Virtual room 2
<b>Tobacco dependence and specialist groups: health inequalities and disadvantage</b> <b>Chair: Prof. Daniel Kotz</b>		
<b>Is cytisine at least as effective as varenicline for smoking cessation? Findings from a non-inferiority trial in indigenous New Zealanders and their extended family</b> <u>Natalie Walker / Auckland, New Zealand; Jo Barnes; Barry Smith; Marjolein Verbiest et al.</u>		
<b>A cluster feasibility trial to explore the uptake and use of electronic cigarettes provided to smokers accessing homeless centres</b> <u>Lynne Dawkins / London, United Kingdom; Linda Bauld; Allison Ford; Deborah Robson et al.</u>		



## Session 5 continued

### **Smoke-free prisons two years on: a qualitative study exploring stakeholders' reflections and current cessation practices in England**

Leah Jayes; [Jessica Waddingham / Nottingham, United Kingdom](#); John Britton; Rachael Murray

### **Association of socio-economic position with electronic cigarette use 2014-2019 among past-year and long-term former smokers in England**

[Loren Kock / London, United Kingdom](#); Lion Shahab; Jamie Brown

### **An integrated method to present trends in health inequalities: an application to 2003-2015 trends in socioeconomic inequalities in adolescent smoking in Europe**

[Mirte A.G. Kuipers / Amsterdam, The Netherlands](#); Kaidi Kang; Anca D. Dragomir; Karin Monshouwer *et al.*

## 17:45-18:30 Poster Session 3

Virtual room 1

### **Poster session: Understanding and treating tobacco dependence through translational and mixed methods approaches**

**Chair: Dr. Richard Halliday**

For more information see Poster session on Page 19

## 17:45-18:30 Poster Session 4

Virtual room 2

### **Tobacco dependence and health and social inequalities**

**Chair: Dr. Gemma Taylor**

For more information see Poster session on Page 20

## 18:30-19:00 Closing Ceremony and Poster Prize

Virtual rooms 1 and 2

### **Closing remarks and presentation of poster award**

Dr. Sharon Cox and Prof. Lion Shahab

### **Invitation to the 21st Annual SRNT-E Conference in Lausanne, Switzerland**

Prof. Carole Clair, Chair of Local Organising Committee and President-Elect, SRNT-E

# SAVE THE DATE

21<sup>st</sup> Annual conference SRNT-Europe

**Lausanne • Switzerland**  
**September 15-17 • 2021**



[www.srnt-e.org](http://www.srnt-e.org)

**unisanté**

Centre universitaire de médecine générale  
et santé publique • Lausanne

*Unil*

UNIL | Université de Lausanne

 SRNT•E

17:45-18:30

Poster Session 1

Virtual room 1

**Smoking cessation interventions: from development to evaluation**

**Chair: Dr. Mirte Kuipers**

**Smoking, nicotine dependence and intention to quit among cigarettes smokers in Saudi Arabia: a national survey**

Aljoharah Algabbani / Riyadh, Saudi Arabia; Amani Algahtani; Nasser Dhimi

**Different influences on smoking habits related to an online tobacco prevention program**

Zoltan Abram / Târgu Mureş, Romania

**Is tobacco consumption associated with type of sport among young Swiss men?**

Marine Gossin / Lausanne, Switzerland; Gerhard Gmel; Joseph Studer; Mathieu Saubade; Carole Clair

**First-year students' perceptions regarding smoking and vaping and their smoking/shisha/vaping behaviour**

Karolien Adriaens / Leuven, Belgium; Dinska van Gucht; Frank Baeyens

**Heated tobacco products and nicotine pouches: a survey of adult current or recent smokers and vapers in the UK**

Leonie Brose / London, United Kingdom; Timea Partos; Mairtin McDermott; Ann McNeill

**National prevalence of cigarette and waterpipe tobacco smoking in three eastern Mediterranean region countries**

Rima Nakkash; Yousef Khader; Ruba Alba / Beirut, Lebanon; Niveen Abu Rmeileh et al.

**Demand elasticities of waterpipe tobacco and cigarette consumption in three eastern Mediterranean region countries**

Ali Chalak / Beirut, Lebanon; Rima Nakkash; Ruba Alba; Yousef Khader et al.

**Tobacco use among women of reproductive age (15-49 years) in Pakistan: a secondary analysis of a Multiple Indicator Cluster Survey (MICS)**

Radha Shukla / York, United Kingdom; Mona Kanaan; Kamran Siddiqi; Anne Readshaw et al.

**Residential proximity to tobacco retailers and cessation among ever-smoking adults: differences by neighbourhood social capital**

Russell McIntire / Philadelphia, United States; Tiara Helstead; Seif Butt; Gary Klein

**A meta-analysis of incident human beta-coronavirus (SARS-CoV-2 (COVID-19), SARS, MERS, OC43, and HKU1) infection relative risks in current smokers versus all others**

Nossin Khan / Davis, United States; Bruce Leistikow

14:30-15:15 **Poster Session 2**

Virtual room 1

**Factors influencing policy and regulation of tobacco and non-combustible nicotine products**

**Chair: Prof. Lynne Dawkins**

**Comparison of nicotine delivery consistency: performance and stability of aerosols of various e-cigarettes (e-cigs) from European market**

Sebastien Roux / Rohrbach-lès-Bitche, France

**Indoor air quality assessment in a vapers environment**

Sebastien Roux / Rohrbach-lès-Bitche, France

**Differences in flavourant levels and synthetic coolant use between USA, EU and Canadian Juul products**

Hanno C. Erythropel / New Haven, United States; Paul T. Anastas; Suchitra Krishnan-Sarin;

Stephanie S. O'Malley et al.

**JUUL e-cigarettes under European law – lower nicotine content but higher vapor generation**

Nadja Mallock / Berlin, Germany; Hai Linh Trieu; Miriam Macziol; Sebastian Malke et al.

**Vaping during the COVID-19 lockdown period in Belgium**

Karolien Adriaens / Leuven, Belgium; Dinska van Gucht; Sven van Lommel; Frank Baeyens

**Implementation of an outdoor smoke-free policy at sports clubs: critical situations and factors influencing implementation**

Heike Garritsen / Amsterdam, The Netherlands; Andrea Rozema; Ien van de Goor; Anton Kunst

**Introducing tobacco taxation and pricing reforms in a tobacco growing country: a political economy analysis**

Haleema Masud / Coventry, United Kingdom; Oyinlola Oyeboode

**News media coverage of Dutch tobacco control policies: tobacco tax increase, point-of-sale display ban and plain packaging.**

Nikita Poole / The Hague, The Netherlands; Barbara van Straaten; Gera Nagelhout

**IQOS point-of-sale marketing strategies at a time of legislation transition in Israel**

Yael Bar-Zeev / Jerusalem, Israel; Carla Berg; Lorien C. Abrams; Elbaz Daniel et al.

**Awareness, attitudes and practices regarding article 5.3 of the WHO Framework Convention on Tobacco Control amongst members of the tobacco control committees in Karnataka, India.**

Praveen Kumar / Udupi, India; Veen Kamath; Muralidhar Kulakarni; Asha Kamath et al.

**Perceived impact of the Massachusetts menthol ban on cigarette use behavior at a large safety-net hospital**

Anna Booras; Andrew Stokes; Jennifer Maccarone; Katia Belukova ; Hasmeena Kathuria /

Boston, United States

17:45-18:30

Poster Session 3

Virtual room 1

**Poster session: Understanding and treating tobacco dependence through translational and mixed methods approaches**

**Chair: Dr. Richard Halliday**

**Medication administration based on tobacco smoke exposure among pediatric emergency department patients with asthma**

Ashley L. Merianos / Cincinnati, United States; Roman A. Jandarov; Judith S. Gordon; Michael S. Lyons; E. Melinda Mahabee-Gittens

**Smoking cessation aid by Flemish general practitioners**

Michiel Mertens / Leuven, Belgium; Sven van Lommel; Bert Aertgeerts; Kristiaan Nackaerts

**Factors related to the success of smoking cessation in South Koreans participating in smoking cessation clinics**

Yoon Hee Eum / Seoul, South Korea; Ho Jun Kim; Bumjo Oh; Kyungha Min

**Hospital interventions to reduce children's exposure to secondhand smoke: a mixed-methods systematic review and evidence synthesis.**

Erica Ferris / Birmingham, United Kingdom; Carole Cummins; Christophe Chiswell; Laura Jones

**My future self-quit smoking: an experimental study into the effect of a future-self intervention on identity and behavioral and psychological smoking outcomes**

Kristell M. Penforis / Leiden, The Netherlands; Eline Meijer; Winifred A. Gebhardt

**Combining default choices and shared decision making to improve tobacco cessation treatment in primary care: interviews with general practitioners**

Christina Hempel Bruder / Lausanne, Switzerland; Marie-Anne Durand; Ivan Berlin; Yasser Khazaal *et al.*

**Network analysis of the cooperation network of academic smoking outpatient clinics (NAKURA): results from two German surveys covering organizational characteristics and SARS-CoV-2 pandemic effects on smoking cessation services**

Sophie Lux / Chemnitz, Germany; Franziska Loth; Florian Wirth; Stephan Mühlig

17:45-18:30

Poster Session 4

Virtual room 2

## **Tobacco dependence and health and social inequalities**

**Chair: Dr. Gemma Taylor**

### **Investigating changes in patients' smoking behaviour, tobacco dependence and motivation to stop smoking following a 'smoke-free' mental health inpatient stay: results from a longitudinal survey in England**

Tom Ainscough / Leeds, United Kingdom; Alex Mitchell; Catherine Hewitt; Michelle Horspool *et al.*

### **Prevalence of mental health and neurodevelopmental conditions in US children with tobacco smoke exposure**

E. Melinda Mahabee-Gittens; Ashley L. Merianos / Cincinnati, United States; Kimberly Yolton

### **Prevalence of e-cigarettes use in specialized tobacco dependence treatment centres**

Kamilia Zvolška / Prague, Czech Republic; Eva Kralikova; Alexandra Pankova; Lenka Stepankova *et al.*

### **Effectiveness of interventions supporting smoking cessation and preventing relapse following a stay at a smokefree institution: systematic review & meta-analysis.**

Emily Shoesmith / York, United Kingdom; Lisa Huddleston; Fabiana Lorencatto; Lion Shahab; Elena Ratschen

### **User-centered development and usability evaluation of a mHealth application with game elements to support smoking cessation among disadvantaged young women during and after pregnancy**

Marloes Derksen / Amsterdam, The Netherlands; Monique Jaspers; Sander van Strijp; Mirjam Fransen

### **Smokefree mental health inpatient settings: an assorted analysis of UK health professional and patient experience**

Lisa Huddleston / York, United Kingdom; Tom Ainscough; Paul Galdas; Elena Ratschen

### **Exploring the role of tobacco and electronic cigarette use for reported incidents in English NHS mental health inpatient settings: a qualitative content analysis**

Lisa Huddleston; Jodi Pervin / York, United Kingdom; Tom Ainscough; Elena Ratschen



### Evaluating the process & outcomes of implementing a national smokefree prisons policy across Scotland: study findings and lessons for other jurisdictions and high smoking prevalence groups

Kate Hunt; University of Stirling, UK

**Objectives** To present findings from two complementary studies of tobacco and e-cigarette use in prison. The first is a multi-methods, 3-Phase comprehensive evaluation of the development, preparation for, implementation and outcomes of smokefree policy across Scotland's prison system, known as the Tobacco in Prisons (TIPs) study. The second is a novel study of e-cigarette use in the prison population before and after implementation of the smokefree policy. Through these studies, we believe we provide the most in-depth evaluation internationally of a smokefree prison policy to date. This evidence can inform transferable insights for other jurisdictions and high-smoking prevalence populations.

By presenting papers using different methods (objective measurements of secondhand smoke (SHS); qualitative focus group/interview data and surveys with people in custody and prison staff; prisoner purchasing data), the workshop will demonstrate the success of implementing smokefree prison policy in Scotland and the factors contributing to this success and related outcomes. Within the workshop we will also discuss some of the challenging issues and decisions which other jurisdictions may face when considering smokefree policy.

The format of the workshop will comprise oral presentations by members of the study teams, followed by commentary by the discussant. It will begin with a brief overview of: a) the rationale for, and challenges of, implementing smokefree policies in the prison context; and b) the methods used during the studies. There will then be presentations examining: experiences and processes of implementing the smokefree prison policy in Scotland; the positive and negative consequences of making prisons smokefree; and use of e-cigarettes in the prison population.

### Evaluating the process and outcomes of implementing a national smokefree prisons policy across Scotland: study findings and lessons for other jurisdictions and high smoking prevalence groups (Paper 1)

Ashley Brown<sup>1</sup>; Douglas Eade<sup>1</sup>; Richard Purves<sup>1</sup>; Danielle Mitchell<sup>1</sup>; Helen Sweeting<sup>2</sup>; Linda Bauld<sup>3</sup>; Kate Hunt<sup>1</sup>

<sup>1</sup>University of Stirling, UK; <sup>2</sup>University of Glasgow, UK; <sup>3</sup>University of Edinburgh, UK

**Background** A national smokefree prison policy was implemented in Scotland from November 2018, in response to very high smoking rates (74%) among people in custody (PiC) and robust evidence of second-hand smoke exposures. The Tobacco In Prisons study (TIPs) is a 3-Phase multi-methods study which has evaluated this policy. Lessons from Scotland, as documented by TIPs, are highly relevant for other jurisdictions and areas of public health in prisons. This presentation considers views and experiences of Scotland's smokefree prison policy among staff and PiC.

**Methods** As part of TIPs, perspectives were gathered via 15 staff focus groups and 23 interviews with PiC ~6 months after the smokefree policy was introduced. Data were thematically analysed to identify the diversity of views and experiences.

**Results** The smokefree policy is widely accepted as the new 'norm' in Scottish prisons, even if PiC do not always fully endorse the decision to prohibit tobacco. Introducing smokefree policy has been less troublesome than expected. Participants identified implementation success factors relating to: planning and communication; smoking abstinence/cessation products/services; and partnership working. The significant benefits of smokefree rules for the comfort and health of those living and working in prison were often recognised. Participants also acknowledged some reported drawbacks and challenges of mandated smoking abstinence among PiC e.g. difficulties managing without tobacco and concerns about displacement of tobacco with other substances.

**Discussion** The results confirm that national smokefree policies can be successfully implemented in prisons, providing that removal of tobacco is well managed and enhanced support measures are available for smokers. Ongoing investment is required to maximise the individual, organisational and social gains of removing tobacco from prisons. Lessons from Scotland can support further public health achievements in prison populations.

### Evaluating the process and outcomes of implementing a national smokefree prisons policy across Scotland: study findings and lessons for other jurisdictions and high smoking prevalence groups (Paper 2)

Kate Hunt<sup>1</sup>; Kathleen Boyd<sup>2</sup>; Nicola McMeekin<sup>2</sup>; Ashley Brown<sup>1</sup>; Linda Bauld<sup>3</sup>; Philip Conaglen<sup>4</sup>; Peter Craig<sup>2</sup>; Evangelia Demou<sup>2</sup>; Douglas Eade<sup>1</sup>; Alistair Leyland<sup>2</sup>; Jill Pell<sup>2</sup>; Emily Tweed<sup>1</sup>; Richard Purves<sup>1</sup>; Catherine Best<sup>1</sup>; Tom Byrne<sup>5</sup>; Ruairaidh Dobson<sup>1</sup>; Lesley Graham<sup>6</sup>; Sean Semple<sup>1</sup>

<sup>1</sup>University of Stirling, UK; <sup>2</sup>University of Glasgow, UK; <sup>3</sup>University of Edinburgh, UK; <sup>4</sup>NHS Lothian, UK; <sup>5</sup>Health Improvement Scotland, UK; <sup>6</sup>Public Health Scotland, UK

**Background** Prisons had partial exemption from UK policy banning smoking in enclosed public spaces in 2006/7 and became one of few workplaces with continued exposure to secondhand smoke (SHS). Prison smoking bans have been introduced elsewhere, but evidence of their impact is sparse. The presentation will demonstrate the success of smokefree policy in virtually eliminating SHS in Scottish prisons. It will also explore other potential gains and unintended harms of removing tobacco from prisons.

**Methods** The Tobacco in Prisons study (TIPs) is a 3-Phase, mixed-methods study of Scotland's smokefree prison policy. We conducted air quality monitoring (measuring fine particulate matter (PM2.5) in fixed locations in prisons and during specific tasks) and surveys of people in custody (paper-based) and staff (online). We also accessed routine data relating to: medications dispensing and staff sickness absence. These data are being used by TIPs researchers to estimate the economic impacts of the smoke-free prison policy.

**Results** TIPs provides evidence that staff SHS exposures significantly reduced following smokefree policy implementation. PM2.5 concentrations in residential halls declined markedly; by >91% 6 months post-ban compared to before the policy change was announced. There were also significant changes in the 'task-based' measurements (89% average decrease for high-exposure tasks) and time-weighted average concentrations across shifts (>90% decrease across all shifts). The results of analysis of routinely collected health and justice data and the economic evaluation are confidential until summer 2020 and will be available to present at SRNT-E 2020.

**Conclusion** As a study encompassing an entire national prison service, this evaluation of smokefree policy is unique worldwide and demonstrates the importance of research evidence for policy implementation and monitoring, providing new evidence for other jurisdictions contemplating bans on smoking in prisons.

## Symposium 1 | 13:00-14:30 | Thursday, 17<sup>th</sup> September 2020

### Evaluating the process and outcomes of implementing a national smokefree prisons policy across Scotland: study findings and lessons for other jurisdictions and high smoking prevalence groups (Paper 3)

Catherine Best<sup>1</sup>; Ashley Brown<sup>1</sup>; Rachel O'Donnell<sup>1</sup>; Douglas Eade<sup>1</sup>; Richard Purves<sup>1</sup>; Helen Sweeting<sup>2</sup>; Alison Ford<sup>1</sup>; Linda Bauld<sup>3</sup>; Kate Hunt<sup>1</sup>

<sup>1</sup>University of Stirling, UK; <sup>2</sup>University of Glasgow, UK; <sup>3</sup>University of Edinburgh, UK

**Background** People in custody (PIC) have poor health and high mortality, in part due to high smoking rates. Scotland's prisons became smokefree in November 2018. Shortly before tobacco was removed from the 'canteen' (shop for PIC), rechargeable e-cigarette starter packs were provided and e-liquids became available for purchase.

**Methods** Weekly 'canteen' purchase data (no. units for 645 unique products by person by date; anonymised) from 29-7-18 to 31-3-19 were provided. Spend by product for those in custody for 31+ weeks in this period was compared pre- (Jul-Sep 2018) and post-ban (Jan-Mar 2019), using mixed effects models. Marginal effects were computed for all models, to investigate the impact of change (pre- versus post-ban) accounting for interactions and random effects.

**Thematic analysis** of 56 interviews with PIC (in six prisons) who had used e-cigarettes in prison was conducted.

**Results** Implementation of smokefree policy was associated with a decrease in weekly spend on nicotine products in 'smokers' resident for the study period (Jul 2018-Mar 2019); their marginal predicted spend on nicotine products was £9.23 (95% CI 8.35-10.12) pre-ban and £5.21 (95% CI 4.66-5.77) post ban. In the post ban period there was a small but statistically significant increase week by week in spend on nicotine products.

There was no indication that the minority of PIC who were 'non-smokers' pre-ban were purchasing e-cigarettes post-ban.

In contrast, amongst pre-ban 'smokers', the marginal predicted weekly spend on food/beverage products rose from £8.67 (95% CI 8.23-9.13) pre-ban to £10.24 post ban (95% CI 9.58-10.90).

PIC often expressed dissatisfaction with the price and value for money of vaping products, particularly for PIC with limited funds. Some said they would like support to cut down/quit vaping.

**Discussion** When prison smokefree policy implementation is facilitated by introduction of e-cigarettes, PIC's nicotine spend may remain high and their food/beverage consumption may change. The implications for health, and whether PIC return to smoking after release, are unclear. PIC may desire or benefit from interventions to support reduction or cessation of vaping.

## Session 1 | 13:00-14:30 | Thursday, 17<sup>th</sup> September 2020

### Association of the US Outbreak of Vaping-Associated Lung Injury and Perceived Harm of e-Cigarettes Compared With Cigarettes

Harry Tattan-Birch; Jamie Brown; Lion Shahab; Sarah Jackson  
University College London, UK

**Background/Significance** The recent US outbreak of vaping-associated lung injury (EVALI), linked to vitamin E acetate in THC vaping devices, received extended news coverage worldwide. But media reports often failed to distinguish THC devices from nicotine e-cigarettes. Here, we examine how smokers' perceptions of the relative harm of e-cigarettes compared with cigarettes changed following the outbreak.

**Methods** Current smokers (>16y) were recruited from the Smoking Toolkit Study, a monthly nationally representative survey in England. They were asked whether they think, compared with cigarettes, e-cigarettes are less, equally or more harmful to health. Following a pre-registered analysis plan, we examined associations between timing of the outbreak (Jan-Jul 2019 vs. Aug-Dec 2019) and e-cigarette harm perceptions, before and after adjustment for covariates (sex, age, social grade, ethnicity, and current e-cigarette use).

**Results** 3215 current smokers were surveyed in 2019, 1833 before the outbreak (46.3% women, mean[SD] age=43.5[17.6] years) and 1382 after it (43.7% women, mean[SD] age=43.0[17.8] years). The proportion of smokers who perceived e-cigarettes as less harmful than combustible cigarettes decreased significantly from before (37.0%) to after (30.9%) the outbreak (Risk Ratio [RR]=0.83, 95%CI = 0.76-0.92, p<0.001). Conversely, there were significant increases in the proportion who perceived them as equally (39.9% vs. 43.8%, RR=1.10, 1.01-1.19, p=0.01) and more (12.7% vs. 17.2%, RR=1.36, 1.15-1.61, p<0.001) harmful. Significant differences remained after adjustment.

**Conclusions** Following the US outbreak of vaping-associated lung injury, views on e-cigarettes among smokers in England deteriorated: the proportion perceiving e-cigarette use as less harmful than smoking fell, while the proportion perceiving it as more harmful increased by over a third.

### Use and purchasing of e-cigarettes among Scottish and English youth: A repeat cross-sectional evaluation of Scotland's ban of e-cigarette sales to minors and retail register

Katherine East<sup>1</sup>; Jessica L. Reid<sup>1</sup>; David Hammond<sup>1</sup>; Sara C. Hitchman<sup>2</sup>

<sup>1</sup>University of Waterloo, CA; <sup>2</sup>King's College London, UK

**Significance** Scotland began implementing new e-cigarette retail regulations in April 2017: i) prohibition of sales to minors age <18 years; ii) mandatory age verification for purchasers; iii) mandatory registration of e-cigarette retailers by Oct 2017. We hypothesised these regulations would reduce e-cigarette use and purchasing among Scottish youth.

**Methods** A quasi-experimental design was used to examine changes from 2017 with 2018 (immediately vs. one year after implementation) between Scotland (SC) and England (EN, where regulations remained comparatively stable). We also contrasted ages 16-17 with 18-19, as the new regulations largely target minors. Data were from Waves 1 (July/Aug 2017) and 2 (Aug/Sept 2018) of the online cross-sectional ITC Youth Tobacco and Vaping Survey (2017/18: SC N=434/377; EN N=3791/3743). Outcomes were i) ever vaping, ii) past-30-day vaping, and, among past-year vapers, iii) purchasing an e-cigarette product, and iv) being refused sale of an e-cigarette product. Separate logistic regressions assessed associations with country, year, age, and interactions of country\*year and country\*year\*age, adjusting for demographics, smoking status, and for outcomes c and d, vaping status.

**Results** For ever vaping, we found little difference by ( $p>.094$ ) or interaction between ( $p=.421$ ) country and year (2017-2018: SC 31.0-35.1%; EN 34.4-32.8%). Past-30-day vaping increased from 2017-2018 to a greater extent in SC (7.0-12.7%) than EN (8.8-8.7%; AOR=2.0 (95%CI=1.1-3.7)). Purchasing an e-cigarette product increased overall from 2017-2018 (SC 29.6-45.4%; EN 27.3-36.9%; AOR=1.6 (1.3-2.1)), but we found little difference by ( $p=.481$ ) or interaction with ( $p=.839$ ) country. For being refused sale, we found little difference by ( $p>.168$ ) or interaction between ( $p=.215$ ) country and year (2017-2018: SC 6.9-13.2%; EN 10.8-8.6%). For all outcomes, we found no interaction between age, country, and year (all  $p\geq.389$ ).

**Conclusion** There was no clear evidence that Scotland's retail regulations reduced youth e-cigarette use or purchasing from immediately to one year after implementation. Limitations include staggered implementation and lack of pre-implementation data.

### Youth use of e-liquid flavours – a systematic review

Caitlin Nollet<sup>1</sup>; Sarah Gentry<sup>1</sup>; Sharon Cox<sup>2</sup>

<sup>1</sup>University of East Anglia, UK; <sup>2</sup>University College London, UK

**Significance** This review aimed to synthesise evidence on youth use of e-liquid flavours through systematically reviewing interventional, observational and mixed methods studies reporting outcome, observational or qualitative data.

**Methods** Mixed methods systematic review exploring incidence, prevalence and use of e-cigarette flavours among young people. Exploratory review questions focused on reports of patterns of use, uptake of vaping in relation to flavours among young people, associations with smoking uptake, cessation, adverse effects and perspectives of young people on use of e-cigarette flavours. We searched: MEDLINE, EMBASE, PsycINFO, CINAHL, Applied Social Sciences Index and Abstracts, the Cochrane database, ProQuest Dissertation and Theses Database and Open Grey. We undertook backwards and forwards citation tracking of all included studies. All data were double screened and double extracted. Narrative synthesis was used to summarise findings due to heterogeneity of included studies meaning that metaanalysis was not possible.

**Results** We screened 686 studies and undertook full text screening of 104 studies. 69 studies were included. Most studies were cross-sectional surveys, with some qualitative studies. We excluded studies where it was not possible to differentiate between reporting on flavoured tobacco use and e-cigarette flavours. Most studies did not fully explore the preferences and experiences of using different flavours due to imprecise definitions. Overall, flavours were reportedly attractive to users and encouraged vaping behaviour. There was no evidence that use of e-liquid flavours was associated with subsequent tobacco use.

**Conclusions** There were difficulties synthesising the data due to heterogeneity of studies and poor methodological quality. Of note, many studies did not clearly define 'e-cigarette' nor the flavours reported on. Due to legal categorisation, US studies often included flavoured tobacco use with flavoured e-liquids, making data extraction difficult. There is a need to establish standards for definition, and to avoid moving from brief self-reported experiential data to broader claims of cause and effect.

### The characteristics of people who vape, but who have never regularly smoked: findings from a nationally representative survey in England

Robert Calder<sup>1</sup>; Leonie Brose<sup>1</sup>; Ann McNeill<sup>1</sup>; Jamie Brown<sup>2</sup>

<sup>1</sup>King's College London, UK; <sup>2</sup>University College London, UK

**Background/Aims** The prevalence of vaping among adults in England is between 5% and 8%. Most people who use vaping products are smokers or former smokers, but about 6% of vapers in England have never regularly smoked, with very little known about the characteristics of this group. To compare the socio-demographic and health characteristics of people who currently vape, but who have never regularly smoked with people who do not currently vape and have never smoked.

**Methods** Data from the Smoking Toolkit Study collected from July 2016 to February 2020 ( $n=48,217$ ) in England were used. Analyses included 49,067 participants who had never regularly smoked; of which 255 currently vaped. Differences between the socio-demographic and health characteristics of participants who currently vaped and who did not vape were analysed. A multinomial logistic regression was used to identify differences between groups.

**Results** Compared with those who had never vaped, participants who currently vaped were more likely to be male (OR = 1.95, 95%CI = 1.50-2.53,  $p<.0001$ ), less likely to be aged 65+ compared with being aged 16-34 (OR = 0.46, 95%CI = 0.32-0.67,  $p<.0001$ ), less likely to be married (OR = 0.74, 95%CI = 0.56-0.99,  $p=.0045$ ) and less likely to have continued education beyond age 16 (OR = 0.61, 95%CI = 0.47-0.80  $p<.0001$ ). There were no significant differences in ethnicity, region of abode within the UK, parental status, socio-economic status, disability status and harmful alcohol use.

**Conclusions** Among people who have never regularly smoked, people who currently vape are more likely to be male, young, unmarried and to have lower levels of education than people who do not vape. More research is needed to identify the reasons for vaping among this population and to understand whether vaping among people who have never regularly smoked has a positive effect (i.e. by preventing uptake of smoking) or a negative effect through exposure to risk of harm from vaping.

## Session 1 | 13:00-14:30 | Thursday, 17<sup>th</sup> September 2020

### Developing an e-cigarette ontology

Janna Hastings<sup>1</sup>; Sharon Cox<sup>1</sup>; Caitlin Notley<sup>2</sup>; Robert West<sup>1</sup>

<sup>1</sup>University College London, UK; <sup>2</sup>University of East Anglia, UK

**Significance** While growing in popularity, there is controversy surrounding the use of e-Cigarettes. Research findings are inconsistent, and are being interpreted selectively. There is a need for a tool that is able to aggregate evidence consistently across studies to support policy and practice.

**Methods** Ontologies are structured computable representations of the entities in a given domain and their relations. Each entity is described and rigorously defined. Ontologies index research findings, allowing unambiguous interpretation. We are developing an ontology for e-Cigarette research. Our first step has been to gather terminology from a representative sample of the literature and a workshop. We are currently defining and interrelating these entities.

**Results** The ontology is separated into several topical domains, for products, organisations, human populations and personal attributes, interventions and research activities, and environmental systems. It includes (as of July 2020) 5839 preliminary entities, of which 662 are flagged as specific to the e-Cigarette domain. Of these, 462 have been fully defined and classified, of which 221 are e-Cigarette domain specific.

The initial focus has been on the products and their definitions. A clear distinction has been drawn between tobacco-containing products and those that do not contain tobacco, as well as between combustible and non-combustible products. The classification of products is not tied to the legal framework in any one country; regulatory status is an attribute of a product in a particular environment. Neither is the product classification based on commonalities between groups of users, also not an intrinsic feature of products.

**Conclusions** The products classification allows unambiguous evidence aggregation based on product features, regardless of the description which authors have favoured in a report (e.g. using 'e-Cigarette' for studies involving vaping of non-nicotine substances). Use of the ontology avoids the misinterpretation of findings that fuels media misreporting, which has led to confusion and, in some jurisdictions, policies that are at odds with the emerging evidence base.

## Session 2 | 16:15-17:45 | Thursday, 17<sup>th</sup> September 2020

### A pragmatic two-arm cluster-randomised controlled trial on training general practitioners in providing brief stop-smoking advice according to the 5As and the ABC methods

Sabrina Kastaun<sup>1</sup>; Verena Leve<sup>1</sup>; Jaqueline Hildebrandt<sup>1</sup>; Christian Funke<sup>1</sup>; Stephanie Klosterhofen<sup>1</sup>; Diana Lubisch<sup>1</sup>; Olaf Reddemann<sup>1</sup>; Hayden McRobbie<sup>2</sup>; Tobias Raupach<sup>3</sup>; Robert West<sup>4</sup>; Stefan Wilm<sup>1</sup>; Wolfgang Viechtbauer<sup>5</sup>; ...; Daniel Kotz<sup>1</sup>

<sup>1</sup>University of Düsseldorf, DE; <sup>2</sup>University of New South Wales, AU; <sup>3</sup>University of Göttingen, DE; <sup>4</sup>University College London, UK;

<sup>5</sup>Maastricht University, NL

**Background/Significance** Evidence-based strategies are needed to implement guideline recommendations on treating tobacco addiction in German primary care. This study assessed the effectiveness of a 3.5h-training for GPs in providing brief stop-smoking advice and compared two different methods of giving advice – ABC vs. 5As – on the rates of delivery of such advice and of recommendations of evidence-based smoking cessation treatment during routine consultations with smoking patients.

**Methods** We conducted a pragmatic, two-arm cluster randomised controlled trial including a pre-post-design for the analyses of the primary outcome in 52 GP practices (69 GPs) with 1,937 smoking patients. Practices were randomised (1:1) to ABC or 5As training. Primary outcome: patient-reported rates of receipt of stop-smoking advice (yes/no) during the last consultation in a period of 6 weeks following the training compared with the 6 weeks before. Secondary outcomes included recommendation/prescription rates of behavioural counselling, pharmacotherapy (nicotine replacement, varenicline, or bupropion), or the combination of both, and comparisons of the effectiveness of 5A vs. ABC (interaction). Outcomes were analysed using multilevel, mixed-effects logistic regression models, adjusted for potential confounders.

**Results** Rates of stop-smoking advice delivered by GPs increased from 13.1% (N=136) to 33.1% (N=297) following the training (adjusted Odds Ratio (aOR)=3.25, 95%CI=2.34-4.51). Recommendation/prescription rates of cessation treatment were low prior to the training (<2%), but had significantly increased for all types of treatment after the training (e.g., behavioral support: aOR=7.15, 95%CI=4.02-12.74; any pharmacotherapy: aOR=7.99, 95%CI=4.11-15.52). The increase in rates of stop-smoking advice following the training was non-significantly (p=0.08) higher in the ABC vs. 5A group (aOR=1.71, 95%CI=0.94-3.12).

**Conclusions** A single training session in stop-smoking advice was associated with a three-fold increase in rates of advice giving and a seven-fold increase in offer of support. The ABC method may lead to higher rates of GP-delivered advice during routine consultations.

### Evaluating level of adherence to nicotine replacement therapy and its impact on smoking cessation: A systematic review and meta-analysis

Amanul G. Mersha; Parivash Eftekhari; Michelle Bovill; Daniel N. Tollosa; Gillian S. Gould  
University of Newcastle, AU

**Significance** Smoking remains the most common preventable cause of premature mortality and morbidity. Despite the availability of nicotine replacement therapy (NRT) for the last few decades, there is still uncertainty about the impact of adherence to NRT on smoking cessation. The aim of the review was to assess the level of adherence to NRT and its impact on successful quitting.

**Methods** A systematic review and meta-analysis were conducted by searching five databases (MEDLINE, Scopus, EMBASE, CINAHL, and PsycINFO) from inception date to 25 February 2020. Statistical analyses were carried out using Stata version 16 software. NIH Quality Assessment Tool was used to appraise quality of the studies. Heterogeneity was assessed by Higgins'  $I^2$  statistics. Results were pooled using fixed or random-effects models. Egger's regression and Funnel plot asymmetry tests with  $p$ -value  $< 0.05$  was used as a cut-off point to indicate publication bias.

**Results** A total of 16 studies were included in the analysis. Level of adherence to NRT among participants of RCTs were found to be 61% (95% CI, 54% - 68%) with  $p$ -value of  $< 0.001$  and  $I^2 = 85.5\%$ . Whereas, a quarter (26%) of participants were found to be adherent among participants of real-world studies with 95% CI, 20% - 32%,  $p$ -value of  $< 0.001$  and  $I^2 = 94.5\%$ . Moreover, level of adherence was the lowest among pregnant women (22%) with 95% CI between 18% and 25% and Higgins'  $I^2 = 15.8\%$ . Being adherent to NRT doubles the rate of successful quitting (OR = 2.17, 95% CI, 1.34 - 3.51) with a  $p$ -value of  $< 0.001$  and Higgins'  $I^2 = 77.6\%$ .

**Conclusions** This review demonstrated the existence of low level of adherence to NRT among adult participants of population studies and pregnant women as compared to clinical trial participants. Moreover, the review illustrated strong association between adherence to NRT and quitting. Hence, it is recommended to advocate and implement large scale interventions to promote NRT adherence; and, policies and strategies that improves the quality of smoking cessation care. Health programs and policies are recommended to integrate the issue of adherence to NRT as a core component of smoking cessation interventions.

### Smoking cessation among adolescents in Europe: an exploration of the role of schools

Aukje E.J. Mertens<sup>1</sup>; Anton E. Kunst<sup>1</sup>; Vincent Lora<sup>2</sup>; Joana Alves<sup>3</sup>; Arja Rimpelä<sup>4</sup>; Luke Clancy<sup>5</sup>; Mirte Kuipers<sup>1</sup>

<sup>1</sup>University of Amsterdam, NL; <sup>2</sup>Université Catholique de Louvain, BE; <sup>3</sup>Universidade NOVA de Lisboa, PT; <sup>4</sup>Tampere University, FI; <sup>5</sup>Focas Research Institute, IE

**Significance** European estimates of adolescent smoking cessation are lacking and studies on the role of schools in quit behaviour are scarce. This study aimed to describe the prevalence of smoking cessation attempts and success among adolescents in Europe and explored the association with school policy and interventions.

**Methods** In 2013 and 2016-2017, we collected cross-sectional survey data of 4,509 12-19-year-old current or ex-smokers in 67 secondary schools in seven countries (Belgium, Germany, Finland, Ireland, Italy, the Netherlands, and Portugal). School staff reported strength of smoke-free school policies (SFSPs), the proportion of grades in which anti-tobacco education was offered, and whether the school offered any form of cessation support programme. Multilevel logistic regression analysis determined school-level variation and the association of school- and individual-level variables with self-reported quit attempts and success.

**Results** More than three quarters (77.3%) of students attempted to quit and half of them (50.1%) were successful. Associations of smoke-free school policy, tobacco educational programmes and cessation programmes with quit attempts and quit success could not be demonstrated with statistical significance. Prevalence of quit success, and to a lesser quit attempts, did vary between schools, but variation was mostly attributable to country and survey year variations. Quit attempts and quit success had strong inverse associations with alcohol use, parental smoking, and friend smoking.

**Conclusions** This study demonstrates that adolescence is an important time to encourage quitting and to support quit attempts. Results imply that schools currently only play a minor in the quit behaviour of adolescent smokers.

### Smokers' perceptions of incentivised smoking cessation programmes: examining how payment thresholds change with income

Rachel Breen; Stuart Ferguson; Matthew Palmer  
University of Tasmania, AU

**Significance** Studies demonstrate financial incentive programmes increase smoking cessation success. Yet there is little guidance on the incentive amount necessary to ensure optimal enrolment and motivation levels. Whether the amount should differ between recipients, including by income level, is also uncertain. These are key questions policy makers consider before the implementation of incentive programmes. Here we investigate current smokers' perceptions of varying amounts to identify whether there is evidence for optimal amount(s), and whether perceptions of amounts differ by income.

**Methods** In Studies 1 (N=56) and 2 (N=147), current smokers were randomly shown multiple hypothetical programmes which differed only in the incentive amount offered. For each programme, smokers rated its appeal, their likelihood of enrolling, and predicted their motivated to quit if enrolled. Growth models were used to investigate the relationship between smoker's perspectives and incentive amounts.

**Results** An increasing quadratic trend in smokers' perspectives of programmes as the incentive amount increased was identified. Potential cut-points at £50 to £75 per week (£500 to £750 total across the programme) were observed, beyond which further increases to the amount did not significantly alter perceptions of programmes. In Study 2, high-income smokers rated all programmes as significantly less appealing and motivating than low-income smokers, although no significant between-group differences were observed in the likelihood of enrolment. No significant differences were observed between low- and middle-income smokers.

**Conclusions** Increasing the incentive amount increases smoker's perspectives of incentive programmes and their predicted enrolment. This relationship is likely curvilinear, meaning a point beyond which further increasing the amount will not improve enrolments or motivation to quit may exist. Incentives appear equally appealing to low- and middle-income smokers; the population among whom smoking is most prevalent. Future research is needed to determine whether other programme or recipient characteristics influence the amount desired, and to consider effectiveness.

## Session 2 | 16:15-17:45 | Thursday, 17<sup>th</sup> September 2020

### Developing a smokefree homes intervention for neonatal Intensive Care unit families

Caitlin Notley<sup>1</sup>; Tracey Brown<sup>1</sup>; Amy Nichols<sup>1</sup>; Linda Bauld<sup>2</sup>; Wendy Hardeman<sup>1</sup>; Elaine Boyle<sup>3</sup>; Felix Naughton<sup>1</sup>; Michael Ussher<sup>4</sup>; Richard Holland<sup>5</sup>; Paul Clark<sup>6</sup>

<sup>1</sup>University of East Anglia, UK; <sup>2</sup>University of Edinburgh, UK; <sup>3</sup>University Hospitals of Leicester NHS Trust, UK; <sup>4</sup>St Georges University of London, UK; <sup>5</sup>Leicester University, UK; <sup>6</sup>Norfolk and Norwich University Hospitals NHS Foundation Trust, UK

**Significance** Babies born to smokers are at higher risk of being born preterm, likely to weight less on average, and may be more susceptible to respiratory infections than those born to non-smokers. The relative risk of admission to Neonatal Intensive Care units (NICU) for infants of smokers is increased by at least 20%. NICU admission is an ideal opportunity when smoking parents may be receptive to cessation support. Ex-smokers may need additional support to remain abstinent from smoking during the stressful time of a NICU admission, and families need advice on maintaining smokefree home environments.

**Methods** Qualitative interviews and focus groups seeking feedback on potential intervention approaches were conducted with parents and family members of babies admitted to NICUs, supplemented with interviews with NICU staff. Participants were purposively sampled (n=40) from NICUs across two large UK teaching hospitals, seeking maximum variation in key demographics. Data were collected by neonatal research nurses. All data were audio recorded and transcribed verbatim before inductive thematic analysis.

**Results** Parents are amenable to smoking cessation. Sensitive, timely support is needed for those willing to quit, and those who have quit but are at high risk of relapse. Support might best be delivered by a NICU nurse with specialist training. Support with cessation and relapse prevention through information about smokefree homes, nicotine replacement therapy and/or support to use nicotine alternatives (e.g. vaping) were identified as promising routes for intervention. Parents specifically wanted accurate evidence-based health advice on the dangers of smoking, and welcomed ongoing digital support following discharge from NICU.

**Conclusions** There is presently little dedicated support for smoking cessation, relapse prevention or smoke-free homes for families of NICU babies. Parents are amenable to support and consider a focus on smokefree homes as a less stigmatising way in which smoking cessation may be promoted to improve neonatal health.

## Session 3 | 16:15-17:45 | Thursday, 17<sup>th</sup> September 2020

### Reactions to, and trial intentions for, three dissuasive cigarette designs: a cross-sectional survey of adolescents in Scotland

Danielle Mitchell<sup>1</sup>; Nathan Critchlow<sup>1</sup>; Crawford Moodie<sup>1</sup>; Linda Bauld<sup>2</sup>

<sup>1</sup>University of Stirling, UK; <sup>2</sup>University of Edinburgh, UK

**Significance** The Scottish Government have identified dissuasive cigarettes, which provide exposure to health warnings at point of consumption and reduce product attractiveness, as a potential tobacco control measure to further reduce smoking prevalence and encourage cessation. We therefore explored reactions to, and trial intentions for, three dissuasive cigarette designs among adolescents in Scotland, including varied colours and written text warnings.

**Methods** A cross-sectional survey with 12-17 year-olds in Scotland (n=594), conducted November 2017 to November 2018. Participants were shown one 'standard' cigarette (imitation cork filter with white paper casing) and three dissuasive cigarettes: (1) cigarette with warning 'smoking kills'; (2) cigarette with message 'toxic' and skull and cross-bones image; and (3) a dark green cigarette. Participants rated each cigarette on nine five-point reaction measures (e.g. appeal and harm). A composite reaction score was computed for each cigarette, which was then binary coded (negative reactions versus neutral/positive). Participants also indicated whether they would trial each cigarette (Yes/No). Demographics, smoking status, and smoking susceptibility were also measured.

**Results** Most participants had overall negative reactions to the 'smoking kills' (85%), dark green (93%) and 'toxic' (96%) cigarette. For all three dissuasive designs, Chi-square tests found that negative reactions were more likely among younger adolescents (vs. older), never-smokers (vs. ever smokers), and non-susceptible never-smokers (vs. susceptible never-smokers). Most participants reported they would not trial any of the cigarettes (range: 89-92%).

**Conclusions** Dissuasive cigarettes present a further opportunity to reduce the appeal of smoking among adolescents, in particular cigarette with explicit health warnings and imagery.



### Reactions to standardised cigarette packs with varying structural designs, and the association with smoking susceptibility: a post-implementation cross-sectional survey with never-smoking adolescents in Scotland

Danielle Mitchell<sup>1</sup>; Nathan Critchlow<sup>1</sup>; Crawford Moodie<sup>1</sup>; Linda Bauld<sup>2</sup>

<sup>1</sup>University of Stirling, UK; <sup>2</sup>University of Edinburgh, UK

**Significance** From 20th May 2017, cigarettes in the United Kingdom must be sold in standardised (plain) packaging. We explore post-implementation reactions to standardised cigarette packaging among never-smokers in Scotland, whether reactions vary in relation to permitted variations in pack structure, and whether reactions are associated with susceptibility.

**Methods** A cross-sectional survey with 12-17 year-old never-smokers (n=507) in Scotland, conducted November 2017-November 2018. Participants were shown one 'regular' standardised cigarette pack (flip-top lid and straight-edged pack, similar to designs in Australia) and three standardised packs with varied pack structures (bevelled-edges, slim pack, and shoulder box), which are permitted post-implementation in the UK. Participants rated each pack on eight five-point reaction measures (e.g. attractiveness). Participants also indicated which pack, if any, they would choose. Smoking susceptibility was the outcome. **Results** The mean reaction scores for all four packs were mostly negative, however the shoulder box was consistently rated less negatively than the regular, slim, or bevelled-edge packs. Most participants (87%) said they would not select any of the four packs, although susceptible participants were more likely to select one than non-susceptible participants (25% vs. 7%;  $\chi^2=29.70$ ;  $p<0.001$ ). For all four packs, not finding them off-putting was associated with susceptibility (Adjusted Odds Ratio range: 2.73-3.69), albeit only a minority of adolescents did not find each pack off-putting.

**Conclusions** Adolescents have negative reactions to the standardised cigarette packs implemented in the United Kingdom, albeit permitted variations in structure can reduce the extent of negativity. Most reactions to standardised packaging had no association with susceptibility.

### Tobacco retailers' support for point of sale tobacco control policies in the UK and the association with tobacco sales and contact with the tobacco industry

Tessa van Deelen<sup>1</sup>; Deborah Arnott<sup>2</sup>; Sara Hitchman<sup>3</sup>; Bas van den Putte<sup>1</sup>; Anton E. Kunst<sup>1</sup>; Mirte Kuipers<sup>1</sup>

<sup>1</sup>University of Amsterdam, NL; <sup>2</sup>Smoking on Action and Health, UK; <sup>3</sup>King's College London, UK

**Background** Successful implementation of tobacco control policies at the point of sale specifically, largely depend on tobacco retailers' level of support for these policies. This study quantified tobacco retailers' level of support for four point of sale tobacco control policies and the association with perceived importance of tobacco sales for their business and contact with the tobacco industry.

**Methods** We used cross-sectional telephone survey data (2019) of 508 tobacco retailers in eight regions in the UK. Logistic regression analyses determined associations between support for four tobacco control policies at the point of sale, and self-reported importance of tobacco sales for business, contact with the tobacco industry, and the perceived impact of the policy on their business.

**Results** A majority of retailers support minimum pack size (66%), product display ban (63%), price display ban (55%), and plain packaging (54%). Importance of tobacco sales was not associated with support for the four policies. High contact with the tobacco industry was associated with more support for minimum pack size (OR1.92, 95%CI:1.23-2.99), but not with the other three policies. Similar results were found when controlling for retailer characteristics and perceived impact of the policy. A neutral or positive perceived impact of the policy on the business was associated with 2 - 4 times higher odds of support for all four policies.

**Conclusion** Support for point of sale tobacco control policies was relatively high among UK small retailers and seems unrelated to the role of tobacco sales and the tobacco industry for their business. A focus on eliminating negative perceptions of the impact of the policies on retailers may benefit tobacco control policy interventions.

### Evaluating the impact of introducing standardized packaging with larger health warning labels in England: findings from adult smokers within the EUREST-PLUS ITC Europe Surveys

Sarah Aleyan<sup>1</sup>; Pete Driezen<sup>2</sup>; Ann McNeill<sup>1</sup>; Máirín McDermott<sup>1</sup>; Sarah Kahnert<sup>3</sup>; Christina Kyriakos<sup>4</sup>; Ute Mons<sup>5</sup>; Esteve Fernández<sup>6</sup>; Antoniga Trofor<sup>7</sup>; Mateusz Zatoński<sup>8</sup>; Tibor Demjén<sup>9</sup>; Paraskevi Katsaounou<sup>10</sup>; Krzysztof Przewoźniak<sup>11</sup>; James Balmford<sup>12</sup>; Filippos Filippidis<sup>13</sup>; Geoffrey Fong<sup>3</sup>; Constantine Vardavas<sup>4</sup>; Sara Hitchman<sup>1</sup>

<sup>1</sup>King's College London, UK; <sup>2</sup>University of Waterloo, CA; <sup>3</sup>University of Heidelberg, DE; <sup>4</sup>University of Crete, GR; <sup>5</sup>DKFZ, DE; <sup>6</sup>ICO, ES; <sup>7</sup>Grigore T. Popa University, RO; <sup>8</sup>University of Bath, UK; <sup>9</sup>SHHF, HU; <sup>10</sup>University of Athens, GR; <sup>11</sup>MSCNRIO, PL; <sup>12</sup>University of Freiburg, DE; <sup>13</sup>Imperial College London, UK

**Significance** In May 2016, new measures were introduced under the EU Tobacco Products Directive requiring larger graphic health warnings on cigarette and roll-your-own tobacco packs. The United Kingdom also implemented standardized packaging, while Germany, Greece, Hungary, Poland, Romania, and Spain did not. We conducted a quasi-experimental evaluation of standardized packaging in England on three key outcomes: perceptions of pack/brand appeal, salience of health warnings, and relative harm perceptions across brands.

**Methods** This study used data from adult smokers in Wave 1 (2016; N=9547) and Wave 2 (2018; N= 9724) of the International Tobacco Control (ITC) survey in England and the ITC EUREST-PLUS surveys in Germany, Greece, Hungary, Poland, Romania, and Spain. Generalized Estimating Equations tested changes in perceptions of pack/brand appeal, salience of health warnings, and the relative harm of different brands in England (where larger health warnings and standardized packaging were introduced) versus the 6 other countries (where only larger health warnings were introduced).

**Results** From 2016 to 2018, smokers in England were more likely to report not liking the look of the pack (41%) compared to smokers in Germany (4.7%), Hungary (9.6%), and Poland (14.2%). Similar greater increases were found in England for salience of warnings (27.6%), compared to Hungary (17.0%), Poland (13.9%), and Romania (15.3%). In contrast, cross-country comparisons showed few differences in relative harm perceptions across different brands.

**Conclusions** Standardized packaging in England reduced pack appeal and increased the salience of health warnings among adult smokers, over and above the effects of introducing larger health warnings. These findings add to the global evidence supporting the effectiveness of standardized packaging, consistent with ITC evaluations in Australia and New Zealand.

### Smokers' and Young Adults' Perceptions of Quantitative Modified Risk Claims for Snus and E-cigarettes

Olivia A. Wackowski<sup>1</sup>; Destiny Diaz<sup>2</sup>; Richard J. O'Connor<sup>2</sup>

<sup>1</sup>Rutgers School of Public Health, US; <sup>2</sup>Roswell Park Cancer Center, US

**Significance** Previous studies examining perceptions of reduced or "modified risk" (MR) messages for e-cigarettes and smokeless tobacco have indicated consumers' desire for specific information, including statistics and quantification of harm reduction. However, limited research exists on the potential impact, understanding and reactions to quantitative MR messages.

**Methods** We conducted 12 focus groups with 57 participants in the United States in 2019 – six focused on e-cigarette messages and six on snus messages. For each product type, four groups were with current smokers (ages 21-66) and two with young adult (ages 18-25) non-smokers. Participants viewed and shared reactions to messages stating that use of snus and vaping products have been estimated by scientists to be about 90% and 95% less harmful than smoking cigarettes (respectively).

**Results** Several participants across groups agreed the messages strongly communicated the products are less harmful than cigarettes, were attention getting and could be "convincing". However, participants expressed skepticism about the source and accuracy of the stated harm reduction magnitude, and some noted the claims could be "misleading" and attractive to young people. Some noted a lower number (or range) might be more believable. For e-cigarettes, claim believability was also related to e-cigarette novelty and negative news reports. Comments also reflected some claim misunderstandings, for example, that e-cigarettes only pose a 5% chance of harm. However, across e-cigarette groups, participants consistently found a claim version which stated e-cigarette risks are unlikely to exceed 5% of cigarette smoking harms to be confusing and less persuasive than the "95% less harmful" wording.

**Conclusions** Quantitative claims suggesting high levels of reduced risk when comparing e-cigarettes or smokeless tobacco relative to cigarettes may be successful in gaining attention and being persuasive for some audiences, particularly if from more credible sources. However, researchers and regulators should be mindful of possible misinterpretations and aim to mitigate unintended consequences.

## Poster Session 1 | 17:45-18:30 | Thursday, 17<sup>th</sup> September 2020

### Smoking, nicotine dependence and intention to quit among cigarettes smokers in Saudi Arabia: a national survey

Aljoharah Algabbani; Amani Algahtani; Nasser Dhim

Saudi Food and Drug Authority, SA

**Introduction** Tobacco consumption remains a challenging issue to the global and public health that requires close monitoring of the spread of this epidemic and its impact. This study aims to assess national prevalence and determinates of cigarettes smoking and nicotine dependence in Saudi Arabia.

**Methods** A cross sectional national survey of a sample of 5148 of Saudi residents' ages >18 years was conducted through a web-based-computer assisted telephone interviews. The two main measurements were current smoking status and nicotine dependence assessed using the Fagerstrom Test for Nicotine Dependence. Data was weighted by age, gender, and region to account for the different probabilities of selection. Descriptive and logistic regression analyses were used to assess cigarettes smoking and nicotine dependence determinants.

**Results** The national prevalence of cigarettes smoking was 16.18% (95% CI:14.59-17.77) with 14.12% (95% CI:12.64-15.59) current daily smoking prevalence. Almost 72% of smokers started smoking before the age 22 and 27% of smokers were highly dependent on nicotine. Having a smoker parent (AOR=1.84[95%CI:1.31-2.58], P<0.001) or a smoker close friend (AOR=6.49[95%CI:3.89-10.81], P<0.001) were significantly associated with being a smoker. Higher nicotine dependence level was significantly associated with early onset of regular smoking (ages<18) (AOR=2.71 [95%CI:1.38-5.34],P<0.001) and lower attempting to quit (AOR=0.51[95% CI:0.32-0.83],P<0.01).

**Conclusions** Cigarettes smoking and nicotine dependence is prevalent in Saudi Arabia. The study found majority of smokers started regular smoking at an early age, which was associated with higher nicotine dependence level. Restrict access to tobacco products to youth will help reduce smoking prevalence and lifetime nicotine addiction."

### Different influences on smoking habits related to an online tobacco prevention program

Zoltan Abram; University of Medicine, Pharmacy, Science and Technology of Targu Mures, RO

**Introduction** Tobacco control experts must concentrate their efforts to prevent smoking and to promote cessation before adolescents become addicted to nicotine. Our aim was to determine different factors associated with tobacco use among high school students.

**Methods** Data were from the baseline, cross-sectional survey of an intervention study to assess the impact of a culturally- and linguistically-adapted ASPIRE computer-based tobacco prevention program. The survey was conducted among 1,835 9<sup>th</sup> grade students from Targu Mures, Romania. We assessed the association of personal and non-personal factors on tobacco experimentation and past 30-day use using bivariate analyses.

**Results** More than half have tried smoking cigarettes at least once in their lifetime, 24.1% have smoked cigarettes during the last 30 days. Perceived peer experimentation was the strongest factor associated with ever smoking (OR=4.65) and smoking in the last 30 days (OR=7.94). Other personal factors associated with experimentation and past 30 day use included: having a brother (OR=3.17, OR=2.66), father (OR=2.07, OR=1.98), mother (OR=1.48, OR=1.68) or another person at home (OR=1.86, OR=2.37) who smokes. Non-personal factors included: being exposed to pro-smoking messages at the cinema (OR=2.36, OR=1.97), at sport events (OR=2.25, OR=2.06), in newspapers and magazines (OR=1.46, OR=1.80). Being exposed to pro-smoking messages on the internet, radio-TV, in shopping areas, outdoor displays were not significantly associated with ever trying cigarettes and past 30 day use.

**Conclusions** Given the high rates of smoking among adolescents, policies and evidence-based tobacco prevention programs targeting adolescents, such as ASPIRE should be priority for public health in Romania.

### Is tobacco consumption associated with type of sport among young Swiss men?

Marine Gossin<sup>1</sup>; Gerhard Gmel<sup>2</sup>; Joseph Studer<sup>2</sup>; Mathieu Saubade<sup>1</sup>; Carole Clair<sup>1</sup>

<sup>1</sup>Unitasité, CH; <sup>2</sup>Lausanne University Hospital and University of Lausanne, CH

**Background** Among young people, physical activity can influence behaviours such as tobacco consumption. The objective of this study is to assess the association between tobacco or nicotine consumption and type and intensity of sport.

**Methods** Data were drawn from the second follow-up of the Cohort Study on Substance Use Risk Factors. Young Swiss men, enrolled at the army recruitment, completed a questionnaire investigating previous tobacco and nicotine consumption (cigarette, vaping, snus, snuff), type and intensity of sport and other variables (age, highest achieved education, body mass index, language, cannabis, alcohol and drugs consumption). Crosstabs and logistic regression models (adjusted for confounding variables) were built.

**Results** Among the 5,414 included participants (mean age=25.5; SD=1.26), 3,434 (63.4%) reported participating regularly in sport activity. They had a lower rate of cigarette smoking (32.3%) compared with participants not playing sport (44.6%,  $p<0.001$ ), but a higher rate of snus consumption (15.0% vs. 10.0%,  $p<0.001$ ). In adjusted models, individual-sport participants were less likely to consume snus (37%) and snuff (27%) (OR=0.63, 95%CI=0.51-0.77 and OR=0.73, 95%CI=0.61-0.88, respectively), compared with team-sport participants. The association was inverted for vaping users, youth being 54% more likely to vape if participating in an individual-sport (OR=1.54, 95% CI=1.03-2.30). Furthermore, youth participating in high intensity sports activity had a lower likelihood to smoke cigarettes (OR=0.63, 95%CI=0.52-0.78) compared with youth participating in low intensity sports activity.

**Discussion** Our findings suggest that type and intensity of sport are associated with tobacco and nicotine consumption. Young Swiss men participating in individual-sport have a significant lower snus and snuff consumption but a higher rate of vaping. This could help better target smoking prevention in young people.

### First-year students' perceptions regarding smoking and vaping and their smoking/shisha/vaping behaviour

Karolien Adriaens<sup>1</sup>; Dinska van Gucht<sup>2</sup>; Frank Baeyens<sup>1</sup>

<sup>1</sup>KU Leuven, BE; <sup>2</sup>Thomas More University of Applied Sciences, BE

**Background** Among Belgian youngsters (18 to 24 year old), 19% is smoking, 19% has ever tried e-cigs and 4% is vaping regularly (at least weekly). Little is known concerning the perceptions, beliefs and attitudes about vaping among Flemish youngsters.

**Methods** An online questionnaire study among first-year psychology and engineering students was used to investigate current smoking, shisha and e-cig use, and their perceptions about vaping. The questionnaire was distributed twice during the academic year 2018-2019. A total of 440 students completed the questionnaire at least once, and 187 completed it twice.

**Results** The majority (86%) of participants (n 440) were non users (tobacco/shisha/e-cigs), 13% were smokers and/or shisha users, and 1% were vapers. Among those who never smoked, never used shisha or never vaped, susceptibility rates were 50%, 50%, and 39%, respectively. Overall, cigarettes were perceived as very harmful to health, followed by smoking shisha, and vaping (mean scores > 60 on a Likert scale going from 0 to 100). Smoking cessation and nicotine replacement therapy were perceived as not that harmful (mean scores: 28-38). The statements regarding the health effects of vaping, comparisons of health effects of vaping with smoking, dependence on vaping, and renormalization were scored neutral (not agreeing, nor disagreeing) by participants (mean scores around 50). Nevertheless, youngsters were disagreeing that e-cigs could be seen as an effective smoking cessation aid (mean score = 35) and were disagreeing that the legislation of e-cigs should be more flexible (mean score = 29). For those participants who were completed the questionnaire twice (n = 187), none of the opinions changed significantly over time, they only disagreed even more with the statement that legislation of e-cigs should be more flexible,  $t(186) = 2.38$ ,  $p < 0.05$ .

**Discussion** The youngsters reached in this study seemed to perceive e-cigs as harmful, not that effective for smoking cessation, and believed that e-cigs should follow the same legislation as combustible cigarettes. Correctly informing youngsters about e-cigs as low(er)-risk alternatives for smoking seems timely.

### Heated tobacco products and nicotine pouches: a survey of adult current or recent smokers and vapers in the UK

Leonie Brose<sup>1</sup>; Timea Partos<sup>1</sup>; Mairlin McDermott<sup>1</sup>; Ann McNeill<sup>1</sup>

<sup>1</sup>King's College London, UK

**Significance** Heated tobacco products (HTP) and nicotine pouches (NP) are new nicotine-containing products. Understanding factors associated with use is important for gauging their potential impact on public health and inequalities caused by smoking. Aims were to assess characteristics associated with 1.) use of HTP and NP; 2.) interest in HTP use.

**Methods** Data came from a cross-sectional survey in the UK in 2019; 3883 adults who smoked, vaped, did both or had recently stopped were surveyed. Prevalence of awareness, ever and current use (at least monthly) was described. Logistic regressions assessed associations between socio-demographics, smoking and vaping status and 1.) ever use of HTP and NP; 2.) interest in HTP use among those who had never used HTP or tried up to a few times.

**Results** Awareness was 34.8% for HTP and 15.9% for NP; ever use was 6.2% and 4.4% respectively, including 3.2% and 2.7% current users respectively. For both products, ever use was more likely among age groups between 18 and 45, those with university education and living in London and not clearly associated with ethnicity. Men were more likely to have ever used NP than women but not HTP. Ever use was more likely among respondents currently vaping and smoking [HTP: 13.2%, adjOR (95% CI)=4.30 (2.67-6.92); NP: 9.5%, adjOR (95% CI)=2.97 (1.82-4.86)] than those not currently smoking or vaping (HTP: 3.4%, NP: 3.4%) who had similar levels to those only smoking (HTP: 4.7%, NP: 3.0%) or only vaping (HTP: 3.5%, NP: 2.1%). Younger age groups were more likely to report any interest in use than those aged 65+. Interest in use was more common among those smoking and vaping [66.1%, adjOR (95% CI)=4.81 (3.06-7.54)], smoking [55.0%, adjOR (95% CI)=3.47 (2.29 - 5.23)] or vaping [48.1%, adjOR (95% CI)= 2.65 (95% CI: 1.66-4.23)] than among those not currently smoking or vaping (27.4%).

**Conclusions** Assuming that HTP and NP are less harmful than smoking, higher use among younger and well-educated smokers in this sample of adults with a history of nicotine use suggests that the products will not help reduce smoking-related inequalities.

### National prevalence of cigarette and waterpipe tobacco smoking in three eastern Mediterranean region countries

Rima Nakkash<sup>1</sup>; Yousef Khader<sup>2</sup>; Ruba Albal<sup>1</sup>; Niveen Abu Rmeileh<sup>3</sup>; Aya Mostafa<sup>4</sup>; Mohammad Jawad<sup>5</sup>; Ali Chalak<sup>1</sup>; Ramzi Salloum<sup>6</sup>

<sup>1</sup>American University of Beirut, LB; <sup>2</sup>Jordan University of Science and Technology, JO; <sup>3</sup>Birzeit University, PS; <sup>4</sup>Ain Shams University, EG;

<sup>5</sup>Imperial College London, UK; <sup>6</sup>University of Florida, US

**Significance** Waterpipe tobacco smoking is a traditional tobacco use method that originated in the Eastern Mediterranean Region (EMR) and has had a global resurgence in recent years. Waterpipe smoking rates in the EMR are among the highest worldwide, exceeding cigarette smoking rates in select jurisdictions. The available estimates of the adult smoking prevalence in the EMR are largely outdated and often limited to cigarette smoking. This study aimed to estimate the prevalence and correlates of waterpipe smoking in Lebanon, Jordan and Palestine.

**Methods** National, interviewer-administered household surveys were conducted using a two-stage cluster sampling approach. Eligibility criteria included all men and women who consider their respective country their primary resident regardless of their nationality, smokers and nonsmokers, aged 18 years and older. A structured, pre-piloted questionnaire gathered data on background characteristics and self-reported smoking patterns.

**Results** The study included 1680 participants aged 18 years and above in Lebanon (50% female), 1925 in Jordan (44.6% female), and 1679 in Palestine (50% female). The mean age was approximately 40 years in each country. Among males and females respectively, the prevalence rates of current waterpipe smoking were 32.7% and 46.2% in Lebanon, 13.4% and 7.8% in Jordan, and 14.8% and 7.7% in Palestine. Among the waterpipe smokers, males and females respectively, 10.5% and 13.9% in Lebanon, 52.1% and 60.6% in Jordan, 10.8% and 7.7% in Palestine attempted to quit waterpipe smoking. As for current cigarette smoking, among males and females respectively, the prevalence rates were 48.6% and 21.5% in Lebanon, 50.4% and 9.1% in Jordan, and 52.6% and 3.2% in Palestine. The percentage of males and females respectively smoking both cigarettes and waterpipe were, 1.0 % of both genders in Lebanon, 4.2% and 0.8% in Jordan, and 5.7% and 1.0% in Palestine.

**Conclusions** The prevalence rates of WTS varied by country and was highest among both sexes in Lebanon. These results serve as a strong foundation to better develop and implement tobacco control and public health interventions in the EMR.

### Demand elasticities of waterpipe tobacco and cigarette consumption in three eastern Mediterranean region countries

Ali Chalak<sup>1</sup>; Rima Nakkash<sup>1</sup>; Ruba Albal<sup>1</sup>; Yousef Khader<sup>2</sup>; Niveen Abu Rmeileh<sup>3</sup>; Aya Mostafa<sup>4</sup>; Mohammad Jawad<sup>5</sup>; Ramzi Salloum<sup>6</sup>

<sup>1</sup>American University of Beirut, LB; <sup>2</sup>Jordan University of Science and Technology, JO; <sup>3</sup>Birzeit University, PS; <sup>4</sup>Ain Shams University, EG;

<sup>5</sup>Imperial College London, UK; <sup>6</sup>University of Florida, US

**Background and aims** Waterpipe tobacco smoking is a traditional tobacco use method that originated in the Eastern Mediterranean Region and has had a global resurgence in recent years. Waterpipe smoking rates in the region are among the highest worldwide, yet its economics is little understood. Available estimates of adult demand elasticities are mostly limited to cigarette smoking. This study aimed to estimate the demand elasticities of waterpipe products in Lebanon, Jordan and Palestine.

**Methods** Nationally representative household surveys of adults were conducted in each of the three countries. The surveys included a volumetric choice experiment that elicited respondents' stated preferences for purchasing 8 different cigarette and waterpipe products with 4 hypothetically varied price levels. Data were analyzed using zero-inflated Poisson models.

**Results** The samples included 1680 participants in Lebanon (50% female), 1925 in Jordan (44.6% female), and 1679 in Palestine (50% female). The mean age was approximately 40 years across all countries. Participants in Lebanon stated the largest quantities across all products, compared to their counterparts in Jordan and Palestine. Elasticities for Lebanon ranged between -1.87 for home-delivered waterpipe and -2.31 for waterpipe consumed in premium cafes. Elasticities in Jordan for waterpipe products ranged between -0.34 for waterpipe in a discount café to -0.86 for discount waterpipe smoked in the home, while the elasticity for home-delivered waterpipe was insignificant and that for traditional waterpipe tobacco positive (0.81). Finally, elasticities in Palestine were only highly significant for waterpipe in premium cafes (-1.16).

**Conclusions** Though sharing cultural similarities, demand elasticities differed substantially across Lebanon, Jordan and Palestine. Lebanon had the highest elasticities across waterpipe products, likely due to its higher consumption levels and a reflection of a higher price sensitivity resulting from its current economic crisis. These results provide a strong evidence base for developing fiscal policies for the control of waterpipe tobacco use in the region.

### **Tobacco use among women of reproductive age (15-49 years) in Pakistan: a secondary analysis of a Multiple Indicator Cluster Survey (MICS)**

Radha Shukla<sup>1</sup>; Mona Kanaan<sup>1</sup>; Kamran Siddiqi<sup>1</sup>; Anne Readshaw<sup>1</sup>; Linda Bauld<sup>2</sup>; Romania Iqbal<sup>3</sup>

<sup>1</sup>University of York, UK; <sup>2</sup>University of Edinburgh, UK; <sup>3</sup>Aga Khan University, PK

**Significance** Estimate recent prevalence of cigarette smoking, non-cigarette smoking (cigars, waterpipe) and smokeless tobacco (ST) use among women of reproductive age in Pakistan, understand the effects of education and socio-economic status (SES) and compare the odds of low birthweight (LBW).

**Method** We used the MICS dataset from the provinces of Punjab and Sindh, which account for 70% of the population in Pakistan. Prevalence estimates are generated for ever and current tobacco use based on administrative divisions and pooled for provinces. We conducted regression analysis for the effects of education and SES on the use of tobacco among women and separate regression analysis to compare the odds of LBW among tobacco users.

**Results** Prevalence of ever use of cigarettes is 2.0% and 5.2%, of non-cigarette smoking 2.8% and 2.2%, and of ST use 1.5% and 9.1% in Punjab and Sindh respectively. Of the ever users, 50% in Punjab and 43% in Sindh are current cigarette smokers, 66% are current non-cigarette smokers in both the provinces and almost 68% and 90% are current ST users in Punjab and Sindh respectively. The estimates vary based on type of tobacco use and administrative unit; i.e. non-cigarette smoking is most prevalent in the DG Khan division of Punjab (10.2% are ever users and 87% of those are current users), while ST use is most prevalent in the Hyderabad division of Sindh (20% ever users and 95% of them are current ST users). The odds of all three forms of tobacco use are significantly lower for those who have attained secondary education and with every increase in wealth quintile. The crude odds of LBW among cigarette smokers are 2.4 (0.7-8.0), 1.9 (0.6-5.6) for non-cigarette smokers and 0.2 (0.1-0.5) for ST users.

**Conclusion** Current tobacco use prevalence estimates vary significantly based on location and type of tobacco. The odds of LBW among ST users need cautious interpretation due to lack of birth weight data and smaller sample size. Initial findings suggest that it is important to increase awareness of the harms of tobacco among women of reproductive age and to target interventions to women from key regions in Pakistan that bear its greatest burden.

### **Residential proximity to tobacco retailers and cessation among ever-smoking adults: differences by neighbourhood social capital**

Russell McIntire<sup>1</sup>; Tiara Helstead<sup>1</sup>; Seif Butt<sup>1</sup>; Gary Klein<sup>2</sup>

<sup>1</sup>Thomas Jefferson University, US; <sup>2</sup>Public Health Management Corporation, US

**Significance** Research has shown that living proximal to tobacco retailers impedes cessation behaviour among adult smokers who live in impoverished areas. However, studies have not explored the contribution of neighbourhood social capital to this relationship. We identified the relationship between residential location of tobacco retailers and former smoking status among adults who reported ever smoking at least 100 cigarettes (Ever-smokers), stratified by self-reported neighbourhood social capital.

**Methods** We used the 2018 Public Health Management's Household Health Survey, which is a population-representative survey of residents in Southeastern Pennsylvania, USA. We selected adult Philadelphia residents with residential location information. We calculated measures of tobacco retailer location including proximity (walking distance to the closest retailer), and density (the count of retailers within 500 metres) from respondent residences. We used separate logistic regression models to analyze relationships between tobacco retail location and former smoker status for respondents who reported living in neighbourhoods with either low or high social capital.

**Results** Among those who reported living in neighbourhoods with low social capital, we found that as distance to the closest tobacco retailer increased, respondents had higher odds of being a former smoker (AOR=1.01). Accordingly, we found that as the density of tobacco retailers around respondent residences increased, the odds of being a former smoker decreased (AOR=0.85), after controlling for confounders. Among respondents who reported living in neighbourhoods with high social capital, we found no relationship between tobacco retail density and former smoking status.

**Conclusions** We found that both residential proximity to a tobacco retailer and tobacco retail density predicted former smoking status among Philadelphians who reported living in neighbourhoods with low social capital. This analysis adds further evidence that tobacco retailer location impedes cessation among smokers in urban areas with low resources."

### **A meta-analysis of incident human beta-coronavirus (SARS-CoV-2 (COVID-19), SARS, MERS, OC43, and HKU1) infection relative risks in current smokers versus all others**

Nossin Khan; Bruce Leistikow

University of California - Davis, US

**Significance** Current tobacco smoke exposure impairs respiratory and immune defenses. Smokers have excesses of incident respiratory, influenza, coronavirus 229E, and maybe beta-coronavirus infections (SARS-CoV-2 and its closest human coronavirus relatives, SARS, MERS, OC43, and HKU1). There is currently limited and biased information on smoker relative risks of incident SARS-CoV-2 infection. Quantifying smoker relative risks (RR) of incident beta-coronavirus infections with near concurrent (so less biased) smoking and infection assessment may help clarify likely impacts of smoking and tobacco control on COVID-19 incidence.

**Methods** We used standard PRISMA methods and smoking, coronavirus, and study type keywords to locate studies with near concurrent current smoking status for incident beta-coronavirus cases and controls. They had current (versus all other) smoking status for beta-coronavirus (MERS, OC43, HKU1) cases and alpha-coronavirus (229E) or other controls. Alpha-coronavirus (229E) cases were used as a control when community controls were unavailable since the smoker RR of 229E incidence is available from a high-quality challenge study. We calculated smoker RR for incident beta-coronavirus cases versus incident alpha-coronavirus 229E cases or community controls from these studies and created a forest plot in Review Manager 5.4 of the RRs. The studies were weighted by sample size and analyzed via the Mantel-Haenszel statistical method with fixed effects.

**Results** 4 out of 578 studies were selected. The smoker RR for community MERS cases in Saudi Arabia was 1.93 (95% CI 1.06, 3.53) versus controls. Smoker RRs for OC43 and HKU1 were 1.74 (95% CI 1.19, 2.55) and 2.40 (95% CI 1.22, 4.74) respectively versus incident 229E controls. The weighted risk ratio for beta-coronavirus smokers compared to control/229E smokers was 1.87 (95% CI 1.40, 2.51).

**Conclusion** Smokers had strong, consistent beta-coronavirus excesses across 3 countries and 4 studies. Those RRs are generally consistent with related studies that have been conducted in the UK and Saudi Arabia. Strengthening comprehensive tobacco control might greatly reduce incident COVID-19 infections.

## Meet the Editors | 17:45-18:30 | Thursday, 17<sup>th</sup> September 2020

**Publishing research on COVID-19 and tobacco: a discussion with Prof. Marcus Munafò (Nicotine & Tobacco Research) and Prof. Robert West (Addiction)**

*Chair: Dr. Yael Bar-Zeev; The Hebrew University of Jerusalem, IL*

Some 400 papers have already been published on COVID-19 and tobacco and no doubt many more are in the pipeline. This session will provide an opportunity for researchers to find out what the editors of NTR and Addiction are looking for in papers on this topic. Participants will be able to ask direct questions and engage in a more general discussion.

## Symposium 2 | 13:00-14:30 | Friday, 18<sup>th</sup> September 2020

### Smoking, vaping and COVID-19

*Chair/Discussant: Prof. Jamie Brown*

*University College London, UK*

There is substantial uncertainty around the impact of tobacco and nicotine use on COVID-19. On the one hand, there are good a priori reasons to assume that tobacco and vaping should be detrimental for infection, disease severity and mortality due to behavioural factors (frequent hand-to-mouth movement), actions on the immune system and increased likelihood of developing other diseases linked to worse COVID-19 outcomes. On the other hand, emerging evidence suggests lower than expected infection rates among smokers and lower smoking rates among those hospitalised with Covid-19, with little known about vaping. This has resulted in trials looking at the efficacy of nicotine use as a COVID-19 treatment. This symposium will provide an overview of current knowledge on how smoking and vaping impacts COVID-19 and vice versa to inform researchers and provide some guidance to policy makers and clinicians. Dr Perski will start by presenting the results of a living rapid review on the association of tobacco and nicotine use with SARS-CoV-2 infection, hospitalisation and mortality from COVID-19. Given limitations in the current available evidence, posing considerable interpretational problems, Mr Simons will go on to describe results of a sizable case-control study from a single UK hospital site to elucidate the association between smoking and hospitalisation for COVID-19 using historic respiratory viral infections as a control. Dr Jackson will present data from a large online survey on the association of smoking with self-reported COVID-19 infection as well as with adherence to guidelines and worry about COVID-19, with a focus on socio-economic inequalities. Lastly, given the lack of data in this area, Dr Kale will present results from another online survey to assess the association of vaping with self-reported COVID-19 infection as well as associated changes in vaping behaviour due to COVID-19 related concerns and risk perceptions. Professor Brown will act as discussant for this symposium, bringing together results across these different studies, to explore implications for policy and practice when it comes to dealing with tobacco and nicotine use during this pandemic.

### The association of smoking status with SARS-CoV-2 infection, hospitalisation and mortality from COVID-19: a living rapid evidence review

*David Simons<sup>1</sup>; Lion Shahab<sup>2</sup>; Jamie Brown<sup>2</sup>; Olga Perski<sup>2</sup>*

*<sup>1</sup>Royal Veterinary College; London, UK; <sup>2</sup>University College London, UK*

**Background** We aimed to estimate the association of smoking status with rates of i) infection, ii) hospitalisation, iii) disease severity, and iv) mortality from SARS-CoV-2/COVID-19 disease.

**Methods** This is a living rapid review of observational and experimental studies with adults in community or hospital settings with no restrictions on location. Published articles and pre-prints were identified via Ovid MEDLINE and medRxiv. Random-effects hierarchical Bayesian meta-analyses were performed.

**Results** Version 6 with searches up to 17 July 2020 included 174 studies. Thirty-nine studies reported current, former and never smoking status. Notwithstanding recording uncertainties, compared with adult national prevalence estimates, recorded current smoking rates were generally lower than expected. Current compared with never smokers were at reduced risk of SARS-CoV-2 infection (RR = 0.74, 95% Credible Interval (CrI) = 0.56-0.97,  $\tau = 0.46$ ). Former compared with never smokers were at somewhat increased risk of infection but data were inconclusive (RR = 1.06, 95% CrI = 0.94-1.20,  $\tau = 0.19$ ). Current (RR = 1.05, CrI = 0.82-1.34,  $\tau = 0.29$ ) and former (RR = 1.20, CrI = 1.03-1.44,  $\tau = 0.19$ ) compared with never smokers were both at somewhat increased risk of hospitalisation with COVID-19, but data for current smokers were inconclusive. Current (RR = 1.15, CrI = 0.80-1.66,  $\tau = 0.29$ ) and former (RR = 1.51, CrI = 1.06-2.15,  $\tau = 0.36$ ) compared with never smokers were at increased risk of greater disease severity, but data for current smokers were inconclusive. Current (RR = 1.89, 95% CrI = 0.77-3.41,  $\tau = 0.51$ ) and former (RR = 1.93, 95% CrI = 1.33-2.66,  $\tau = 0.19$ ) compared with never smokers had increased risk of mortality, but data for current smokers were inconclusive.

**Discussion** There is uncertainty about the associations of smoking with COVID-19 outcomes. Recorded smoking prevalence among people with COVID-19 was generally lower than national prevalence. Current smokers were at reduced risk of infection. Former smokers were at increased risk of hospitalisation, disease severity and mortality, while data for current smokers were inconclusive.



### The association between smoking & hospitalisation during the COVID-19 outbreak: a case-control study in a single UK hospital site

David Simons<sup>1</sup>; Olga Perski<sup>2</sup>; Lion Shahab<sup>2</sup>; Jamie Brown<sup>2</sup>; Robin Bailey<sup>3</sup>

<sup>1</sup>Royal Veterinary College, London, UK; <sup>2</sup>University College London, UK; <sup>3</sup>London School of Hygiene and Tropical Medicine, UK

**Background** The association of tobacco smoking and hospitalisation with COVID-19 remains unclear. Bacterial and viral respiratory infections are more prevalent in current and former smokers. Evidence suggests that current smokers are at reduced risk of testing positive for SARS-CoV-2. However, severe disease risk requiring hospitalisation once infected appears similar to never smokers, raising questions whether there is a protective effect of smoking/nicotine on COVID-19 outcomes.

**Methods** This non-inferiority, case-control study assesses whether current smoking prevalence differs between populations hospitalised with COVID-19 (cases, N=149) and other respiratory viral infections (controls, N=298) one year earlier at a single UK hospital site. Data were extracted from electronic health records (EHRs). The outcome is the type of pathogen causing hospitalisation (i.e. SARS-CoV-2 vs. other respiratory viruses). The exposure is smoking status (current, former, never). Where available, pack-year history of smoking was recorded. The a priori expected current smoking prevalence is 20% in both populations to test a non-inferiority margin of 10%.

**Results** More than 400 patients with COVID-19 have been admitted to the study site since March 2020. We present descriptive statistics for cases and controls and a logistic regression analysis for the association between smoking status and type of pathogen causing hospitalisation. As a secondary analysis, we compare the proportion of current smokers in the case population with the local current smoking prevalence. Further, the concordance of smoking data in EHRs with that recorded in contemporaneous, free-text medical notes will be compared.

**Discussion** This study is expected to provide some clarity to the association of smoking status with COVID-19 hospitalisation. This case-control study is strengthened by the comparison of smoking status in populations hospitalised with viral infections other than SARS-CoV-2 that share similar routes of transmission. This study also highlights the limitations associated with extracting data on smoking status from EHRs without comparison to free-text entries from multiple clinical encounters.

### COVID-19, smoking, and inequalities: a study of 53,002 adults in the UK

Sarah E. Jackson; Jamie Brown; Lion Shahab; Andrew Steptoe; Daisy Fancourt

University College London, UK

**Background** This study aimed to examine associations between smoking and COVID-19 relevant outcomes, taking into account the influence of inequalities and adjusting for potential confounding variables.

**Methods** Cross-sectional data were used from an online study of adults in the UK (n=53,002). Main outcome measures were confirmed and suspected COVID-19, worry about catching or becoming seriously ill from COVID-19, and adherence to protective behaviours. Covariates included age, sex, ethnicity, education (post-16 qualifications: yes/no), key worker status, and comorbid health conditions.

**Results** Compared with never-smokers (0.26% [95%CI 0.21-0.33%]), prevalence of confirmed COVID-19 was higher among current (0.56% [0.41-0.75%]) but not ex-smokers (0.19% [0.13-0.28%]). Associations were similar before (current: OR=2.14 [1.49-3.08]; ex-smokers: OR=0.73 [0.47-1.14]) and after (current: OR=1.79 [1.22-2.62]; ex-smokers: OR=0.85 [0.54-1.33]) adjustment. For current smokers, this was moderated by socioeconomic position, with higher rates only seen in those without post-16 qualifications (OR=3.53 [2.04-6.10]). After including suspected cases, prevalence was higher among current smokers (11.2% [10.6-11.9%], OR=1.11 [1.03-1.20]) and ex-smokers (10.9% [10.4-11.5%], OR=1.07 [1.01-1.15]) than never-smokers (10.2% [9.9-10.6%]), but remained higher only among ex-smokers after adjustment (OR=1.21 [1.13-1.29]). Current and ex-smokers had higher odds than never-smokers of reporting significant stress about becoming seriously ill from COVID-19 (current: OR=1.34 [1.27-1.43]; ex-smokers: OR=1.22 [1.16-1.28]). Adherence to recommendations to prevent spread of COVID-19 was high (96.3% [96.1-96.4%]), but lower among current than never-smokers (OR=0.70 [0.62-0.78]).

**Discussion** In a population sample, current smoking was independently associated with self-reported confirmed COVID-19 infection. There were socioeconomic disparities, with the association only apparent among those without post-16 qualifications. Smokers reported lower adherence to guidelines despite being more worried than non-smokers about catching or becoming seriously ill from COVID-19.

### The impact of COVID-19 on e-cigarette use in the UK: Findings from the HEBECO study

Dimitra Kale, Aleksandra Herbec, Sarah E. Jackson; Jamie Brown; Lion Shahab

University College London, UK

**Background** The impact of tobacco use on COVID-19 infection and outcomes is unclear. Early data are inconclusive, providing evidence for both increased and decreased risk that may impact smoking behaviour. Much less is known about the impact of e-cigarette use on COVID-19. This study aims to investigate differences in infection and hospitalisation rates between e-cigarette users and non-users as well as changes in e-cigarette use during the COVID-19 pandemic and factors associated with changes.

**Methods** Data from 372 e-cigarette users and 2993 non-users who completed the baseline wave of an ongoing retrospective longitudinal online survey of adults (the Health Behaviours during the COVID-19 pandemic (HEBECO) study) collected between April 30<sup>th</sup> 2020 and June 14<sup>th</sup> 2020 will be presented. Participants self-reported data on sociodemographic characteristics, COVID-19 related characteristics (isolation status, COVID-19 risk to one's health, self-reported infection/hospitalisation), health-related characteristics (health conditions, BMI), e-cigarette use characteristics (e-cigarette dependence, e-cigarette device), changes in e-cigarette use since COVID-19 (decrease/no change/increase) and associated reasons.

**Results** First, a logistic regression will compare infection and/or hospitalisation rates between e-cigarette users and non-users, adjusting for sociodemographic and health-related characteristics. Second, a series of logistic regressions will assess the association of changes in e-cigarette use (decrease vs not; increase vs not) with attitudinal characteristics and COVID-19 related risk perceptions, adjusting for e-cigarette use characteristics, sociodemographic and health-related characteristics.

**Discussion** Understanding the association between e-cigarette use and COVID-19 infection and outcomes could help us identify how this pandemic influence nicotine use as well as targets for intervention during the future periods of social distancing and lockdown due to possible subsequent waves of the coronavirus.

### **Tobacco smoke exposure and healthcare resource utilization among pediatric emergency department patients**

Ashley L. Merianos<sup>1</sup>; Roman A. Jandarov<sup>1</sup>; Judith S. Gordons<sup>2</sup>; Michael S. Lyons<sup>1</sup>; E. Melinda Mahabee-Gittens<sup>3</sup>

<sup>1</sup>University of Cincinnati, US; <sup>2</sup>University of Arizona, US; <sup>3</sup>Cincinnati Children's Hospital Medical Center, US

**Significance** The contribution of child tobacco smoke exposure (TSE) specific to pediatric emergency department (PED) healthcare resource utilization is under-studied. The study objective was to examine the relationship between healthcare resource utilization in tobacco smoke-exposed children (TSE group) compared with unexposed children (non-TSE group).

**Methods** We employed a retrospective, cross-sectional design using data from 0-17 year old patients who presented to a U.S. Children's Hospital PED. We matched 380 children in the TSE group with 1,140 children in the non-TSE group based on child age, sex, race, and ethnicity using propensity scores. Healthcare resource utilization outcome variables included: interventions (i.e., supplemental oxygen, nasal bulb suctioning), infectious diagnostic tests (i.e., influenza test, strep test, monospot test, blood culture test), laboratory tests (i.e., renal profile, complete blood count), radiologic tests (i.e., chest x-ray and lateral airway x-ray), and PED disposition. Adjusted logistic and linear regression models were built to assess relationships.

**Results** Child mean age was 4.9 (SD=0.1) years, 50.5% were female, 55.5% black, and 73.2% had public insurance/self-pay. Children in the TSE group <3 years old were 7.8 times more likely to have nasal bulb suctioning performed (95% confidence interval [CI]=4.8-12.6). The child TSE group was 2.7 times more likely to have an infectious diagnostic test obtained (95%CI=1.9-3.7), and were more likely to have a higher number of tests obtained (M=0.3, SD=0.02;  $\beta$ =0.15, 95%CI=0.1-0.2) than the non-TSE group (M=0.1, SD=0.01). The child TSE group was 5.7 times more likely to have a laboratory test obtained (95%CI=2.3-14.4), and 4.7 times more likely to have a radiologic test obtained (95%CI=2.9-7.7). The child TSE group was 24.1 times more likely to be admitted to the hospital (95%CI=6.9-84.6) than the non-TSE group.

**Conclusions** Tobacco smoke-exposed PED patients are more likely to have higher resource utilization, highlighting the importance of screening and providing TSE prevention and remediation interventions for patients and their families.

### **Cost-effectiveness of a digital smoking cessation intervention for cancer survivors: health economic evaluation within a randomized controlled trial**

Ajla Mujcic; Trimbo Institute, NL

**Background** In cancer survivors, continued tobacco use is one of the most important risk factors for development of second cancers, iatrogenic effects of cancer treatment, and cancer mortality. The prevalence of smoking among cancer survivors is nonetheless considerable. The aim was to evaluate the effectiveness and cost-effectiveness of a digital smoking cessation (SC) intervention developed for cancer survivors in the Netherlands.

**Methods** A health economic evaluation alongside a two-arm parallel-group randomised controlled trial (RCT) with follow-ups at 3, 6, and 12 months post baseline. The study was conducted online in The Netherlands from 2016 to 2019. Participants were adult cancer survivors who were current smokers with the intention to quit. In total, 165 participants were included and analysed; 83 in the intervention group and 82 in the control group. In the intervention group, participants had access to a newly developed, digital, minimally guided SC intervention "MyCourse". In the control group, participants received an online information brochure on SC. Primary outcome was self-reported 7-day abstinence at 6-month follow-up. Secondary outcomes were number of cigarettes smoked, nicotine dependence, and treatment satisfaction at 3 months post baseline. For the health economic evaluation, healthcare costs, productivity losses and quality of life were assessed.

**Results** At 6-months follow-up the quit rates were (n=23, 27.7%) and (n=21, 25.6%) in the experimental and control groups, respectively, but this was not statistically significant. Both groups reduced the number of smoked cigarettes by half; with number of cigarettes decreasing more over time and the intervention group demonstrating a greater reduction at 12-month follow-up (P = .04). Incremental cost-effectiveness ratios per reduced pack-year and per QALY will be presented.

**Discussion** At twelve months, MyCourse, a digital SC intervention tailored to cancer survivors may lead to a greater reduction of number of smoked cigarettes at higher costs in the longer term compared to non-interactive online information.

### Cytisine's lower potency at 5-HT3 receptors may explain its lower incidence of nausea and vomiting than varenicline

Sarah Lummis<sup>1</sup>; Kerry Price<sup>1</sup>; Anthony Clarke<sup>2</sup>

<sup>1</sup>University of Cambridge, UK; <sup>2</sup>Achieve Life Sciences, US

**Background** The 5-HT<sub>3</sub> receptor (5-HT<sub>3</sub>R) is a member of the Cys-loop ligand-gated ion channel family, of which the nicotinic acetylcholine receptor (nAChR) is the prototypic member. These receptors play roles in synaptic transmission in both the central and peripheral nervous systems, with highest levels of 5-HT<sub>3</sub>R in parts of the brainstem that are involved in the vomiting reflex. The receptors are pentameric assemblies of one, or, more usually, several subunits, which surround a central ion-conducting pore. Five 5-HT<sub>3</sub>R subunits (A–E) have been identified to date, and whereas the A subunit can form functional homomeric receptors, subunits B to E function only as heteromeric receptors in combination with the A subunit. Varenicline is a synthetic derivative of the naturally-occurring substance cytisine; both drugs are agonists or partial agonists at nAChRs and both are used as smoking cessation agents. Here we assess the potency of cytisine in comparison with varenicline at 5-HT<sub>3</sub>R using radioligand binding.

**Methods** Crude cell membranes derived from HEK293 cells transfected with human 5-HT<sub>3</sub>R subunit cDNA were incubated in HEPES buffer (pH 7.4) containing the 5-HT<sub>3</sub>R antagonist [<sup>3</sup>H]GR65630 (0.1 nM) for 1 h at 40°C ± cytisine or ± varenicline. Non-specific binding was determined using 1 µM quipazine. Data were analyzed by iterative curve fitting.

**Results** Displacement of specific [<sup>3</sup>H]GR65630 binding revealed an IC<sub>50</sub> for varenicline and cytisine of 0.25 mM and 0.5 mM respectively. Hence, the radioligand displacement assays revealed that cytisine had an approximate 2000-fold lower affinity for 5-HT<sub>3</sub>R compared to varenicline.

**Conclusions** Cytisine can displace specific [<sup>3</sup>H]GR65630 binding to the 5-HT<sub>3</sub>R binding site indicating it acts at the same site as varenicline. However, it has a 2000-fold lower potency than varenicline. These findings help to explain why the incidence of nausea and vomiting in subjects treated with cytisine is significantly lower than that reported for varenicline.

### Smoking status and risk of coronavirus infection and illness in a highly controlled challenge study from the United Kingdom

Melanie Dove, Davis; Bruce Leistikow; Nossin Khan; Elisa Tonk

University of California - Davis, US

**Significance** The association between smoking and risk of COVID-19 progression and severity are well described, but fewer studies have described risks of COVID-19 infection. We re-analyzed data from the British Cold Study to calculate the risk between smoking and infection (instead of only illness as originally reported) and whether the association differed for a coronavirus to other virus types.

**Methods** The British Cold Study was a 1986-89 challenge study that intentionally exposed 391 adults ages 18-54 to 1 of 5 respiratory viruses (including 14% coronavirus 229E) and monitored their progression to a clinical cold. Adults were considered smokers if they had cotinine levels above 15 ng/mL. Outcomes included 1) infection, as measured by viral shedding and/or 4 times the increase in antibody titers to the challenge virus, and 2) illness, based on presence of infection and physician diagnosis of a cold. We calculated the relative risk for smoking and each outcome using SAS PROC GENMOD's log-binomial regression and adjusted for seropositivity for the viruses before the challenge, age, sex, education, allergy to food or drug, BMI, season, number of roommates, virus type, alcohol consumption, and stress. We examined if each association was modified by type of respiratory virus by including an interaction term (smoking\*type of virus).

**Results** A total of 88.4% of smokers developed infection, compared with 79.9% of non-smokers. The adjusted risk ratio for infection in smokers compared with non-smokers was 1.11 (95% CI: 1.01, 1.24). A total of 42.0% of smokers were diagnosed with illness, compared with 36.6% of non-smokers. The adjusted risk ratio for illness in smokers compared with non-smokers was 1.43 (95% CI: 1.08, 1.91). Neither association was modified by type of virus (p value for interaction term: infection=0.44 and illness=0.76).

**Conclusion** Among adults exposed to a coronavirus or other respiratory viruses, smokers had an 11% increased risk of becoming infected and a 43% increased risk of being diagnosed with a cold compared with non-smokers. Future research is needed to examine this association for COVID-19 which has a different type of coronavirus.

### Comparison of nicotine delivery consistency: performance and stability of aerosols of various e-cigarettes (e-cigs) from European market

Sebastien Roux

CRIVAPE, Rohrbach-lès-Bitche, FR

Following the continual increase in the number of vapers, the number of different materials has rapidly increased. The current trend is the sale of pre-filled cartridges / pods, and disposable, allowing beginners an easy entry to the vape in order to smoke cessation<sup>1-3</sup>. To facilitate this transition two parameters are important: the performance (higher loss of mass) and the stability (lower standard deviation) of the e-cig. Higher is the loss of mass, better is the performance of the E-cigs which is linked to the quantity of delivered nicotine to the vapers. A low standard deviation leads to a stable device and a constant delivery of nicotine as a function of the puffs. This study aims to compare, in terms of performances and stabilities according to a vaping cycle, of six vaporizers on the French market which have in common a pre-filled and sealed clearomiser. After characterization of liquids and materials, each vaporizer is tested in triplicate on a vape machine with parameters adjusted according to the Afnor standard XPD 90-300-34. The test consists of five sets of 20 puffs. The quantity of vaporized liquid mass loss of the device) is measured by weighting the E-cig after each series. The aerosol is trapped with impingers. Aerosol collected mass and nicotine are then determined. The test focused on six e-cigs with pods (Alfapod, Juul, Logic, My blu, Slym, Vype ePen 3) show that the loss of mass of aerosols generated by personal vaporizers during the five series of twenty puffs are repeatable. As a result, the standard deviation between the series is low and the quantity of nicotine delivered is therefore constant. On the other hand, performance is the only parameter that varies and differentiates the different vaporizers proposed on the market. The method outlined in this study allows the performance and stability of a vaporizer to be determined and compared to other devices. This ensures the constant delivery of nicotine and thus to avoid the vapers a lack of nicotine and therefore a relapse to traditional tobacco.

### Indoor air quality assessment in a vapers environment

Sebastien Roux

CRIVAPE, Rohrbach-lès-Bitche, FR

Indoor air quality assessment in a vapers environment

Since the arrival of the electronic cigarette on the market, and the public health issues raised against it, a study on passive vaporization seems topical and would allow to see more. Indeed, the electronic cigarette, used as a means of smoking cessation for people addicted to tobacco, releases an aerosol that contains propylene glycol (PG), glycerin (VG), flavors and especially nicotine. Nicotine is an addictive molecule necessary for the former smoker to quit traditional cigarettes. The objective of this study is to determine if the aerosol is totally absorbed by the vapers or if some of it exposes his entourage to risks! To do this, tests were conducted in ventilated offices in the presence of several vapers using e-liquids containing nicotine levels up to 19.6 mg/mL. The vapers, liquids, materials used as well as the operating protocol of the test are perfectly characterized. Air samples from the room, at different times of the day, were taken in duplicate, using a peristaltic pump and Tenax® tubes. The tubes were desorbed and then analyzed by TD-GC-MS. In summary, the results show that nicotine is never detected during and after the tests. PG and VG are analysed and a follow-up of the evolution of their content according to the quantity of e-liquid vaporised during the day is observed. The PG persists longer in the air compared to the VG. To conclude, passive vaporization in a ventilated room does not present a risk of nicotine addiction for a non-smoking environment.

### Differences in flavourant levels and synthetic coolant use between USA, EU and Canadian Juul products

Hanno C. Erythropel<sup>1</sup>; Paul T. Anastas<sup>1</sup>; Suchitra Krishnan-Sarin<sup>1</sup>; Stephanie S. O'Malley<sup>1</sup>; Sven E. Jordt<sup>2</sup>; Julie B. Zimmerman<sup>1</sup>

<sup>1</sup>Yale University, US; <sup>2</sup>Duke University, US

**Significance** 'Juul' is the dominant US e-cigarette brand and was recently introduced to Canada, UK, France, Germany and Italy, with several flavors available across countries. US/Canadian products are sold with 5%, 3% and 1.5% (Canada only) nicotine content, whereas European Union (EU) regulation limits nicotine content to 1.7%. The differential nicotine content raises the question if flavor profiles and Juul device power output differ between countries.

**Methods** 'Mint', 'Vanilla' and 'Mango' e-liquids from all six countries were purchased in 2019 and analyzed by GC/MS for their principal flavorant and nicotine content. In addition, device power specifications were compared for devices purchased from the respective countries.

**Results** Compositions of Juul e-liquids from the USA and Canada were identical and differed from the EU-marketed liquids, in which principal flavorant concentrations were significantly lower. EU Juul 'Mint' e-liquids contained a synthetic coolant, N-ethyl-p-menthane-3-carboxamide (WS-3), absent in US/Canadian products. US/Canadian 'Mango' e-liquid contained triethyl-citrate, an emulsifier. Nicotine contents matched label information, and devices had identical power specifications.

**Conclusions** Tested US/Canadian Juul e-liquids contained higher flavor concentrations than EU products, likely reflecting adaptation to user preferences. In EU, 'Mint' e-liquid, menthol is partially substituted with the synthetic coolant WS-3 that elicits a cooling effect like menthol but lacks its distinct 'minty' odor. The inhalational safety of WS-3 is unknown. The use of an emulsifier in US/Canadian 'Mango' Juul e-liquid may be necessary to keep the product homogeneous. Similar power specifications of devices between countries suggest that nicotine aerosol delivery is likely proportional to the e-liquid nicotine content

### JUUL e-cigarettes under European law – lower nicotine content but higher vapor generation

Nadja Mallock<sup>1</sup>; Hai Linh Trieu<sup>2</sup>; Miriam Macziol<sup>2</sup>; Sebastian Malke<sup>1</sup>; Aaron Katz<sup>1</sup>; Peter Laux<sup>1</sup>; Frank Henkler-Stephani<sup>1</sup>; Jürgen Hahn<sup>2</sup>; Cristoph Hutzler<sup>1</sup>; Andreas Luch<sup>1</sup>

<sup>1</sup>German Federal Institute for Risk Assessment, DE; <sup>2</sup>Chemical and Veterinary Investigation Office Sigmaringen, DE; Pod e-cigarettes with high nicotine content raised public health concerns, especially in the US. In December 2018, the controversial brand JUUL has launched a European product version. Nicotine content in the liquid was reduced to below 20 mg/mL in order to comply with the European Tobacco Product Directive (TPD). A second version of the European pods has been placed on the EU market in summer 2019. In this study, the liquid composition and vapor generation of both European product versions was analyzed in a smoking machine set-up and compared to the US product version. Additionally, the generation of toxicologically relevant carbonyl compounds in the emissions of the two European versions was assessed. The initial European product resulted in a similarly low vapor generation compared to the US version and subsequently an about threefold lower emission of nicotine per puff. The second European version showed an increased vapor generation resulting in an emission of nicotine per puff that was comparable to the US version. Generation of carbonyl compounds by the second product did not increase compared to the initial pods. Interestingly, the modification of the European pods that was responsible for the differences between the initial and second pod version was not achieved via reduction of the coil resistance but instead by replacement of the wick material. Due to this product modification, the lower nicotine content of 18 mg/mL in European pods compared to approximately 58 mg/mL in the US versions has been compensated resulting in comparable nicotine emissions.

### Vaping during the COVID-19 lockdown period in Belgium

Karolien Adriaens<sup>1</sup>; Dinka Van Gucht<sup>2</sup>; Sven van Lommel<sup>1</sup>; Frank Baeyens<sup>1</sup>

<sup>1</sup>University of Leuven, BE; <sup>2</sup>Thomas More University of Applied Sciences, US

**Background** Due to the Corona Virus Disease 2019 (COVID-19), the Belgian government has set out a range of measures to prevent the spread of the virus. One measure included closing all non-food shops, including vape shops.

**Methods** A retrospective online questionnaire was used to investigate the impact of closing the vape shops on the vaping and/or smoking behavior of current vapers.

**Results** The sample (n = 202) reached consisted of 70% exclusive vapers, 29% dual users and 1% no-product users. Over half (55%) of participants was in need to buy e-liquid during the lockdown, with a small majority being able to buy e-liquids – mostly with their usual nicotine concentrations, flavor or brand – but as much as 39% of them running out of e-liquid. Those buying e-liquid mainly did so by making purchases via foreign online webshops. A similar pattern was observed with respect to purchasing hardware, with about half (47%) of participants reporting hardware availability and with a small majority (53%) reporting hardware unavailability. Of those indicating that hardware was not available, 38% ran out of a properly functioning e-cigarette. A non-trivial minority was forced to consume e-liquids with another nicotine concentration, flavor or brand than usual. One seventh of exclusive vapers relapsed partly or completely to smoking during the lockdown. The main reasons for changing vaping and/or smoking behavior included the unavailability of e-liquid with nicotine, the unavailability of hardware, and stress/worries about COVID-19.

**Conclusion** The majority of vapers succeeded in maintaining their vaping behavior as usual, highly likely due to (illegally) buying consumables online. Nevertheless, for a minority the lockdown period resulted in unintended consequences and these vapers relapsed (completely) to smoking. Even during periods of lockdown, smokers and vapers should be able to purchase low(er)-risk alternatives to smoking, for example e-cigarettes.

### Implementation of an outdoor smoke-free policy at sports clubs: critical situations and factors influencing implementation

Heike Garritsen<sup>1</sup>; Andrea Rozema<sup>2</sup>; Ien van de Goor<sup>2</sup>; Anton Kunst<sup>1</sup>

<sup>1</sup>Amsterdam UMC, NL; <sup>2</sup>Tilburg University, NL

**Significance** Outdoor smoke-free policies (SFPs) at sports clubs have significant potential in reducing adolescent smoking. However, the actual occurrence of such effects may be strongly dependent on how these policies are implemented in practice. The aim of this study is to identify to what extent outdoor SFPs at sports clubs are implemented in practice and which factors contribute to successful implementation.

**Methods** Semi-structured interviews were held with 46 key stakeholders at 8 Dutch sports clubs (i.e., field hockey, soccer, tennis, korfbal) with an outdoor SFP. A thematic approach was used for analysis of the transcripts.

**Results** Overall, the implementation of an outdoor SFP at sports clubs appears to be successful. The SFP is often enforced, smokers react positively when they are approached, the SFP has led to less (visible) smokers at the venue, and a nonsmoking norm is reinforced. On the contrary, three 'critical situations', in which implementation is less than optimal, emerged from the data analysis: 1) when children are not present at the sports club, 2) when alcohol is involved, and 3) when smokers relocate at the entrance of the sports club. In addition, seven factors that contribute to successful implementation were identified and classified into four categories: 1) factors related to individuals (i.e., support, communication towards smokers), 2) factors related to the SFP (i.e., formulation of the policy), 3) factors related to the sports club (i.e., communication of the policy, characteristics of the sports club), and 4) factors related to the community (i.e., change of social norm with regard to smoking, support from local and national organizations).

**Conclusions** Successful implementation of an outdoor SFP at sports clubs is feasible. Support is high and experiences are mainly positive. Nevertheless, some challenges are faced, especially with regard to compliance and enforcement. Sports clubs should pay special attention to the critical situations identified in this study and to the factors that contribute to successful implementation.

### Introducing tobacco taxation and pricing reforms in a tobacco growing country: a political economy analysis

Haleema Masud; Oyinola Oyeboode

University of Warwick, UK

**Significance** Despite the availability of a clear evidence on using tobacco taxation to decrease tobacco use, many countries fail to implement such taxation measures. A possible reason for this failure is poorly understood political economy of the matter. An insight into the political economy of tobacco taxation can tell who are the decision makers and influencers; how they influence the matter; what interests motivate them and what could be the best strategy to control tobacco use based on ground realities. This study was aimed to explore political economy factors influencing tobacco taxation in Pakistan.

**Methods** A qualitative study based on interviews with policy actors was carried out in Pakistan. The World Bank's problem driven political economy analysis guided the research. Framework analysis approach was used to explore and compile the data. An analysis of stakeholders' interests, positions and power augmented the findings.

**Results** There is lack of political will for introducing tobacco taxation reforms for public health purpose in the country mainly due to tobacco dependent economy and conflict of interest of policy makers. Marked information asymmetries, conspiracy theories, tax administration issues and industry interference further affects the problem.

**Conclusions** Tobacco taxation is a highly political matter in Pakistan owing to its tobacco dependent economy. Considering the current political economy scenario a step-wise approach to implement Article 6 of the FCTC is warranted.

### News media coverage of Dutch tobacco control policies: tobacco tax increase, point-of-sale display ban and plain packaging.

Nikita Poole; Barbara van Straaten; Gera Nagelhout

IVO Research Institute, NL

**Significance** News media coverage is influential in generating support for and aiding the implementation of tobacco control policies, which makes it important for public health advocates and the tobacco industry alike to promote their message. In the Netherlands, the tobacco control measures of a substantial tobacco tax increase, point-of-sale display ban and plain packaging were discussed from November 2017 and are being introduced in 2020. This research aims to analyse the presentation of these measures and the tobacco industry arguments against the measures in the news articles. This is the first study to map the frequency of individual tobacco industry arguments per policy measure.

**Methods** We conducted a content analysis of articles covering these measures from the ten largest national Dutch newspapers. Articles published between November 2017–June 2020 were downloaded via LexisNexis using a search string that was tested and refined. We mapped the coverage of these three measures over the time period and two researchers coded the articles for type ( $Kappa=0.86$ ) and tone ( $Kappa=0.68-0.83$ ). Tobacco industry arguments were also double coded and analysed for frequency and theme using the Policy Dystopia Model.

**Results** LexisNexis retrieved 7,927 results up to and including June 2020. 164 articles have been included for analysis. The tax increase has received the most coverage, followed by the display ban and plain packaging. The majority of the coverage analysed is neutral in tone, with the second-most common tone being negative for the display ban and plain packaging and positive for tax increases. However, the most-read newspaper presents of the measures in a negative tone 58% of the time. Significance of overall tone (pro/anti-tobacco control, neutral or mixed) over time will also be presented.

**Conclusions** The findings of this study provide insight into the coverage of these three tobacco control measures in the media. Well-known tobacco industry arguments against the measures are also reflected in the news media. Negative portrayal of policies may have implications for public support, dependent on political leaning and reading level of the newspaper.

### IQOS point-of-sale marketing strategies at a time of legislation transition in Israel

Yael Bar-Zeev<sup>1</sup>; Carla Berg<sup>2</sup>; Lorien C. Abrams<sup>2</sup>; Elbaz Daniel<sup>1</sup>; Amal Khayat<sup>1</sup>; Hagai Levine<sup>1</sup>

<sup>1</sup>The Hebrew University of Jerusalem, IL; <sup>2</sup>George Washington University, US

**Significance** Heated tobacco products (HTP), such as Philip Morris IQOS, have penetrated the global tobacco market. Currently the only HTP on the market in Israel, IQOS was introduced in 2016. The device is sold in specialty stores and online; while the heat sticks (HEETS) are sold at traditional retailers. In 01/2019 a ban on advertisements in all media (excluding print media) and at the point-of-sale (POS) went into effect. In 01/2020, a POS display ban and plain packaging went into effect. Understanding the POS marketing strategies at a time of regulatory transition could aid regulatory efforts in other countries.

**Methods** Observations were conducted in 80 retailers carrying HEETS in four large Israeli cities in 12/2019, before the POS display ban and plain packaging went into effect. Data were collected using an adapted version of the Standardized Tobacco Assessment for Retail Settings, which assessed store characteristics, product offerings, pricing, promotional strategies, and placement.

**Results** All retailers sold cigarettes; 51% carried also electronic cigarettes (predominantly JUUL). Only one retailer carried the IQOS device in addition to carrying HEETS. HEETS packages were visible to customers in 46% of retailers. Over 60% carried at least three HEETS different flavours (out of five available). Posted ads were uncommon. In 20% of retailers, a special IQOS product display cast was prominent. Additionally, 25% of retailers placed cigarettes and 14% placed HEETS near youth-oriented merchandise. In all but one retailer, HEETS were sold at higher prices than cigarettes, on average 21% more expensive. Only one retailer was located in a low socio-economic cluster neighbourhood.

**Conclusions** This study provides insights into IQOS marketing strategies during a period of regulatory transition. Findings suggest that IQOS-specific promotions were not common, but a proportion of retailers highlighted IQOS via displays and/or proximity to youth-oriented merchandise. Moreover, IQOS may be promoted to higher socio-economic status populations, as indicated by pricing and possibly by availability of products.



### **Awareness, attitudes and practices regarding article 5.3 of the WHO Framework Convention on Tobacco Control amongst members of the tobacco control committees in Karnataka, India.**

Praveen Kumar<sup>1</sup>; Veen Kamath<sup>1</sup>; Muralidhar Kulakarni<sup>1</sup>; Asha Kamath<sup>1</sup>; Jeff Collin<sup>2</sup>; Rob Ralston<sup>2</sup>

Manipal Academy of Higher Education, IN; <sup>2</sup>University of Edinburgh

**Significance** Efforts to implement effective tobacco control policies have been undermined by the tobacco industry (TI) for many decades. Article 5.3 of the WHO Framework Convention on Tobacco Control (FCTC) is considered to be the backbone of the convention by providing essential guidelines for addressing tobacco industry interference (TII) in public health policies. Article 5.3 calls for the government to 'raise awareness' about the addictive and harmful nature of tobacco products and TII with tobacco control policies. Government officials must understand the rationale behind TI tactics and its impact on public health. Awareness among government officials related to Article 5.3 is much more important than awareness of any other stakeholder. However, no studies have been conducted on whether the people responsible for the implementation of the policy are aware of Article 5.3. The purpose of this study was to assess the awareness, attitudes, and practices of Article 5.3 of the WHO FCTC among members of the tobacco control committee in Karnataka state, India.

**Method** A semi-structured questionnaire was administered between January – July 2019 to the district and state tobacco control committee members. The questionnaire was developed considering the essential guidelines recommended as per Article 5.3.

**Result** Responses were received from a total of 85 members with 51 (60%) from health and 34(40%) non-health departments. Awareness about FCTC (49.4%) was higher than the awareness about Article 5.3 (41.1%). Nearly 80% of the respondents were aware that Corporate Social Responsibility (CSR) by tobacco companies is an indirect form of promoting tobacco. However, 44% of members still feel that funding from the tobacco company's CSR should be used to combat tobacco-related harm.

**Conclusion** These results suggest that, although general awareness of Article 5.3 is adequate, members still need to develop a comprehensive understanding of the guidelines. A whole-of-government approach is essential to effectively counter tobacco industry interference. An opportunity exists to focus awareness programs on the tactics of the TI and measures to control such interference.

### **Perceived impact of the Massachusetts menthol ban on cigarette use behavior at a large safety-net hospital**

Anna Booras; Andrew Stokes; Jennifer Maccarone; Katia Belukova; Hasmeena Kathuria

Boston University, US

**Significance** Menthol cigarettes are a serious public health risk. Massachusetts implemented a ban on the sale of menthol cigarettes on 6/1/2020. In this mixed-methods study, we sought to estimate the burden of menthol cigarette use in patients at our safety-net hospital and to understand their opinions on the ban.

**Methods** We abstracted data from 2041 smokers admitted at Boston Medical Center (BMC) between 6/2019-5/2020 and compared demographics among adults who smoked menthol vs non-menthol cigarettes. We conducted interviews from 4/2020-6/2020 with menthol smokers at BMC (n=27) to assess beliefs about menthol cigarettes and their opinions about the ban. Interviews were audiotaped, transcribed, and coded. Themes were identified by 2 coders and reviewed with the research team.

**Results** 62.7% (1279/2041) of adult smokers hospitalized at BMC smoke menthol cigarettes. Characteristics of adults using menthol cigarettes (n=1279) were 59.2% male, 60.3% African-American, and the median age was 52 (18-91). There were significant differences in African American race [60.3% (772/1279) vs 21.9% (167/762), p<0.001] between smokers who did and did not use menthol, respectively. Most menthol smokers realize the harm of menthol products and cited taste as the reason for using these products. Several believed the ban was unfair: "I think it is wrong because you're taking our choice away." Yet, many thought the ban would help them quit: "It's only a matter of time before I won't be able to purchase menthol cigarettes. I plan to quit." Those in favor of the ban worried it wouldn't be effective due to the ability to buy them illegally or from another state. Some thought that a complete ban was therefore needed: "If you're going to ban it... Stop making them, period." Other suggested increasing access to treatment: "While putting the ban out there, you need a lot more advertising about ways you can get help."

**Conclusions** At our safety-net hospital, hospitalized smokers use menthol cigarettes at alarmingly high rates. Banning the sale of menthol cigarettes can improve health disparities. To be most effective, clinicians must capitalize on this moment to promote tobacco treatment.



### **E-cigarettes and the clinical encounter: characterizing smoker-physician discussions about e-cigarettes and their consequences**

*Chair/Discussant: Dr. James F. Thrasher  
University of South Carolina, US*

The clinical encounter is a key opportunity to promote smoking cessation, yet physicians inconsistently provide best-practices cessation advice due to lack of time, knowledge, skills, and confidence. Counseling smokers about cessation is complicated by smokers' increasing use of e-cigarettes for cessation and the uncertainty surrounding their efficacy and health consequences. Furthermore, most smokers who use e-cigarettes do not switch completely to e-cigarettes, whether for harm reduction or as a step towards cessation. This symposium brings together studies of smokers and physicians across countries in order to characterize discussions about e-cigarettes in clinical encounters, results from an intervention to encourage these discussions in the context of cessation assistance, and to understand the consequences of these discussions. Salloum will discuss results from a discrete choice experiment with primary care practitioners in the US, describing the physician and patient characteristics that drive physician recommendations for using e-cigarettes in the United States, where physician guidelines do not recommend e-cigarettes for cessation. Jackson will describe results from ongoing surveys with smokers in the UK – where health authorities have begun to embrace a harm reduction approach to e-cigarettes for established smokers – to describe trends in e-cigarette use recommendations, frequency of recommendation relative to other cessation methods, and their association with smoking cessation behaviors. Cho's longitudinal study of smokers in four countries with contrasting regulatory environments (UK, US, Canada, Australia) examines trajectories in tobacco product use as a function of physician discussions about and recommendations to use e-cigarettes. Finally, Strayer will discuss results from a pre/post assessment of a clinic-based, iPad-delivered decision aid that tailors information to smokers about smoking cessation and e-cigarettes based on their quit intentions and e-cigarette use. Overall, these studies illustrate the panorama and complexity of the intersection between the clinical encounter, e-cigarettes, and smoking across regulatory environments.

### **Primary care physician perspectives on recommending e-cigarettes to smokers: a best-worst discrete choice experiment**

*Ramzi Salloum  
University of Florida, US*

**Background** Some clinical trial evidence suggests that e-cigarettes may better promote smoking cessation than traditional cessation aids, yet physician practices regarding e-cigarette recommendations for patients who smoke are not known.

**Methods** Primary care physicians (PCPs) in Florida (n=216) completed a survey in 2019-2020 assessing beliefs, perceptions and recommendation practices related to e-cigarettes. It also included a profile-case best-worst discrete choice experiment, whereby respondents indicated if they would recommend e-cigarettes for 8 hypothetical patient profiles with the following factors: e-cigarette use status, interest in approved cessation methods, smoking intensity, prior experience with approved cessation medications, quit intention, patient's age and comorbidity. PCPs identified the most and least important patient factor associated with their decision to recommend e-cigarettes. Responses were summarized using descriptive statistics and standardized scores (SS) for factor selections.

**Results** Most PCPs thought e-cigarettes were effective for smoking cessation (66%) and lowering disease risk (60%), and 31% perceived e-cigarettes to be equally or more effective than traditional cessation aids. Compared to cigarettes, 49% thought e-cigarettes were less harmful, and 38% just as harmful. Yet, few were very confident in their ability to counsel patients on the risks of using e-cigarettes (26%) or their benefits (13%). PCPs recommended e-cigarettes in 26% of patient profiles they evaluated. The most important factors predicting recommendations for e-cigarette use were patients' prior use of both NRT and medication for cessation (SS=0.23), prior use of NRT alone (0.17), and middle age (i.e., 50) with COPD (0.17).

**Conclusions** Most PCPs endorsed the use of e-cigarettes for smoking cessation and harm reduction, particularly among middle-aged patients with comorbidities and those with failed quit attempts using approved medication. These findings, coupled with findings of increased patient e-cigarette use and efficacy for cessation, highlight the need for guidelines to help PCPs incorporate e-cigarettes into current smoking cessation practices.

### **Receipt of GP advice on e-cigarettes by smokers in England: prevalence and association with quit attempts**

*Sarah E. Jackson  
University College London, UK*

**Significance** Advice from a general practitioner (GP) can encourage smokers to quit. This study estimated the prevalence of receipt of GP advice to use an e-cigarette in England, compared this with other types of advice and support was offered, and explored associations of different types of advice with quit attempts.

**Methods** Data were collected from 11,588 past-year smokers between 2016 and 2019 in a series of monthly cross-sectional surveys of representative samples of the adult population in England. Participants reported whether they had received advice or offer of support for smoking cessation from their GP in the last year. Past-year quit attempts were also recorded.

**Results** Of past-year smokers who visited their GP in the last year, just 3.7% (95%CI=3.3-4.1%) recalled having been recommended to use e-cigarettes. The most common form of support offered was stop smoking services (16.5%, 95%CI=15.7-17.3%) followed by prescription medication (8.1%, 95%CI=7.5-8.7%) and consultation with a nurse in the practice (7.6%, 95%CI=7.0-8.2%). Offer of prescription medication was associated with highest odds of attempting to quit (ORadj=2.52, 95%CI=2.04-3.12) followed by recommendation to use an e-cigarette (ORadj=1.80, 95%CI=1.35-2.41), and suggestions to see a nurse in the practice (ORadj=1.44, 95%CI=1.16-1.80) or use stop smoking services (ORadj=1.39, 95%CI=1.17-1.66).

**Conclusions** In England, fewer than one in 20 smokers are advised by their GP to use an e-cigarette to help them to quit. Recommendation to use e-cigarettes is associated with increased odds of making a quit attempt.

### Smoker-physician communication about e-cigarettes and associated transitions in smoking-vaping at 18-month follow-up

Yoo Jin Cho<sup>1</sup>; James F. Thrasher<sup>1</sup>; Shannon M.L. Gravely<sup>2</sup>; Anthony Alberg<sup>3</sup>; Hua-He Yong<sup>3</sup>; Sara Hitchman<sup>4</sup>; Ron Borland<sup>5</sup>; K. Michael Cummings<sup>1</sup>; Geoffrey T. Fong<sup>2</sup>

<sup>1</sup>University of South Carolina, US; <sup>2</sup>University of Waterloo, CA; <sup>3</sup>Deakin University, AU; <sup>4</sup>King's College London, UK; <sup>5</sup>University of Melbourne, AU

**Background** Cross-sectional studies suggest that physician-smoker communication about e-cigarettes influences e-cigarette use among smokers, but the longitudinal relationship has not been studied. This study of adult smokers examined the prevalence of physicians' discussion and recommendation about e-cigarettes and smoking-vaping transitions that follow.

**Methods** Data came from the 2016 and 2018 ITC-4 country Smoking and Vaping Surveys from Australia, Canada, England, and the US. The prevalence analysis included adult smokers who visited a physician or other health professional in the prior 12 (n=6,555; 2016) or 18 (n=7,186; 2018) months. The longitudinal analysis included 2,855 exclusive smokers and 604 dual users of cigarettes and e-cigarettes who were followed up at 18 months and visited a physician during this period. Multinomial logistic models with data pooled across countries were used to examine whether physician discussion and recommendation of e-cigarettes were associated with smoking-vaping transitions at 18-month follow-up.

**Results** The prevalence of smoker-physician communication about e-cigarettes did not significantly change between 2016 and 2018 in Australia (2.1% to 2.8%), England (6.7% to 8.8%), and the US (7.8% to 7.2%) but in Canada (8.2% to 5.7%; p<0.01). Among those who had e-cigarette communications, reported physicians' e-cigarette recommendations increased in Australia (13.0% to 21.5%), Canada (31.9% to 33.6%), and England (31.9% to 37.9%), respectively, but decreased in the US (37.7% to 25.7%), although none of these changes were statistically significant. When comparing smokers who did not discuss cessation or e-cigarettes with those whose physicians recommended e-cigarettes, baseline exclusive smokers were more likely to become concurrent users (ARR=3.54; 95% CI= 1.12, 11.15) and baseline dual users were less likely to become exclusive smokers (ARR=0.10; 95% CI= 0.01, 0.81).

**Discussion** Smoker-physician communication about e-cigarettes was infrequent and relatively stable between 2016 and 2018. Physician recommendations to use e-cigarettes were associated with uptake and continued use of e-cigarettes among smokers.

### Evaluation of a smoking cessation patient decision aid that integrates information about e-cigarettes

Scott Strayer<sup>1</sup>; Kollath-Cattano Christy<sup>2</sup>; Ramzi Salloum<sup>3</sup>; Andrew Albano<sup>4</sup>; Meenu Jindal<sup>4</sup>; Martin Durkin<sup>1</sup>; James Thrasher<sup>1</sup>

<sup>1</sup>University of South Carolina, US; <sup>2</sup>College of Charleston, US; <sup>3</sup>University of Florida, US; <sup>4</sup>Prisma Health System, US

**Background** Smokers increasingly use e-cigarettes to try to quit smoking, even more than recommended cessation methods. However, few smokers discuss the full range of cessation options with their physicians. Decision aids can inform smokers about all smoking cessation options, including evidence about e-cigarettes, and may encourage smokers to engage in shared decision making with their physician. This study aimed to evaluate a smoking cessation decision aid (DA) that included information about e-cigarette risks and benefits.

**Methods** Adult smokers were recruited from primary care clinics for two research phases: 1. usability and acceptability testing of the decision aid (n=37); and 2. pre/post study that compared usual care (n=90) with implementation of the DA in clinics (n=90). Acceptability measures were adapted from prior studies and assessed perceptions of helpfulness, time for completion, clarity and amount of information, and whether participants would recommend the DA to others. For the pre-post clinical study, outcome measures included frequency of clinical discussions on: readiness to quit; methods to quit in general; and of specific cessation methods. Decisional conflict, communication satisfaction, and overall patient satisfaction were also measured.

**Results** Smokers indicated high usability and acceptability of the DA. In the pre/post evaluation, DA implementation was associated with higher rates of smokers: being asked if they were ready to quit smoking (89% vs. 67%, respectively; p<0.001); discussing methods for smoking cessation in general (81% vs. 48%; p<0.001); and discussing specific cessation methods (NRT 55% vs. 26%, p=0.000; prescription medications 26% vs. 12%, p=0.022). At 3 month follow-up, quit attempts were higher in the DA phase (40% vs. 27%, p=NS). DA use was also associated with higher overall patient satisfaction with the physician visit and lower decisional conflict (p=0.02).

**Discussion** This study demonstrates the feasibility and potential effectiveness of an iPad-delivered smoking cessation DA that integrates information about e-cigarettes and can be used in clinical settings.

### **Is cytisine at least as effective as varenicline for smoking cessation? Findings from a non-inferiority trial in indigenous New Zealanders and their extended family**

Natalie Walker<sup>1</sup>; Jo Barnes<sup>1</sup>; Barry Smith<sup>2</sup>; Marjolein Verbiest<sup>3</sup>; Varsha Parag<sup>1</sup>; Subhash Pokhrel<sup>4</sup>; Chris Bullen<sup>1</sup>

<sup>1</sup>University of Auckland, NZ; <sup>2</sup>Lake District Health Board, NZ; <sup>3</sup>Tilburg University, NL; <sup>4</sup>Brunel University, UK

**Significance** Cytisine is a plant-based alkaloid, and, like varenicline, is a nicotine receptor partial agonist. As a natural product, cytisine may appeal to indigenous people who smoke. New Zealand (NZ) research indicates that because cytisine is found in some endemic plants, indigenous Māori (who are disproportionately affected by tobacco) feel a sense of Rangatiratanga (ownership) over it. Trial evidence indicates cytisine is superior to placebo and NRT, with few harms reported in clinical trials. The effectiveness and safety of cytisine compared to varenicline has not been assessed. We designed a pragmatic, single-blind, randomised non-inferiority trial to determine whether cytisine was at least as effective as varenicline in supporting indigenous NZ Māori (and their whānau [extended family]) who smoke, to remain abstinent for at least six months.

**Methods** Participants identified through multi-media advertising were: daily smokers who self-identified as Māori or whānau of Māori; aged ≥18 years; motivated to quit. Participants were randomised (1:1) to receive prescriptions for 12-weeks' cytisine (Tabex®) or varenicline tablets (Champix®). Both groups were offered brief behavioural support. The primary outcome was carbon-monoxide-verified continuous abstinence at 6 months post-quit date. Secondary outcomes at 1, 3, 6 and 12 months post-quit date included smoking, cessation, and adverse events. 2,140 participants were sought (90% power, non-inferiority margin of 10%).

**Results** 679 people were randomised (337 cytisine, 342 varenicline). Non-inferiority, but not superiority, was demonstrated at 6-months (verified continuous abstinence: 12.1% cytisine vs 7.9% varenicline; Absolute Risk Difference: 4.29, 95% CI -0.22 to 8.79; Relative Risk: 1.55, 95% CI 0.97 to 2.46). Fewer self-reported adverse events occurred with cytisine (320 events/115 participants) than with varenicline (517 events/143 participants; Incidence Rate Ratio: 0.57, 95% CI 0.49 to 0.65, p<0.001).

**Conclusion** Cytisine plus behavioural support is at least as good as varenicline plus behavioural support for smoking cessation in this indigenous population and is associated with fewer adverse events.

### **A cluster feasibility trial to explore the uptake and use of electronic cigarettes provided to smokers accessing homeless centres**

Lynne Dawkins<sup>1</sup>; Linda Bauld<sup>2</sup>; Allison Ford<sup>3</sup>; Deborah Robson<sup>4</sup>; Peter Hajek<sup>5</sup>; Steve Parrott<sup>6</sup>; Catherine Best<sup>3</sup>; Jinshuo Li<sup>6</sup>; Allan Tyler<sup>1</sup>; Isabelle Uny<sup>3</sup>; Sharon Cox<sup>7</sup>

<sup>1</sup>London South Bank University, UK; <sup>2</sup>University of Edinburgh, UK; <sup>3</sup>University of Stirling, UK; <sup>4</sup>Kings College London, UK; <sup>5</sup>Queen Mary's London, UK; <sup>6</sup>University of York, UK; <sup>7</sup>University College London, UK

**Significance** Smoking prevalence in the UK continues to decline and is currently below 15%. However, this masks considerable inequalities; amongst adults who are homeless, smoking rates are four times higher than the national average. Although there is desire to quit, smokers experiencing homelessness are less likely to engage with cessation services and are less successful when they do make a quit attempt. The objective of this trial was to assess the feasibility of supplying free e-cigarette starter kits to smokers accessing homeless centres to inform a possible future larger trial.

**Methods** Using a cluster design, four homeless centres in Great Britain were allocated to either a Usual Care (UC) or E-Cigarette (EC) arm. UC arm participants (N=48) received advice to quit and signposting to the local Stop Smoking Service. EC arm participants (N=32) received an EC starter kit and 4-weeks supply of e-liquid. Participants were followed up at 4, 12 and 24 weeks. Outcome measures were recruitment and retention rates, EC use, unintended consequences, smoking cessation/reduction and completion of measures required for economic evaluation.

**Results** Eighty (mean age 43; 65% male) of 153 participants invited to participate, were successfully recruited (52%) and 47 (59%) of these were retained at 24 weeks. EC were well accepted, there were very few unintended consequences (e.g. lost, theft, adding illicit substances) and negative effects. Depression and anxiety scores declined from baseline to 24 weeks in both arms, as did the incidence of risky smoking practices, whilst substance dependence scores remained constant. Assuming those with missing follow up data were smoking, CO validated sustained abstinence at 24 weeks was 3/48 (6.25%) and 0/32 (0%) respectively for the EC and UC arms. Almost all participants present at follow-up visits completed data collection for healthcare service and health-related quality of life measures.

**Conclusions** Providing an e-cigarette starter kit to smokers attending homeless centres was associated with reasonable recruitment and retention rates and promising evidence of efficacy and cost-effectiveness.

### **Smoke-free prisons two years on: a qualitative study exploring stakeholders' reflections and current cessation practices in England**

Leah Jayes, Jessica Waddingham, John Britton, Rachael Murray  
University of Nottingham, UK

**Significance** Smoking among prisoners is up to five times more prevalent than the national average. Between 2016-2018, Her Majesty's Prison and Probation Service (HMPPS) completed a staged roll-out of a comprehensive smoke-free (SF) policy across the closed estate, alongside introducing a partial policy (smoking only permitted in smoking shelters) throughout the open estate. This huge public health achievement provides a unique opportunity to promote lifelong cessation in this highly disadvantaged group. The aim of this research is to explore stakeholders' views on the implementation and ongoing management of the SF policy and provision of smoking cessation services during imprisonment and after release.

**Methods** Stakeholders were purposively sampled to complete a one-to-one semi-structured interview. HMPPS and Public Health England stakeholders at national and local levels were identified via the lead authors' professional network. At a local level, participants were recruited from three Midlands establishments (a local, training and open prison). Recruits within each site included: Governor/deputy Governor, operational smoke-free lead/s, healthcare manager/s, and cessation staff. Twenty-nine interviews were audio-recorded, transcribed and analysed using thematic analysis.

**Results** The SF move was viewed as a success, largely attributable to the introduction of electronic cigarettes. Availability of smoking cessation services within establishments had declined and support varied across sites, contrary to HMPPS Headquarters' perceptions. With the majority of prisoners now vaping issues were raised relating to the poor quality of the available electronic cigarettes, their use as a maintenance tool, the high milligram (18mg) of nicotine commonly used, and long-term health impacts. It was envisaged that most prisoners would return to tobacco at release or transfer to open conditions; predictors and possible interventions were discussed.

**Conclusion** In order to promote SF life amongst prisoners, further work needs to consider ongoing cessation services and use of vaping devices in prison alongside possible interventions on release or transfer to open conditions.

### **Association of socio-economic position with electronic cigarette use 2014-2019 among past-year and long-term former smokers in England**

Loren Kock; Lion Shahab; Jamie Brown  
University College London, UK

**Significance** Electronic cigarette (EC) use among long-term (>1-year) ex-smokers in England is highest among those of lower socio-economic position (SEP) and may impact on smoking-related health inequalities depending on whether the devices protect against relapse to tobacco smoking.

**Methods** This study aimed to assess trends in current EC use by SEP among i) all long-term (>1-year) ex-smokers and, to capture recent and late post-cessation uptake, ii) among past-year ex-smokers who did not use an e-cigarette in their most recent quit attempt, and iii) long-term ex-smokers who quit smoking before e-cigarettes became popular in 2011 (pre-2011 long-term ex-smokers). Participants included adult (16+) respondents in the Smoking Toolkit Study. Data were collected between 01/2014-09/2019. The outcome measure for the analyses was current e-cigarette use. Social grade based on occupation was operationalised as the explanatory variable for SEP. The analyses were stratified by year to assess the changes in these associations over time.

**Results** Among long-term ex-smokers, EC use increased from 3.3% in 2014 to 10.4% in 2019 among all groups. Use was more common across the period among lower SEP long-term ex-smokers compared with higher SEP respondents. Regarding post-cessation uptake of ECs, of the past-year ex-smokers who did not use an EC in their most recent quit attempt, 7.1% initiated EC use following smoking cessation and there was no clear trend over time, or any difference according to SEP. Among pre-2011 long-term ex-smokers there was an overall increase over time in use of ECs (0.8% in 2014 to 2.1% in 2019) but there were no apparent differences in use across SEP.

**Conclusion** EC use increased over time among all long-term ex-smokers but was highest among those of lower SEP. Continued monitoring of this socio-economic patterning is important because if ECs do not confer the public health benefit of protection against relapse to smoking, then equity-negative disadvantages of long-term usage are more likely. Late, but not recent, post-cessation uptake of ECs increased over time but is not likely to impact on smoking-related health inequalities.

### **An integrated method to present trends in health inequalities: an application to 2003-2015 trends in socioeconomic inequalities in adolescent smoking in Europe**

Mirre A.G. Kuipers<sup>1</sup>; Kaidi Kang<sup>2</sup>; Anca D. Dragomir<sup>2</sup>; Karin Monshouwer<sup>3</sup>; George Luta<sup>2</sup>; Anton E. Kunst<sup>1</sup>

<sup>1</sup>University of Amsterdam, NL; <sup>2</sup>Georgetown University, US; <sup>3</sup>Netherlands Institute of Mental Health and Addiction, NL

**Background** Appropriate and unambiguous measurements of health inequality trends are needed for monitoring and policy evaluation purposes. This study aimed to develop and apply a method to present and interpret trends in health inequalities, without distinguishing absolute and relative inequalities.

**Methods** We used repeated cross-sectional data on smoking behaviour of 165,630 15 and 16-year-old adolescents from 22 countries, from the 2003, 2007, 2011 and 2015 European Survey Project on Alcohol and Other Drugs surveys. Multilevel logistic regression models estimated weekly smoking prevalence adolescents at the lowest (P(0)) and highest (P(1)) ends of socioeconomic status (SES). Using simulation methods, 95% confidence regions were constructed for plotted points of (P(1),P(0)) and a linear regression line fitting these points. The intercept of the regression line indicated the predicted low SES smoking prevalence if high SES prevalence were 0%, and the slope indicated smoking decrease in low SES compared to high SES. The likelihood of eradication of smoking was calculated as the percentage of simulated regression lines predicting <5% prevalence in both high and low SES. Analyses were stratified by gender and European region.

**Results** Smoking prevalence was 21.6% among boys and 21.0% among girls. We presented a graphical presentation of plotted (P(1),P(0)) values, their confidence regions, and regression line. Smoking prevalence decreased more slowly among low SES than high SES adolescents. Prevalence in boys was predicted to remain at 8.6% (4.6;12.9) for low SES when 0% for high SES, and 5.0% (0.2;9.7) in girls. Likelihood of eradication was 4% among boys and 46% among girls. Trends seem more favourable in North and West than in South and East Europe.

**Conclusion** Our method visualised and quantified trends in inequalities, allowing to conclude that the current trend will unlikely lead to smoking eradication among boys in Europe. Assumption of linearity and the need for a steady decline in the outcome are limitations of this method that may require further development.

### Medication administration based on tobacco smoke exposure among pediatric emergency department patients with asthma

Ashley L. Merianos<sup>1</sup>; Roman A. Jandarov<sup>1</sup>; Judith S. Gordon<sup>2</sup>; Michael S. Lyons<sup>1</sup>; E. Melinda Mahabee-Gittens<sup>3</sup>

<sup>1</sup>University of Cincinnati, US; <sup>2</sup>University of Arizona, US; <sup>3</sup>Cincinnati Children's Hospital Medical Center, US

**Significance** Pediatric emergency departments (PEDs) commonly serve hard-to-reach populations that have a high tobacco smoke exposure (TSE) prevalence, high number of visits for asthma, and limited access to preventive care. The objective was to assess TSE and medication use among PED patients with asthma.

**Methods** We used retrospective, cross-sectional data from patients who presented to a U.S. Children's Hospital PED (N=204). We used propensity score matching to pair 0-17 year old patients with asthma who were tobacco smoke-exposed (n=64) with those who were unexposed (n=140) based on demographics. We built logistic regression models for categorical outcomes and linear regression models for continuous outcomes to answer the study objective.

**Results** Asthmatic patients with TSE were 18.06 times more likely to receive steroids during their PED visit (95% confidence interval [CI]=15.07-21.65) than unexposed patients. Patients with TSE were 11.44 times more likely to receive albuterol (95%CI=9.73-13.45), but no differences ( $\beta=1.23$ , 95%CI=-0.35-2.81,  $p=0.14$ ) were found based on number of albuterol treatments between patients with TSE (mean [M]=2.83, standard deviation [SD]=0.41) and those who were unexposed to tobacco smoke (M=1.64, SD=0.38). Patients with TSE were 16.18 times more likely to receive ipratropium during their PED visit (95%CI=3.76-69.54), and more likely to receive a higher number of ipratropium treatments (M=2.82, SD=0.11;  $\beta=1.60$ , 95%CI=0.94-2.26,  $p=0.001$ ) than patients who were unexposed (M=1.25, SD=0.55). Patients with TSE were 13.25 times more likely to receive a combination of steroids, albuterol, and ipratropium medications while in the PED (95%CI=11.37-15.44). Asthmatic patients with TSE were 7.00 times more likely to be prescribed albuterol only (95%CI=2.23-22.02) and both albuterol and steroids (95%CI=2.17-18.43) for home administration.

**Conclusions** Standardized tobacco control initiatives in the emergency setting could be highly advantageous for children with TSE by potentially reducing subsequent moderate to severe asthma exacerbations, which may help already overburdened PEDs by decreasing resource utilization attributed to TSE.

### Smoking cessation aid by Flemish general practitioners

Michiel Mertens<sup>1</sup>; Sven van Lommel<sup>2</sup>; Bert Aertgeerts<sup>2</sup>; Kristiaan Nackaerts<sup>2</sup>

<sup>1</sup>Catholic University of Leuven, BE; <sup>2</sup>University Hospital of Leuven, BE

**Background** Tobacco smoking is the largest avoidable cause of mortality and morbidity worldwide. The increasing e-cigarette use and an adjusted reimbursement policy for Flemish general practitioners (GPs) recently changed smoking cessation practice. With this study, we wanted to identify issues in GP's current smoking cessation practice.

**Methods** We sent an anonymous questionnaire to Flemish GP's and GP's in training through GP associations and the interuniversity centre of GP education. We interrogated sociodemographic data, smoking screening, used cessation methods, the e-cigarette and the adjusted reimbursement policy. We carried out a descriptive data analysis on completed questionnaires.

**Results** 129 GP's and 18 GP's in training completed the questionnaire. Among the analysed communicative and pharmacological smoking cessation aids, participants mostly used brief advices (95.9%) and varenicline (89.1%), while follow-up (51.0%) and bupropion (43.5%) were used less. They estimated monitoring post-cessation smoking status, referral to tobaccologists and varenicline to be the most effective interventions. 80.3% reported having insufficient knowledge of the e-cigarette. Therefore, 27.2% was less prone to confront e-cigarette use. Some 22.5% confronted e-cigarette use less due to a lower perception of harmfulness. 39.5% judged tobaccologists to be insufficiently accessible.

**Discussion** Identified issues in GP's smoking cessation practice are insufficient follow-up, limited knowledge and use of bupropion, inadequate collaboration with tobaccologists, insufficient e-cigarette knowledge, suboptimal e-cigarette cessation support and an unsatisfactory education in smoking cessation practice for medicine students. We advise organizing structural smoking cessation campaigns to address the exposed flaws in smoking cessation practice.

### Factors related to the success of smoking cessation in South Koreans participating in smoking cessation clinics

Yoon Hee Eum; Ho Jun Kim; Bumjo Oh; Kyungha Min

SMG - SNU Boramae Medical Center, KR

**Introduction** Although at least a half of smokers attempt smoking cessation every year, the average smoking rate in South Korea is still higher compared to that in other countries. This study aimed to find the factors related to the success of smoking cessation through a cross-sectional study of data on South Korean smokers who visited smoking cessation clinics with the will to quit smoking.

**Method** This study analyzed 1,395 smokers who participated in smoking cessation clinics at two hospitals between 2015 and 2019. The subjects responded to a self-response questionnaire related to basic information and smoking when they first visited the smoking cessation clinic, underwent the smoking cessation clinic program in which they received counseling and took varenicline for 12 weeks, and thereafter answered to a question asking whether they succeeded in smoking cessation. Adjusted odds ratios (aORs) and 95% confidence intervals (CIs) for factors related to the success of smoking cessation were obtained by carrying out multivariable logistic regression analyses according to the success or failure of smoking cessation.

**Result** Through the 12-week program, 553 smokers succeeded in smoking cessation. The higher the nicotine dependence (aOR 0.73, 95% CI 0.54-0.98, ref. FTND low group), and the higher the total amount of smoking (aOR 0.67, 95% CI 0.47-0.95, ref. pack\_year<10), the lower the success rate of smoking cessation. In addition, smokers who participated in the program for at least 8 weeks (aOR 7.16, 95% CI 5.57-9.20, less than 8 weeks), those who had hypertension (aOR 1.40, 95% CI 1.07-1.85, ref. no hypertension), or cardiovascular disease (aOR 1.68, 95% CI 1.03-2.75, ref. no cardiovascular disease) as an underlying disease showed high smoking cessation success rates.

**Conclusion** Factors related to the success of smoking cessation included whether the subject steadily visited the smoking cessation clinic along with nicotine dependence and the total amount of smoking prior to the start of smoking cessation, and whether the subject had hypertension, or any cardiovascular disease.

### Hospital interventions to reduce children's exposure to secondhand smoke: a mixed-methods systematic review and evidence synthesis.

*Erica Ferris<sup>1</sup>; Carole Cummins<sup>1</sup>; Christophe Chiswell<sup>1</sup>; Laura Jones<sup>1</sup>*

<sup>1</sup>University of Birmingham, UK; <sup>2</sup>Public Health Birmingham, UK

**Background** Childhood secondhand smoke exposure (SHSe) is associated with increased morbidity and mortality. Secondary care contact may present a 'teachable moment' to provide parents with support to change their smoking behaviours to reduce children's home SHSe. This review explored: (1) if existing interventions in this context are effective; (2) if they are reported in sufficient detail to be replicated; (3) if the learning is transferable to an NHS setting, (4) the experiences of healthcare professionals (HCPs) delivering SHSe reduction interventions, and (5) the experiences of parents receiving SHSe reduction interventions.

**Methods** Five electronic databases and grey literature were searched for relevant literature published between January 1980 and March 2020. Fourteen papers reporting twelve studies (nine quantitative and five qualitative) were included. A mixed-methods segregated approach was used involving independent syntheses of the quantitative and qualitative data followed by an overall mixed-methods synthesis.

**Results** There was some evidence of effectiveness of secondary care interventions in the shorter term (<6 months) when SHSe was measured subjectively. Existing secondary care interventions were not effective in all but one poor quality study in longer term (> 6 months) or when measured objectively for initiating parental behaviour change to reduce children's SHSe. Inconsistencies with reporting make replication challenging and the lack of UK based studies makes transferability to the NHS setting unclear. Experiential evidence highlighted discrepancies between stakeholder preferences and interventions offered.

**Discussion** This review has provided evidence of limited effectiveness of existing interventions to reduce children's SHSe in secondary care settings. However, it offers insights into areas to target to develop future effective interventions. For example, smoking parents are receptive to receiving intervention in this setting but that this should be led by the HCP caring for their child and not researchers/other professionals.

### My future self-quit smoking: an experimental study into the effect of a future-self intervention on identity and behavioral and psychological smoking outcomes

*Kristell M. Penformis; Eline Meijer; Winifred A. Gebhardt*

Leiden University, NL

**Background** Identity refers to perceptions and views of who we are. Identity theories posit that identities can evolve and that individuals not only have views and perceptions of who they are now, but also of who they want to become (desired self) and who they do not want to become (feared self) in the future. Studies on identity and smoking have shown that sustainable smoking cessation is unlikely when people cannot see themselves as quitters or nonsmokers. To date, very few studies have attempted to experimentally strengthen nonsmoking or quitter identity as a means to facilitate smoking cessation. We aim to test the effect of a future-self task on a number of smoking-related variables including identity, intention and motivation to quit and the number of cigarettes smoked.

**Methods** For this longitudinal online experimental study, 233 smokers with an intention to quit were recruited and randomized 1:1 into the experimental (i.e., participants were asked to imagine their ideal self as a successful quitter and feared self as a continued smoker and then referred to a smoking cessation website) or the control condition (i.e., participants were solely referred to the smoking cessation website) and included baseline, post-test, one- and three-months follow-up measures.

**Results** There was a significant post-test increase in intention to quit ( $p = 0.03$ ) and quitter self-identity ( $p = 0.03$ ) within the experimental group. Quitter self-identity was especially strengthened in women and those who ascribed more importance to their ideal self. There were no differences in identity and behavioral and psychological smoking characteristics between conditions (all  $ps > .05$ ) at post-test or follow-ups.

**Conclusions** Future-self tasks show promise in strengthening quitter identity and intention to quit but should be improved for more consistent and generalizable results.

### Combining default choices and shared decision making to improve tobacco cessation treatment in primary care: interviews with general practitioners

*Christina Hempel Bruder<sup>1</sup>; Marie-Anne Durand<sup>2</sup>; Ivan Berlin; Yasser Khazaal<sup>4</sup>; Joachim Marti<sup>1</sup>; Jacques Cornuz<sup>1</sup>; Kevin Selby<sup>1</sup>*

<sup>1</sup>Center for Primary Care and Public Health (Unisante), CH; <sup>2</sup>University of Toulouse III Paul Sabatier, FR; <sup>3</sup>Hôpital Pitié-Salpêtrière, FR;

<sup>4</sup>Lausanne University Hospital, CH

**Introduction** Few current smokers seen in primary care are prescribed smoking cessation treatment. Perhaps because they must 'opt-in' to treatment, in contrast to other medical conditions where treatment is the default option. We observed that an encounter decision aid (DA) presenting pharmacologic interventions shifted discussions onto quitting rather than evaluation of readiness to quit. This shift makes a quit attempt with treatment the default choice. A similar 'opt-out' approach has been used in hospital and specialty settings, but never in primary care. Our aim was to collect pilot data about the acceptability of the approach and encounter decision aid in preparation for a cluster-randomized trial of default choices and shared decision making in primary care.

**Methods** We conducted before-after interviews with 5 GPs in Lausanne, Switzerland. We first presented the general concept of using default choice combined with an encounter decision aid. Using a semi-structured interview guide, we asked GPs for first impressions. They were encouraged to test the approach with patients who are current smokers over the next 2 months, and provide further feedback during a second interview.

**Results** Four men and 1 woman were interviewed. Three of 5 GPs were immediately curious about the 'default choice' approach. All challenged discussing a quit attempt at every contact with smokers, feeling it could be detrimental to relationships and paternalistic. Most felt they discuss quitting regularly, but could be more insistent. All GPs were enthusiastic about the DA and were able to test it with patients, feeling it made discussions more 'concrete'. GPs were not able to discuss quitting in every situation. Patients were perceived to be receptive and curious, and seemed more likely to discuss treatments and receive a prescription.

**Discussion** These data revealed opportunities (DA popular, more prescriptions) and challenges (difficult approach with all smokers, fear of being paternalistic) of having GPs present smokers with smoking cessation treatment as the default choice with a DA. We will start testing the training program and an electronic version of the DA in August.



## Poster Session 3 | 17:45-18:30 | Friday, 18<sup>th</sup> September 2020

### Network analysis of the cooperation network of academic smoking outpatient clinics (NAKURA): results from two German surveys covering organizational characteristics and SARS-CoV-2 pandemic effects on smoking cessation services

Sophie Lux; Franziska Loh; Florian Wirth; Stephan Mühlh  
Chemnitz University of Technology, DE

To quit smoking is the most efficient way to prevent a manifestation of tobacco-associated diseases and substantially improve their course and prognosis as well. However, only 3-6% of smokers willing to quit smoking by themselves maintain abstinence for at least 12 months. Using professional smoking cessation programs, up to 30-40% remain abstinent. Although there are several highly effective evidence-based programs available in Germany, only a minority of smokers take part in these programs. Supported by "German Cancer Aid", ("Deutsche Krebshilfe") the NAKURA project aims at joining forces of academic/research-based smoking outpatient clinics across Germany in order to build up a network that engages both in researching and providing smoking cessation treatment. We conducted a pilot survey amongst these smoking cessation centers on their client's means of access, utilization of services, acquisition strategies for participants and specific interventions for high-risk patients in autumn 2019. In summer 2020, we conduct a follow-up survey to investigate the consequences of the SARS-CoV-2 pandemic for the smoking ambulances from the therapist's point of view. Findings of both surveys will be presented.

## Poster Session 4 | 17:45-18:30 | Friday, 18<sup>th</sup> September 2020

### Investigating changes in patients' smoking behaviour, tobacco dependence and motivation to stop smoking following a 'smoke-free' mental health inpatient stay: results from a longitudinal survey in England

Tom Ainscough<sup>1</sup>; Alex Mitchell<sup>2</sup>; Catherine Hewitt<sup>3</sup>; Michelle Horspool<sup>4</sup>; Pete Stuart<sup>3</sup>; Suzy Ker<sup>5</sup>; Lesley Colley<sup>4</sup>; Claire Paul<sup>5</sup>; Phil Hough<sup>6</sup>; Simon Hough<sup>6</sup>; John Britton<sup>7</sup>; Elena Ratschen<sup>1</sup>

<sup>1</sup>University of Leeds, UK; <sup>2</sup>University of York, UK; <sup>3</sup>Sheffield Health and Social Care NHS Foundation Trust, UK; <sup>4</sup>Tees, Esk and Wear Valleys Foundation NHS Trust, UK; <sup>5</sup>Leeds and York Partnership NHS Foundation Trust, UK; <sup>6</sup>Vale Royal Relative Support Group, UK; <sup>7</sup>University of Nottingham

**Significance** In line with national guidance, mental health Trusts in England are implementing complete smokefree policies. We investigated inpatients' changes in smoking behaviour, tobacco dependence, vaping and motivation to stop smoking between pre-admission and post-discharge.

**Methods** We surveyed acute adult mental health inpatients from 14 wards in three mental health Trusts in England in 2019. Structured face-to-face and telephone interviews with patients who smoked on or during admission were conducted during the admission period and at 1 week and 1 month after discharge. Data on smoking status; daily cigarette consumption; Heaviness of Smoking Index (HSI); Strength of Urges to Smoke (SUTS); Motivation to Stop Smoking (MTSS) and vaping were collected and analysed using regression and probit models.

**Results** Inpatient smoking prevalence was 51.9%, and a total of 152 of all 555 eligible smokers (27%) were recruited. Attrition was high: 49.3% at the first, and 50.7% at the second follow-up interview. Changes in self-reported smoking status, motivation to quit and vaping did not change significantly over the study period. Cigarette consumption ( $p<0.001$ ) and Heaviness of Smoking Index ( $p=0.001$ ) modestly reduced. Frequency and strength of urges to smoke ( $p=0.011$  and  $0.012$ , respectively) decreased modestly after discharge but were scored as high by 57% and 60% of participants during admission respectively. Just over half (56%) reported being offered smoking cessation support on admission.

**Conclusions** This study identified very modest changes in smoking-related outcomes during and after admission and indicates major challenges to smokefree policy implementation, including limited support for patients who smoke.

### Prevalence of mental health and neurodevelopmental conditions in US children with tobacco smoke exposure

E. Melinda Mahabee-Gittens; Ashley L. Merianos; Kimberly Yoltan  
University of Cincinnati, US

**Significance** Research on tobacco smoke exposure (TSE) and associated mental health and neurodevelopmental conditions in school-age children are limited. We investigated the prevalence and correlates of current mental health and neurodevelopmental conditions among U.S. school-age children exposed to tobacco smoke, overall and within age groups.

**Methods** We analyzed data from the 2016-2017 National Survey of Children's Health. We conducted multivariable logistic regression analyses among U.S. children aged 6-11 years ( $N=21,539$ ) and among subsamples aged 6-8 years ( $n=10,100$ ) and 9-11 years ( $n=11,439$ ).

**Results** Among 6-11 year olds who lived with a smoker with no home TSE, the top mental health/neurodevelopmental conditions were other mental health conditions (22.1%), behavioral/conduct problems (21.7%), ADD/ADHD (20.5%), depression (21.7%), and learning disabilities (19.3%). Children who lived with a smoker, with or without home TSE, were at increased odds of having anxiety problems, depression, attention deficit disorder/attention deficit hyperactivity disorder, behavioral/conduct problems, other mental health conditions, or learning disabilities. Younger children with home TSE were 5.32 (95%CI=2.53-11.16) times as likely and older children with home TSE were 2.19 (95%CI=1.24-3.85) times as likely to be diagnosed with depression. Younger children with home TSE were 3.10 (95%CI=1.95-4.93) times as likely to be diagnosed with a learning disability while older children with home TSE were 1.69 (95%CI=1.15-2.48) times as likely to be diagnosed with a learning disability.

**Conclusions** TSE is associated with mental health and neurodevelopmental conditions; many associations were more notable in younger children. Strict smoke-free policies are needed to protect children.

### Prevalence of e-cigarettes use in specialized tobacco dependence treatment centres

Kamila Zvalská; Eva Králíková; Alexandra Panková; Lenka Štepanková; Zuzana Adamčeková; Vladislava Felbrova; Stanislava Kulová

Charles University and General University Hospital Prague, CZ

**Significance** During quitting smoking, electronic cigarettes (EC) may play supporting role, especially in patients with mental illness who are generally less successful with other smoking cessation drugs or are afraid of their pharmacological interactions. In the Czech Republic, EC are not a first line medication, but recommended when other options failed.

**Methods** 12-months follow up, CO-validated abstinence during intensive treatment of tobacco dependence (intervention + pharmacotherapy) in patients motivated to stop smoking. Mental illness included actual or past history of anorexia/bulimia, depression, schizophrenia, manic depression, and anxiety.

**Results** From total 2,971 patients who completed one-year follow-up between 2013-19, 122 did use EC (EC only or additionally to the standard treatment). In this whole sample, 39.52% (1,174/2,971) were abstainers, among patients not using EC 37.5% (1,114/2,971) were abstinent. Among all abstainers, only 5.1% (60/1,174) did use any kind of EC during the one year period, 5 of them even at the 12 months follow-up. From all patients, 868 were mentally ill (29.2%) with the overall success rate of 34.1% (296/868), while among successful EC users 28.3% (17/60) patients had mental illness. Forty-one percent of patients using EC had mental illness (50/122), 34% of them were successful (17/50).

**Conclusions** Only a small percentage of patients used EC although EC may enhance the success rate in those unsuccessful with other treatment options.

### Effectiveness of interventions supporting smoking cessation and preventing relapse following a stay at a smokefree institution: systematic review & meta-analysis.

Emily Shoemith<sup>1</sup>; Lisa Huddleston<sup>1</sup>; Fabiana Lorençatto<sup>2</sup>; Lion Shahab<sup>2</sup>; Elena Ratschen<sup>1</sup>

<sup>1</sup>University of York, UK; <sup>2</sup>University of College London, UK

**Background** Tobacco smoking is a leading cause of morbidity, premature mortality, and health inequalities. While many health and care institutions around the world are now smokefree by law, offering abstinence and cessation support for smokers during their stay, little is known about effective strategies to continue this support (and prevent return to previous smoking behaviours) following discharge. This systematic review updates and extends the existing literature, aiming to identify interventions that maintain abstinence following a smokefree stay and determine their effectiveness, as well as the likely effectiveness of Behaviour Change Techniques (BCTs) used.

**Methods** MEDLINE, EMBASE, PsycINFO, CINAHL and Web of Science were searched up to February 2020. Participants were adult smokers, temporarily or fully abstinent from smoking to comply with institutional policies (residential mental health, substance misuse treatment centre, prison, or acute inpatient hospital), and were followed-up post-discharge. A Mantel-Haenszel random effects meta-analysis of trials was conducted, and observational studies were summarised in a narrative synthesis. Behaviour change techniques (BCTs) were coded using an established taxonomy. BCTs were defined as 'promising' if the technique was present in at least two long-term effective interventions, and where frequency in all included trials was highest (present in ≥ 25% interventions).

**Results** Twenty-three RCTs, 3 non-randomised trials, and 11 cohort studies were included. Meta-analysis of biochemically-verified abstinence at longest follow-up (12-weeks to 18-months) found an overall effect in favour of intervention [risk ratio (RR) = 1.39, 95% confidence interval (CI) 1.16 – 1.66]. Eighteen BCTs were characterised as 'promising'.

**Conclusion** Behavioural and/or pharmacological support can help to maintain smoking abstinence following a smokefree stay. However, the interventions utilised a range of theoretical approaches, and the reporting of interventions were often insufficiently described. Future interventions to support smoking cessation might include the 18 'promising' BCTs to maximise effectiveness.

### User-centered development and usability evaluation of a mHealth application with game elements to support smoking cessation among disadvantaged young women during and after pregnancy

Marloes Derksen; Monique Jaspers; Sander van Strijp; Mirjam Franssen

University of Amsterdam, NL

**Significance** Smoking prevalence during and after pregnancy remains high among socioeconomically disadvantaged women. mHealth seems a promising intervention for smoking cessation. This paper describes the user-centered development and usability of Kindle, a mHealth application with game elements to support smoking cessation among disadvantaged young women during and after pregnancy through the first stages of smoking cessation.

**Methods** Disadvantaged women (n=9), members of their social networks (n=4), and nurses (n=51) were informants throughout the five round, iterative prototype development according to ISO 9241-11:2018. Prototype usability was evaluated by a combination of a heuristic evaluation (HE) performed by experts (n=3), and a think aloud (TA) performed by end-users (i.e. nurses and disadvantaged) (n=10).

**Results** The mHealth application that was developed with end-users, Kindle, aimed to support disadvantaged women through the first stages of smoking cessation. The Kindle prototype combined a nurses- and clients-interface, and included the following functionalities: (1) personal goal setting with earning points, (2) chat function with nurse and other clients, (3) tips, and (4) admin function or diary, and (5) profile creation. Through HE and TA we found 37 usability problems within the nurses-interface (e.g. the private chat function is hidden in the admin menu) and 41 usability problems within the client-interface (e.g. same icon has different meanings) of Kindle.

**Conclusion** The user-centered development and usability testing resulted in useful insights for further optimization of Kindle to achieve readiness for smoking cessation among socioeconomically disadvantaged women during and after their pregnancy.

### **Smokefree mental health inpatient settings: an assorted analysis of UK health professional and patient experience**

Lisa Huddleston<sup>1</sup>; Tom Ainscough<sup>2</sup>; Paul Galdas<sup>2</sup>; Elena Ratschen<sup>1</sup>

<sup>1</sup>University of York; <sup>2</sup>University of Leeds

**Background** People with mental illness are disproportionately affected by high smoking prevalence and increased levels of smoking-related morbidity and mortality. According to national guidance, mental health inpatient services should be completely smokefree, with comprehensive evidence-based support provided to all smokers during admission. However, smokefree policy implementation remains highly variable, and substantial challenges are emerging nationally. This study aimed to explore in depth the experiences of mental health professionals and patients with smokefree policies implemented in adult inpatient mental health wards.

**Methods** An assorted analysis of primary and secondary data collected across three NHS mental health trusts in the north of England were conducted. Primary data comprised 24 qualitative interviews with patients and mental health professionals, 24 hours of observation, and the free-text responses of 152 patients participating a longitudinal survey. Secondary data comprised 174 reports of 282 tobacco-related incidents. An inductive approach to thematic analysis was undertaken.

**Results** Twelve sub-themes were identified and grouped into three overarching themes: Policy implementation and sustainability; Consequences; and Management, mitigation, and moving forward. Concerns were expressed about the level at which the policies were implemented and enforced within Trusts. Patients identified the need for staff to adapt the support offered as patients progress through their recovery. Issues around segregation and guilt concerning failed attempts at abstinence were common among patients. E-cigarettes were considered a desirable alternative to tobacco during hospitalisation and the need to enable their continued use following discharge was highlighted.

**Discussion** An inpatient admission provides a unique opportunity to break the cycle of nicotine addiction for people with mental illness. Variable responses to smoking and support for tobacco dependence undermine likelihood of temporary abstinence and subsequent quit attempts. Strategies to ensure compliance with smokefree policies and adequate support for patients and staff are required.

### **Exploring the role of tobacco and electronic cigarette use for reported incidents in English NHS mental health inpatient settings: a qualitative content analysis**

Lisa Huddleston<sup>1</sup>; Jodi Pervin<sup>1</sup>; Tom Ainscough<sup>2</sup>; Elena Ratschen<sup>1</sup>

<sup>1</sup>University of York, UK; <sup>2</sup>University of Leeds, UK

**Background** According to national guidance, mental health inpatient settings in the UK should be smokefree, with patients comprehensively supported to abstain from smoking during admission. However, smokefree policy implementation challenges have been widely reported. This project aimed to investigate the role of tobacco and e-cigarette use in mental health inpatient settings, based on incident reports.

**Methods** Computerised incident reporting databases of three large mental health trusts in the North of England were searched using a bespoke strategy that covered terms relating to tobacco and electronic cigarette use. Records reporting relevant incidents in the participating trusts between September 2018 and February 2019 were included. An inductive approach to qualitative content analysis was utilised to identify common themes.

**Results** One hundred and seventy-four records were retrieved. None referred to e-cigarette use. Twenty-two sub-themes comprising 50 individual codes were organised into four overarching themes: antecedents, incidents, consequences, and psychiatric management. Patient violation of smokefree policy was the most commonly reported incident (55%), followed by verbal abuse and threats towards staff (27%), and violence against staff (16%). Among the 32 records related to the consequences of incidents, the most commonly reported were searches of patient's rooms and belongings (n=15, 47%). Approximately one-third of incidents were resolved through the use of psychiatric management techniques. The most frequently reported technique was restraint (26%), but administration of emergency psychiatric medication was identified in 19% of reports.

**Conclusion** Despite formal smokefree policies in place, regular smoking remains a source of frequent reported incidents in mental health inpatient settings, causing distraction, disruption and distress to patients and staff. Further research should support the comprehensive and sustainable implementation of complete smokefree policies in these settings and investigate the role of e-cigarette use, which we were unable to elucidate in this context."