

9th Annual Conference

Innovations in Tobacco Control and Regulatory
Science to Decrease Cigarette Smoking

OCTOBER 7-8, 2021

VIRTUAL



Vermont Center on
Behavior & Health
The University of Vermont

Welcome

Dear Colleagues:

Welcome to the 9th Annual Vermont Center on Behavior and Health Conference. Once again, we find ourselves meeting virtually, something I did not originally expect if you had asked six months ago. However, as we continue to face challenges from COVID-19, we realized it was in the best interests of all to proceed in the safest, most inclusive way possible.

This year we are focusing on *Innovations in Tobacco Control and Regulatory Science to Decrease Cigarette Smoking*, a research area with a number of topics that have garnered widespread media attention over the past year. These include the Spring 2021 FDA announcement that menthol cigarettes and all flavors of cigars would be banned, new research on low nicotine content and addictiveness, and more recently, decisions on product applications from some, but not all, vaping companies through the premarket tobacco product application process. We are proud to have speakers discuss a variety of tobacco, e-cigarettes, smoking cessation, and disparity issues from various perspectives, giving space to different schools of research.

I would like to take a moment to thank U.S. Senator Patrick Leahy for taking time to share a video welcome to our conference again this year as well as UVM Senior Vice President and Provost Patty Prelock, PhD for joining us as our welcome speaker. A warm thanks goes to Dr. Neal Benowitz for finding time in his demanding schedule to give our keynote presentation this year.

I am thankful to our speakers and presenters for giving their time to us and the larger research community. Their dedication to the field and the hard work they continue to do under challenging conditions is applauded. We appreciate your participation and collaboration.

We hope you enjoy the conference and look forward to a time when we can gather in person again.

Many thanks for your contributions and support.

Sincerely,



Stephen T. Higgins, PhD
Director, Vermont Center on Behavior and Health
Virginia H. Donaldson Professor of Translational Science
Departments of Psychiatry and Psychological Science





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The University of Vermont designates this internet live for a maximum of 11 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Target Audience: Physicians

Conference Objectives:

1. Discuss the relationship between behavior patterns (lifestyle) and risk for chronic disease and premature death.
2. Identify evidence-based interventions that successfully promote health-related behavior change.

Funded in part by non-commercial support from the [National Institute of General Medical Sciences](#), Centers of Biomedical Research Excellence (COBRE), and the [National Institutes of Health](#)/Food and Drug Administration Tobacco Centers of Regulatory Science (TCORS)

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Conference Agenda, Day 1

Innovations in Tobacco Control and Regulatory Science to Decrease Cigarette Smoking

Thursday, October 7

8:30 – 8:55 Opening Session and Welcome Remarks

<https://uvmcom.zoom.us/j/95266106913> PW: vcbh2021

Opening Remarks: **STEPHEN T. HIGGINS, PHD**, Director, Vermont Center on Behavior and Health; Professor, Departments of Psychiatry and Psychological Science, Vermont Center on Behavior and Health, Larner College of Medicine, University of Vermont

Welcome: **PATRICIA A. PRELOCK, PHD**, Senior Vice President and Provost, University of Vermont

Video Welcome: United States **SENATOR PATRICK J. LEAHY** of Vermont

9:00 – 11:25 PAPER SESSION 1

<https://uvmcom.zoom.us/j/95697772784> PW: vcbh2021

Session Chair: **JENNIFER TIDEY, PHD**, Professor of Behavioral and Social Science, Associate Dean for Research, Brown University School of Public Health

Speakers:

Digital Interventions

AMANDA GRAHAM, PHD, Chief of Innovations, Truth Initiative; Adjunct Professor of Medicine, Mayo Clinic College of Medicine and Science

Quitlines

CHRISTINE SHEFFER, PHD, Director of Research and Evaluation Roswell Park Cessation Services; Professor of Oncology, Department of Health Behavior, Roswell Park Comprehensive Cancer Center

E-cigarettes for Smoking Cessation: The Latest Cochrane Evidence

JAMIE HARTMANN-BOYCE, PHD, Senior Research Fellow, Nuffield Department of Primary Care Health Sciences, University of Oxford; Editor, Cochrane Tobacco Addiction Group

Impacts of State-Level Tobacco Flavor Bans

MICHAEL SIEGEL, MD, Visiting Professor, Department of Public Health and Community Medicine, Tufts University School of Medicine

AUDIENCE Q&A

11:30 – 12:30 **Keynote Address** **Innovations to Reduce Cigarette Smoking**

<https://uvmcom.zoom.us/j/97132005561> PW: vcbh2021

Keynote delivered by **NEAL L. BENOWITZ, MD**, Emeritus Professor of Medicine and Bioengineering & Therapeutic Sciences and Chief of the Division of Clinical Pharmacology and Experimental Therapeutics, University of California, San Francisco

Introduction: **STEPHEN T. HIGGINS, PHD**, Director, Vermont Center on Behavior and Health; Professor, Departments of Psychiatry and Psychological Science, Vermont Center on Behavior and Health, Larner College of Medicine, University of Vermont

12:30 – 1:30 **LUNCH**

1:30 – 3:55 **PAPER SESSION 2**

<https://uvmcom.zoom.us/j/92687294958> PW: vcbh2021

Session Chair: **ELIAS KLEMPERER, PHD**, Assistant Professor, Vermont Center on Behavior and Health, Departments of Psychiatry and Psychological Science, Vermont Center on Behavior and Health, Larner College of Medicine, University of Vermont

Speakers: **Smoking Cessation Among Those With Mental Illness**
JUDITH (JODI) PROCHASKA, PHD, Professor, Department of Medicine
Stanford University

Smoking-Cessation Reach and Effectiveness
DANIELLE E. MCCARTHY, PHD, Professor, Department of Medicine
University of Wisconsin School of Medicine and Public Health

Medication Sampling and Smoking Cessation
MATTHEW CARPENTER, PHD, Professor, Department of Psychiatry
and Behavioral Sciences, Medical University of South Carolina

Smoking Cessation with Pregnant Women: Financial Incentives
STEPHEN T. HIGGINS, PHD, Director, Vermont Center on Behavior and Health;
Professor, Departments of Psychiatry and Psychological Science
University of Vermont

AUDIENCE Q&A

4:00 – 4:15

BREAK

4:15 – 5:00

VIRTUAL POSTER SESSION 1

Group 1: Youth and Young Adults

Group 2: Smoking and Cardiac Rehabilitation

Group 3: Changes in Cigarettes Per Day (CPD)

5:00 – 5:15

BREAK

5:15 – 6:00

VIRTUAL POSTER SESSION 2

Group 1: ENDS

Group 2: Incentives and Opioid Use

Group 3: Behavioral Economics

Poster Session Schedule and Presenters

4:15 – 5:00 SESSION 1

Group 1: Youth and Young Adults

Zoom Link: <https://uvmcom.zoom.us/j/96199519260>

CONNIE HASSETT-WALKER, PHD, MPA: The Impact of Arrest, Criminal Conviction, Incarceration, and Other Disruptive Life Events on Smoking Trajectories through Age 36*

S. ELISHA LEPINE, BA: Evaluating a Smoking Cessation Text Message Intervention for Socioeconomically-Disadvantaged Young Adults: What is Helpful and What Can Be Improved?

JOAQUIN REATEGUI: Does Dose of Vaping Prevention Messaging Impact Vaping-Related Beliefs and Behaviors in Young Adults?

JULIA C. WEST, MA: Harnessing Mass Media Substance Use Prevention Campaigns to Inform Polytobacco Use Prevention in U.S. Adolescents and Young Adults: A Systematic Review

Group 2: Smoking and Cardiac Rehabilitation

Zoom Link: <https://uvmcom.zoom.us/j/92095763354>

DIANN E. GAALEMA, PHD: Effect of Smoking Status on Changes in Cardiorespiratory Fitness in Cardiac Rehabilitation

BRIAN R. KATZ, PHD: Differences in the Relation Between Smoking Status and Either Education or Executive Function

WILLIAM A. MIDDLETON, BSC: Quality of Life in Lower Socioeconomic Status Smokers Attending Cardiac Rehabilitation

BLAIR YANT, BA: Characteristics of Hospitalized Cardiac Patients Who Smoke

Group 3: Changes in Cigarettes Per Day (CPD)

Zoom Link: <https://uvmcom.zoom.us/j/97064076538>

SOOYONG KIM, MD, MPH: Adult Smokers' Complete Switching Away from Cigarettes at 6, 9, and 12 Months After Initially Purchasing a JUUL E-Cigarette

NICOLLE M. KREBS, MS: Does Race Moderate the Effects of Reduced Nicotine Content Cigarettes Among Smokers?

JONATHAN A. SCHULZ, PHD, MPH: Tobacco Product Use Among U.S. Adults with Disabilities: Findings from the 2019 National Health Interview Survey

RHIANNON C. WILEY, BA: Factors Influencing Smoking Trajectory Among Vulnerable Populations During the COVID-19 Pandemic

Poster Session Schedule and Presenters

5:15 – 6:00 SESSION 2

Group 1: ENDS

Zoom Link: <https://uvmcom.zoom.us/j/99975128188>

KAITLYN BROWNING, PHD: Substitutability of JUUL and Other Alternative Tobacco Products for Cigarettes in an Experimental Tobacco Marketplace Among Vulnerable Populations

SULAMUNN R. M. COLEMAN, PHD: Examining the Association Between Flavor Categories of Electronic Nicotine Delivery Systems (ENDS) and Smoking Cessation Among U.S. Women of Reproductive Age, Pregnant and Not-Pregnant

NICHOLAS I. GOLDENSON, PHD: Differences in Switching Away from Cigarettes and JUUL Use Characteristics among Adult Menthol and Nonmenthol Smokers Who Purchased the JUUL System

SAUL SHIFFMAN, PHD: Changes in Dependence Over One Year Among Adult Smokers Who Switched Completely or Partially to Use of the JUUL System

Group 2: Incentives and Opioid Use

Zoom Link: <https://uvmcom.zoom.us/j/92608332125>

SYDNEY BATCHELDER, PHD: Characterizing Smokers and Non-Smokers Among Opioid-Dependent Treatment Seekers

DANA E. BOURNE, MPH: Implementation of Quitline Financial Incentives to Increase Counseling Sessions Among Specific Populations in Vermont

REBECCA COLE, BA: Cigarette Smoking in Individuals with Concurrent Posttraumatic Stress Disorder and Opioid Use Disorder

BETHANY YON, PHD: Incentivizing Pregnant Women to Quit Smoking in the Real World – A Community-Based Pilot Intervention

Group 3: Behavioral Economics

Zoom Link: <https://uvmcom.zoom.us/j/92234764960>

MICHAEL AMLUNG, PHD: Investigating Delayed Reward Discounting and its Neural Correlates as Predictors of Smoking Cessation Outcomes

TYLER G. ERATH, PHD: A Behavioral-Economic Examination of Differences in the Relative Reinforcing Value of Cigarette Smoking Among Those with Cumulative Vulnerabilities

CAROLYN G. EVELY, BS: Examining the Factor Loading Pattern of a Hypothetical Cigarette Purchase Task

ERIC A. THRAILKILL, PHD: Loss Aversion and Risk for Cigarette Smoking and Other Substance Use

Conference Agenda, Day 2

Friday, October 8

8:00 – 10:25 PAPER SESSION 3

<https://uvmcom.zoom.us/j/99025557134> PW: vcbhday2

Session Chair: **ANDREA VILLANTI, PHD, MPH**, Associate Professor, Vermont Center on Behavior and Health, Departments of Psychiatry and Psychological Science, Vermont Center on Behavior and Health, Larner College of Medicine, University of Vermont

Speakers: **Potential Anticipated and Unanticipated Impacts of FDA Bans on Characterizing Flavors in Cigarettes and Cigars**

KEVIN SCHROTH, JD, Associate Professor,
Department of Health Behavior, Society and Policy,
Rutgers University School of Public Health

Reducing Smoking in Disadvantaged and Racial/Ethnic Minority Populations

PEBBLES FAGAN, PHD, MPH, FACP, Professor and Director of the
Center for the Study of Tobacco, Department of Health Behavior and
Health Education, University of Arkansas for Medical Sciences
Fay W. Boozman College of Public Health

Effects of Menthol Ban on Smoking Behavior

MICHAEL KOTYLAR, PHARM D, Associate Professor,
Department of Experimental and Clinical Pharmacology,
University of Minnesota College of Pharmacy

Potential Impact of a Menthol Ban on Smoking Prevalence

K. MICHAEL CUMMINGS, PHD, MPH, Professor,
Department of Psychiatry and Behavioral Sciences,
Medical University of South Carolina

AUDIENCE Q&A

10:30 – 10:45 BREAK

10:45 – 12:00

PAPER SESSION 4

<https://uvmcom.zoom.us/j/98400237761>

PW: vcbhday2

Session Chair:

DUSTIN LEE, PHD, Assistant Professor of Psychiatry and Behavioral Sciences, Johns Hopkins Medicine, Johns Hopkins University

Speakers:

Potential Impacts of Menthol Ban on Cigarette Smoking in Disadvantaged and Racial/Ethnic Minority Populations

SHYANIKA W. ROSE, PHD, MA, Assistant Professor, University of Kentucky College of Medicine, Behavioral Science and Center for Health Equity Transformation

Hypothetical Impacts of Flavored Cigar Sales Restrictions on Cigar Use Behavior

JULIA CEN CHEN-SANKEY, PHD, MPP, Assistant Professor, Center for Tobacco Studies, Rutgers Biomedical and Health Sciences, Department of Health Behavior, Society and Policy, Rutgers School of Public Health

AUDIENCE Q&A

12:00 – 1:15

LUNCH AND LEARN

presented by the UVM Center on Rural Addiction ([CORA](#))

<https://uvmcom.zoom.us/j/94999034820>

PW: vcbhday2

Rural Tobacco Use: Prevalence, Considerations, and Interventions

Session Chair:

STACEY SIGMON, PHD, Director, Center on Rural Addiction; Professor, Departments of Psychiatry and Psychological Science, Vermont Center on Behavior and Health, Larner College of Medicine, University of Vermont

Speakers:

Growing Disparities Between Rural and Urban Smoking in the US

STEPHEN T. HIGGINS, PHD, Director, Vermont Center on Behavior and Health; Professor, Departments of Psychiatry and Psychological Science, Larner College of Medicine, University of Vermont

The Prevalence of Smoking and Vaping Among Rural Youth and Promising Approaches for Addressing It

ANDREA VILLANTI, PHD, MPH, Associate Professor, Departments of Psychiatry and Psychological Science, Vermont Center on Behavior and Health, Larner College of Medicine, University of Vermont

Feasibility of a Remotely-Delivered Contingency Management Intervention for Vaping Abstinence among Young Adults

BETHANY RAIFF, PHD, BCBA-D, Director, Health and Behavioral Integrated Treatments (HABIT) Research Unit, Professor, Department of Psychology, College of Science and Mathematics, Assistant Professor, Family Medicine, School of Osteopathic Medicine (SOM), Rowan University

1:15 – 3:15

PAPER SESSION 5

<https://uvmcom.zoom.us/j/94287746741> PW: vcbhday2

Session Chair:

ERIC THRAILKILL, PHD, Assistant Professor, Departments of Psychiatry and Psychological Science, Vermont Center on Behavior and Health, Larner College of Medicine, University of Vermont

Speakers:

Nicotine Reduction and Smoking

ERIC C. DONNY, PHD, Director, Tobacco Control Center of Excellence, Professor, Departments of Physiology & Pharmacology, Wake Forest University

Nicotine Reduction and Smoking in Vulnerable Populations

JENNIFER TIDEY, PHD, Professor of Behavioral and Social Science, Associate Dean for Research, Brown University School of Public Health

Messaging Around Nicotine Content in Cigarettes

ANDREA VILLANTI, PHD, MPH, Associate Professor, Departments of Psychiatry and Psychological Science, Vermont Center on Behavior and Health, Larner College of Medicine, University of Vermont

AUDIENCE Q&A

3:15

ADJOURN

Poster Session Abstracts

Session 1

GROUP 1: Youth and Young Adults

The Impact of Arrest, Criminal Conviction, Incarceration, and Other Disruptive Life Events on Smoking Trajectories through Age 36*

Connie Hassett-Walker, PhD, MPA

Norwich University

Introduction: Prior life course research has identified 3 to 6 smoking trajectories over the life course. Individuals may remain stable, fluctuate, increase, or decrease their smoking over time. Disruptive life events may cause an individual to transition from one smoking trajectory to another. Involvement with the criminal justice system can be one such disruptive event. Prior research has shown that justice system involvement (JSI) adversely impacts health (e.g., chronic medical conditions, increased substance use).

Methods: Drawing on life course and criminological labeling theories, this study examined how three types of involvement with the justice system during young adulthood – specifically getting arrested; incurring a criminal conviction; or getting incarcerated – impacted smoking trajectories and transitions during subsequent years. The PI's hypotheses included: H1 – justice system involvement would be related to increased likelihood of greater smoking over non-smoking; H2 – the likelihood of greater smoking would be higher with more serious forms of justice system involvement (i.e., incarceration as opposed to arrest); and H3 – women and men would be differentially impacted by JSI. Data from the National Longitudinal Survey of Youth (NLSY97) were analyzed via group-based trajectory modeling, latent transition analysis and multinomial logistic regression.

Results: The results show that JSI had a strong impact for both women and men, particularly for the 'chronic smoking' & 'slow increase' classes, than for the 'quitting smoking' class. The likelihood of transitioning to a worse smoking class increased as the type of JSI became more severe. Becoming a parent generally decreased the odds of being in a smoking class, as opposed to the non-smoking class, for both genders. Marriage increased the odds of being in a smoking class for women, whereas the opposite was true for men. The public policy implications of the findings for reducing smoking are discussed.

Evaluating a Smoking Cessation Text Message Intervention for Socioeconomically-Disadvantaged Young Adults: What is Helpful and What Can Be Improved?

S. Elisha LePine¹, Elias M. Klemperer, PhD¹, Catherine Peasley-Miklus, PhD¹, Julia C West, MA^{1,2} Andrea Villanti, PhD, MPH¹

¹Vermont Center on Behavior and Health, Department of Psychiatry, University of Vermont

²Department of Psychological Science, University of Vermont

Introduction: The prevalence of cigarette smoking is substantially higher among US young adults with socio-economic disadvantage than those without. Smoking cessation interventions are often less accessible to socio-economically disadvantaged young adults (SDYAs) and few interventions are tailored for this group. The present qualitative study examines perceptions of a web and text message intervention trial among this group.

Methods: 346 SDYA smokers participated in a trial of a web and text message intervention ("The tEXt Study"). Control participants (n=172) were referred to a quitline; intervention participants (n=174) received daily text messages related to quitting and weekly surveys for 12 weeks. Surveys included open-ended response items asking, "What did you find helpful about the tEXt study messages?" and "What could be improved about the tEXt study messages?" Responses to these items were inductively coded according to emergent categories.

Results: Over the 12-week study period, intervention participants provided 255 responses regarding what was helpful, and 249 regarding what could be improved. Responses most commonly reflected that study text messages motivated and encouraged participants during their quit attempt (31%) and coping strategies and tips helped to

manage their cravings (20%). Participants also mentioned that the frequency and consistency of the messages was helpful (15%), but the frequency of the messages could be increased (11%).

Discussion: Results indicate SDYA smokers were receptive to an innovative text message cessation intervention and positive about the support received. Future interventions can be improved by maximizing messages containing encouragement and coping strategies and increasing the frequency of administered support

Does Dose of Vaping Prevention Messaging Impact Vaping-Related Beliefs and Behaviors in Young Adults?

Joaquin Reategui,¹ Julia C. West, MA,^{2,3} Catherine Peasley-Miklus, PhD,^{1,2} S. Elisha LePine,^{1,2} Rhonda Williams, MES,⁴ Andrea C. Villanti, PhD, MPH^{1,2}

¹ Robert Larner, M.D. College of Medicine at the University of Vermont

² Vermont Center on Behavior and Health, Department of Psychiatry, University of Vermont

³ Department of Psychological Science, University of Vermont

⁴ Vermont Department of Health

Introduction: Preliminary studies suggest that vaping prevention messaging can increase vaping-related harm perceptions. This study evaluated the effects of vaping-prevention message dose on vaping-related harm perceptions and beliefs in young adults (YAs).

Methods: 396 Vermont YAs aged 18-24 participated in both a randomized controlled trial of vaping prevention messages and an ongoing online cohort study. Participants had varying levels of exposure to three types of vaping messages in Fall 2020, with dose of exposure categorized as low (0-1; n= 158), moderate (2; n=192), or high (3; n=46). Prospective analyses examined associations between message dose (fall 2020) and vaping-related beliefs and harm perceptions six months later (spring 2021).

Results: There were few differences in baseline characteristics across groups, however the high-exposure group had the highest prevalence of past 30-day electronic vapor product (EVP) use. High message exposure participants had greater endorsement of the following: “One 5% vape pod can contain as much nicotine as entire pack of cigarettes” (89% vs. 71%; $p = 0.022$) and “a cigarette brand low in nicotine means that it is less addictive” at follow-up (28% vs. 15%; $p = 0.035$) compared to low-exposure YAs. Conversely, the high-exposure group had lower mean perceived risk from weekly EVP use at follow-up (-0.33 points; 95% CI: -0.58, -0.074).

Conclusion: Results suggest that greater exposure to vaping prevention messages may result in more accurate nicotine beliefs, but may not increase vaping-related harm perceptions, particularly in those already using EVPs. Incorporation of vaping cessation content in prevention messaging may promote greater vaping reduction in YAs.

Harnessing Mass Media Substance Use Prevention Campaigns to Inform Polytabacco Use Prevention in U.S. Adolescents and Young Adults: A Systematic Review

Julia C. West, MA,^{1,2} Emily Pomichter, MA,² S. Elisha LePine, BA,¹ Ollie Ganz, DrPH, MSPH,³ Elias M. Klemperer, PhD,¹ Darren Mays, PhD, MPH,⁴ Robin J. Mermelstein, PhD,⁵ Andrea C. Villanti, PhD, MPH,¹

¹ Vermont Center on Behavior and Health, Department of Psychiatry, University of Vermont

² Department of Psychological Science, University of Vermont

³ Center for Tobacco Studies, Rutgers Biomedical and Health Sciences, New Brunswick, NJ

⁴ Department of Internal Medicine, The Ohio State University; Center for Tobacco Research, The Ohio State University Comprehensive Cancer Center

⁵ Department of Psychology and Institute for Health Research and Policy, University of Illinois at Chicago

Introduction: The high prevalence of polytabacco and polysubstance use among adolescents and young adults (AYAs) may be driven by beliefs that these products pose little addiction risk or harm to health and are socially acceptable. This study aimed to identify message themes and delivery strategies producing the greatest effect on substance-related beliefs to inform messages targeting polytabacco use in AYA.

Methods: Electronic searches were conducted in 5 databases in March 2021. Two independent reviewers coded the articles and included studies fell into one of two groups: 1) outcome evaluations of mass media prevention interventions targeting AYA (aged 12-29) beliefs about alcohol, marijuana, and/or tobacco; or 2) formative studies testing message themes and delivery strategies to inform mass media prevention interventions targeting AYA beliefs about alcohol, marijuana, and/or tobacco.

Results: Electronic searches discovered 11,310 publications for title and abstract review (10,730 of which were excluded). Full-text review was conducted for 578 articles (260 outcome evaluations and 318 formative articles), resulting in 87 included studies: 55 included outcome evaluations and 32 formative research articles. Included evaluations comprised 3 studies on alcohol (3), marijuana (7) and tobacco (39) prevention. No campaigns targeted the use of more than one substance or product. One campaign addressed isolated alcohol and marijuana use, and 5 targeted “drug use.”

Conclusions: No outcome evaluations have addressed campaigns focused on polytobacco or polysubstance use. Findings highlight the need for mass media prevention efforts to target young peoples’ beliefs about use of multiple tobacco products as well as prevention campaigns tailored to young adults.

Session 1

GROUP 2: Smoking and Cardiac Rehabilitation

Effect of Smoking Status on Changes in Cardiorespiratory Fitness in Cardiac Rehabilitation

Gaalema, DE, Mahoney, K, Yant, B, Savage, P, Rengo, J, Khadanga, S, Ades, P.

University of Vermont, University of Vermont Medical Center

Introduction: Continued smoking in patients with cardiovascular disease greatly increases risk for subsequent cardiac events. Smoking is associated with reduced aerobic capacity and lower adherence to secondary prevention strategies like cardiac rehabilitation (CR), yet aerobic fitness among smokers attending CR is understudied.

Purpose: Examine the association between smoking at the time of hospitalization and gains in cardiorespiratory fitness levels during CR.

Design: Secondary analysis of data from two randomized clinical trials testing interventions to increase CR attendance.

Methods: Peak Metabolic Equivalents of Task (MET_{peak}) was determined via a symptom-limited exercise tolerance test (ETT) at entry and exit from CR. Baseline demographics, self-reported smoking status, and number of CR sessions completed were collected. Smokers were defined as patients reporting smoking at hospitalization. Multiple linear regression was used to examine the impact of smoking status on exit MET_{peak} controlling for age, sex, surgical diagnosis, CR sessions completed, baseline body mass index (BMI) and entry MET_{peak} .

Results: The sample included 129 patients (mean age 58.5 ± 8.9 yrs, 32% female). Individuals that were smokers ($N=42$) completed fewer CR sessions (21.3 vs. 27.8, $p=0.01$). Overall, mean MET_{peak} improved during CR (5.2 to 6.6, $p<0.0001$). Smoking predicted smaller MET_{peak} gains ($\beta = -0.904$, $p=0.016$), as did older age ($\beta = -0.054$, $p=0.009$), higher BMI ($\beta = -0.055$, $p=0.031$), higher intake MET_{peak} ($\beta = -0.171$, $p=0.018$), and fewer CR sessions completed ($\beta = 0.043$, $p<0.0001$).

Conclusions: Smoking at the time of hospitalization was a significant predictor of smaller improvements in MET_{peak} during CR program, suggesting that smoking negatively impacts cardiorespiratory fitness. Smoking cessation should remain a top priority for patients entering CR.

Differences in the Relation Between Smoking Status and Either Education or Executive Function

Brian R. Katz, Sherrie Khadanga, & Diann E. Gaalema

University of Vermont, University of Vermont Medical Center

Introduction: Patients who continue smoking following cardiac events or surgeries have an increased risk of morbidity and mortality. During hospitalizations, most patients abstain from smoking, but relapse post hospitalization is high.

Purpose: The aim of this study was to collect demographic information and smoking status, of hospitalized cardiovascular patients that had a Cardiac Rehabilitation qualifying diagnosis for the purposes of designing a post-hospitalization tobacco cessation intervention.

Design: Quality Improvement Study

Methods: Between 7/30 and 9/2, patients admitted to the Cardiology and Cardiothoracic Surgery floors at the University of Vermont Medical Center were screened for eligible cardiac diagnoses including: myocardial infarctions, percutaneous coronary intervention, coronary artery bypass graft, valve replacement, or valve repair. Demographic information (age, sex, location) and smoking information (smoking status, type/amount smoked) from those with a qualifying diagnosis was drawn from the clinical record.

Results: Of 103 eligible patients screened during the designated time period, 16 patients were characterized as current smokers. Current smokers were younger (59 vs. 71 years, $p < .01$) but were not different from noncurrent smokers by location or diagnosis ($ps > .05$). However, the majority of current smokers were residing in rural counties (75%).

Conclusions: Patients who are current smokers are young and reside in rural areas, suggesting a remote smoking cessation intervention would be optimal.

Session 1

GROUP 3: Changes in Cigarettes Per Day (CPD)

Adult Smokers' Complete Switching Away From Cigarettes at 6, 9, and 12 Months After Initially Purchasing a JUUL E-Cigarette

Sooyong Kim, MD, MPH,¹ Saul Shiffman, PhD,¹ Nicholas I. Goldenson, PhD²

¹ PinneyAssociates Inc., Pittsburgh, PA

² Juul Labs Inc., Washington, DC

Introduction: Electronic nicotine delivery systems (ENDS) have the potential to benefit public health if smokers completely switch from cigarettes to ENDS for extended periods of time.

Methods: We analyzed rates of self-reported 6-month repeated point-prevalence switching (RPPS) 12 months after a JUUL Starter Kit purchase (defined as no past-30-day smoking 6, 9, and 12 months), and factors associated with the 6-month RPPS outcome.

Results: Among adult smokers (age ≥ 21) with evaluable data ($N = 12,537$), 21.6% reported 6-month RPPS. Smokers with lighter baseline smoking history and lower baseline cigarette dependence were more likely to subsequently report 6-month RPPS. The 6-month RPPS was also associated with patterns of and responses to JUUL use: daily use of JUUL at month 3 (OR=2.25, 95% CI=1.96–2.60) and month 6 (OR=1.81, 95% CI=1.48–2.22) was associated with greater odds of 6-month RPPS, as was greater subjective reinforcing effects from JUUL use (assessed by the mCEQ, month-3: OR=1.70, 95% CI=1.57–1.83; month-6: OR=1.15; 95% CI=1.06–1.25). Even among smokers who did not meet the criteria of 6-month RPPS (i.e., smoking at least once), 35.5% reported no past-30-

day smoking on at least one follow-up, and their daily cigarette consumption was substantially reduced compared to baseline.

Conclusion: Approximately one-fifth of adult smokers reported no past-30-day smoking 6, 9, and 12 months after purchasing JUUL. Greater use of JUUL and stronger subjective reinforcing effects was associated with smokers' complete switching, validating the potential for ENDS to substitute for smoking, with potential for positive impacts on individual and population health.

Disclosures: The study and analyses were sponsored by JUUL Labs, Inc. through Pinney Associates, SK and SS provide consulting services on tobacco harm reduction on an exclusive basis to JUUL Labs, Inc. NIG is an employee of JUUL labs, Inc.

Does Race Moderate the Effects of Reduced Nicotine Content Cigarettes Among Smokers?

Nicolle M. Krebs¹, Wenxue Lin¹, Sophia I. Allen¹, Kimberly Horn², Junjia Zhu¹, Jonathan Foulds¹, A. Eden Evins³, Joshua Muscat¹

¹Penn State College of Medicine, Department of Public Health Sciences, Hershey, PA

²Virginia Tech - Carilion Fralin Biomedical Research Institute, Department of Population Health Sciences, Roanoke, VA

³Massachusetts General Hospital, Department of Psychiatry, Boston, MA

Background: Reduced nicotine content (RNC) cigarettes may reduce nicotine dependence and facilitate smoking cessation, but the effect may vary in population subgroups. We examined racial differences in nicotine and smoking reduction in smokers switching to RNC cigarettes.

Methods: We conducted a secondary analysis of two pooled randomized clinical trials in smokers with low socioeconomic status or a mental health disorder. Both trials randomized participants into a usual nicotine content group (UNC: nicotine content=11.6 mg/cigarette) or gradual nicotine reduction group (RNC: nicotine content=11.6 mg/cigarette -> 0.2 mg/cigarette) over 18 weeks. This analysis focused on whether race (Black vs. White) moderated the effects of RNC (vs. UNC) cigarettes at week 18. Outcomes included cigarettes per day (CPD), Fagerstrom Test for Cigarette Dependence (FTCD) scores, plasma cotinine, and exhaled carbon monoxide (CO). Linear regression models examined the race by treatment interaction effect and mean differences (MD) compared treatment groups within race.

Results: At baseline, Blacks (n=104) had lower CPD (p=0.02), lower CO (p<0.01), and lower cotinine (p=0.04) than Whites (n=299). Reductions in CPD and FTCD scores were similar in Black and White smokers (White CPD MD -4.39 (-7.47, -1.32); Black CPD MD -4.28 (-9.19, 0.63); White FTCD MD -0.99 (-1.52, -0.46); Black FTCD MD -0.82 (-1.66, 0.03)). Both White and Black RNC smokers had significantly lower cotinine values at 18 weeks. Tests for interaction by race were not significant.

Conclusion: Black and White smokers experience similar smoking outcomes when using RNC cigarettes.

Tobacco Product Use Among U.S. Adults with Disabilities: Findings from the 2019 National Health Interview Survey

Jonathan A. Schulz¹, PhD, MPH, Julia C. West¹, MA, Andrea C. Villanti¹, PhD, MPH

¹ Vermont Center on Behavior and Health, University of Vermont

Objective: To estimate the current prevalence of cigarette, e-cigarette, cigar, pipe, and smokeless tobacco use by adults in the United States who reported having a disability.

Methods: Data from the 2019 US National Health Interview Survey were used to estimate the prevalence of tobacco product use by type of disability. Disability was defined as reporting "a lot of difficulty/cannot do at all" to questions on vision, hearing, mobility, cognitive, communication, and self-care; comparison categories were "no difficulty" (no disability) and "some difficulty." Bivariate analyses examined the association between tobacco product use and disability type.

Results: Compared to adults who reported "no difficulty," the prevalence of current cigarette use was higher for adults who reported "a lot of difficulty/cannot do at all" to vision, hearing, mobility, and cognitive disabilities. The

prevalence of current e-cigarette use was higher for adults with a cognitive disability (7.6% vs. 4.1%) and the prevalence of current pipe use was higher for those who reported a visual disability (2.9% vs. 1.0%) than those without. The prevalence of current smokeless tobacco use was lower for those who reported a communication disability compared to those without (0.6% vs. 2.4%). Current cigar use was similar across each disability type.

Conclusion: Cigarette smoking was prevalent in people with any disability and across multiple types of disabilities. Other tobacco use differed in prevalence by disability type. Tobacco prevention and cessation programs and policies may need to be adapted to best serve adults with varying disabilities and ultimately reduce health inequities.

Factors Influencing Smoking Trajectory Among Vulnerable Populations During the COVID-19 Pandemic

Rhiannon C. Wiley, Anthony C. Oliver, Miranda B. Snow, Janice Y. Bunn, Anthony J. Barrows, Jennifer W. Tidey, Dustin Lee, Stacey C. Sigmon, Diann E. Gaalema, Sarah H. Heil, Catherine Markesich, Andrea C. Villanti, Stephen T. Higgins

Aim: Accumulating evidence suggests that people have changed their smoking in response to the ongoing COVID-19 pandemic. It remains unclear whether and how the pandemic has affected the smoking of individuals most at risk for tobacco-related health disparities. The current study examined changes in smoking among these populations in response to the COVID-19 pandemic.

Methods: Web-based surveys were distributed to 709 adults with socioeconomic disadvantage, comorbid affective disorders, or opioid use disorder who currently smoked cigarettes and had participated in a previous trial investigating the effects of very low nicotine content (VLNC) cigarettes in daily smokers from vulnerable populations. Perceptions of the danger and immediacy of the ongoing pandemic, current smoking, current psychiatric symptoms, and changes in other health-related behaviors in response to the pandemic were examined. Repeated measures analysis was used to compare participants' self-reported pre-COVID (i.e., February of 2020) and current cigarettes per day (CPD). Risk factors associated with tobacco use were included as covariates in the analyses. Follow-up analyses assessed the association between risk factors and change in CPD.

Results: Among 332 survey respondents (46.8% response rate), 84.6% were current smokers. Overall, current CPD was higher than pre-COVID CPD (12.9 ± 1.0 vs 11.5 ± 1.0 ; $p < .001$). Older participants ($p = .004$) and those with only a high school degree compared to some college ($p = .04$) had a higher CPD at both timepoints. Opioid-dependent smokers had a higher CPD at both timepoints than smokers with affective disorders ($p < 0.001$). There was no significant main effect of menthol status, sex, ethnicity, study site, assigned VLNC dose in the parent study, or current depression, anxiety or employment status on CPD. Follow-up analyses indicated a significant relationship between employment status and change in CPD ($p = .02$), such that individuals who were unemployed experienced a greater increase in CPD than those who were employed ($\Delta\text{CPD} = 2.8 \pm 0.9$ vs. 0.7 ± 0.7).

Conclusions: Smoking has generally increased among vulnerable populations during the COVID-19 pandemic. Unemployment during the pandemic might serve as a risk factor for experiencing steeper increases in smoking.

SESSION 2

GROUP 1: ENDS

Substitutability of JUUL and Other Alternative Tobacco Products for Cigarettes in an Experimental Tobacco Marketplace Among Vulnerable Populations

Kaitlyn Browning, Ph.D.¹, Tyler Nighbor, Ph.D.¹, Anthony C. Oliver, Ph.D.¹, Ellaina N. Reed, B.A.¹, Michael J. DeSarno, M.S.¹, Warren K. Bickel, Ph.D.², & Stephen T. Higgins, Ph.D.¹

¹University of Vermont, ²Virginia Tech Carilion Research Institute

Introduction: The experimental tobacco marketplace (ETM) is an online marketplace wherein one can investigate the substitutability of alternative tobacco products for cigarettes. The ETM is useful for modeling the effects of potential policy changes on use of various concurrently available products. To our knowledge, the ETM has not been used to investigate cigarette demand and product substitutability among populations especially vulnerable to smoking.

Methods: In this study, participants were 24 adult daily smokers with comorbid psychiatric conditions or socioeconomic disadvantage. In each session, cigarette prices increased while prices for other products (JUUL, little cigars and cigarillos (LCCs), snus, chew, gum, lozenges) remained fixed. Across three ETM sessions, either all products, all products except LCCs, or all products except JUUL were available. Linear regression was performed on group mean data as a function of log-transformed cigarette price to determine demand and substitution.

Results: Cigarette demand decreased as a function of increasing price in all sessions, as evident by significant non-zero slopes ($p \leq .001$). When all products were available, JUUL substituted for cigarettes. That is, JUUL purchasing increased as a function of increasing cigarette price, as evident by a positive, significant non-zero slope ($p = .002$). When JUUL was unavailable, LCCs did not substitute for cigarettes, with a slope not significantly different than zero ($p = .47$). When LCCs were unavailable, the JUUL slope remained positive, but not significantly so ($p = .06$). Participants rarely purchased other products.

Conclusions: Overall, JUUL was the preferred substitute when constraints on cigarettes increased in the current study with vulnerable populations, suggesting that JUUL availability could be an important moderator of the effect of tobacco regulatory policies on conventional combusted cigarettes. We saw no evidence that LCCs substituted for cigarettes, but that observation should be interpreted cautiously pending further investigation.

Examining the Association Between Flavor Categories of Electronic Nicotine Delivery Systems (ENDS) and Smoking Cessation Among U.S. Women of Reproductive Age, Pregnant and Not-Pregnant

Sulamunn R. M. Coleman, PhD, Janice Y. Bunn, PhD, Andrea C. Villanti, MPH, PhD, Stephen T. Higgins, PhD
University of Vermont

Introduction: Many women of reproductive age (WRA) who smoke conventional cigarettes turn to electronic nicotine delivery systems (ENDS) in an effort to reduce or quit smoking. As flavors may be of special appeal to this population, determining the extent to which use of flavored ENDS predicts quitting smoking represents an opportunity for enhanced tobacco regulation.

Methods: This study examined whether use of flavored ENDS predicted quitting current use of conventional cigarettes among WRA ($n=501$; 22 pregnant women, 479 not pregnant women) in Waves 3 (W3) and 4 (W4) of the Population Assessment for Tobacco and Health Study. The W3 sample included women who reported dual use (i.e., conventional cigarettes and ENDS), including women who did and did not endorse using ENDS to quit or cut down on smoking.

Results: WRA who reported regular use of flavored ENDS in W3 were more likely to report that they had quit smoking in W4 compared to WRA who reported using only tobacco-flavored ENDS in W3 (Wald Chi-Square=12.61, $p < .001$); that relationship was observed among women who were pregnant in W4 (49.6% quit [95%CI=17.5-82.0%] vs. 0.0% [95%CI=0.0-0.2%] $p = .001$) and women who were not-pregnant in W4 (12.3% quit [95%CI=7.7-19.0%] vs. 2.3% [95%CI=0.5-9.5%] $p = .02$). Importantly, these results pertain both to WRA who do and do not report using ENDS to quit or cut down on smoking.

Conclusion: In summary, this study demonstrated that use of flavored ENDS may help WRA transition away from conventional cigarettes and may help to inform policies regulating the availability of flavored ENDS.

Differences in Switching Away from Cigarettes and JUUL Use Characteristics Among Adult Menthol and Nonmenthol Smokers Who Purchased the JUUL System

Nicholas I. Goldenson, PhD^a, Erik M. Augustson, PhD, MPH^a, Saul Shiffman, PhD^b

^a Juul Labs, Inc., ^b PinneyAssociates, Inc.

Objectives: Studies have assessed switching away from cigarettes among adult smokers who use electronic nicotine delivery systems (ENDS), but there is little data assessing differences in likelihood of switching or ENDS use characteristics by menthol smoking.

Methods: Adult (age≥21) established smokers who purchased a JUUL starter kit (N=15,036) completed baseline and 1-, 2-, 3-, 6-, 9- and 12-month assessments. Switching (no past-30-day smoking) was assessed at each follow-up. Repeated-measure logistic regression models evaluated association of menthol smoking and switching across 1 year.

Results: Menthol smokers (41.2% of sample) were, on average, younger than nonmenthol smokers; a greater proportion were female, African-American, and had annual income <\$50,000. On average, menthol smokers smoked fewer cigarettes/day, had lower levels of cigarette dependence, and had smoked regularly for fewer years. Across all follow-ups, menthol (vs. nonmenthol) smokers were more likely to switch (42.6% vs. 38.8%: OR[95% CI]=1.17[1.11, 1.23]); this association remained significant after covariate adjustment (OR[95% CI]=1.13[1.05, 1.20]). A significantly greater proportion of menthol smokers (53.8%), compared to nonmenthol smokers (22.9%), primarily used Menthol/Mint flavor JUULpods; only 6.4% of menthol smokers primarily used Tobacco flavors (vs. 25.9% of nonmenthol smokers).

Conclusions: Adult menthol smokers who purchased JUUL differed from nonmenthol smokers in their sociodemographic and smoking characteristics. Adjusted switch rates were significantly higher among menthol smokers. A substantial and significantly greater proportion of menthol smokers used Menthol/Mint-flavor JUULpods, and few menthol smokers used tobacco flavors. The availability of ENDS in non-tobacco flavors may be particularly important for menthol smokers who would not otherwise quit.

Changes in Dependence Over One Year Among Adult Smokers Who Switched Completely or Partially to Use of the JUUL System

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Introduction: Electronic nicotine delivery systems (ENDS) are intended to serve as substitutes for combustible cigarettes among adult smokers. It is of interest to understand how levels of dependence change as smokers switch from smoking to ENDS.

Objectives: This study examined changes in: (1) levels of dependence as adult established smokers switch completely or partially from smoking to JUUL, and (2) levels of dependence on JUUL over the course of 12 months among adult smokers who completely switched.

Methods: Adult (age≥21) established smokers who purchased JUUL in 2018 completed online surveys at baseline and 1-, 2-, 3-, 6-, 9- and 12-month follow-up assessments. Mixed-effects models evaluated within-participant changes in baseline cigarette dependence to JUUL dependence at follow-up, assessed with the Tobacco Dependence Index from the Population Assessment of Tobacco and Health Study (Range: 1-5).

Results: Dependence was significantly lower when smokers were using JUUL compared to their own baseline cigarette dependence ($p < 0.0001$), when smokers had switched completely away from smoking to JUUL as well as when they were both using JUUL and smoking. Among smokers who used JUUL exclusively mean dependence significantly increased ($p < .05$) but the magnitude of the increase was small (Month 12–Month 1=0.045).

Conclusions: Dependence decreased as smokers transitioned from cigarette smoking to use of JUUL, for both smokers who completely switched and among those who continued smoking (dual users). Over 12 months of use, increases in JUUL dependence scores were small. Shift of dependence from cigarettes to ENDS may be one mechanism underlying the process of switching.

Disclosure: This study and analyses were supported by Juul Labs, Inc. Authors NIG and RAB are full-time employees of Juul labs, Inc. Through PinneyAssociates, author SS provides consulting services on tobacco harm reduction on an exclusive basis to Juul Labs, Inc.

SESSION 2

GROUP 2: Incentives and Opioid Use

Characterizing Smokers and Non-Smokers Among Opioid-Dependent Treatment Seekers

Sydney Batchelder, Rhiannon C. Wiley, Kelly Peck, Stacey C. Sigmon

Background: People with opioid use disorder (OUD) experience elevated rates of smoking, greater adverse health outcomes, and have more difficulty quitting smoking than the general population. Identifying characteristics that distinguish smokers from nonsmokers among individuals with OUD may help elucidate risk and protective factors related to tobacco use among this population.

Methods: Data for this project were collected from opioid-dependent adults participating in two ongoing 6-month randomized trials examining the efficacy of interim buprenorphine treatment. We compared individuals who reported current smoking behavior at intake to those who did not smoke on baseline demographic, psychological, and substance use characteristics.

Results: Among 96 participants, 72 reported current smoking (75%). Smokers consumed 17.7 (± 9.7) cigarettes per day on days they used opioids, and 17.5 (± 13.0) cigarettes on days they did not. Smokers and nonsmokers did not differ on sex, age, race, education, or employment status. There were no differences between groups on age of substance use initiation, other drug use, overdose history, or depression and anxiety symptoms at baseline. Individuals who were current smokers were more likely to have a history of IV opioid use than those who were not current smokers (55.6% vs. 27.3%; $\chi^2 [1, N=96] = 4.32, p = 0.38$).

Conclusions: Smokers and non-smokers largely did not differ on demographic, psychological, or substance use variables at baseline. Non-smokers were less likely to have taken opioids intravenously, potentially indicating a less risk-preferring behavioral pattern related to substance use. Results should be interpreted with caution given the small number of nonsmokers in the present analyses.

Implementation of Quitline Financial Incentives to Increase Counseling Sessions Among Specific Populations in Vermont

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Tobacco Control Program, Health Promotion and Disease Prevention, Vermont Department of Health

Introduction: Pregnant/post-partum Vermonters use tobacco at twice the national average. Medicaid or uninsured Vermonters use tobacco at nearly three times that of those privately insured. Among youth and young adults, nearly one-third of past 30-day smokers used menthol cigarettes.

Methods: To increase quit attempts among disparate populations, the Vermont Tobacco Program implemented financial incentives for completed coaching sessions through its quitline, 802Quits. In 2012, 802Quits adopted National Jewish Health's (NJH) protocol for people who are pregnant/post-partum that provided up to \$65 in incentives. In March 2021, 802Quits launched additional incentive protocols:

- The pregnancy and post-partum protocol with increased incentives up to \$250.
- The Medicaid/uninsured protocol, with incentives up to \$150.
- The menthol tobacco protocol, with incentives up to \$50.

Vermont is the only NJH client using all three incentives to increase quitline enrollment and the conversion rate from first-time callers to callers completing the maximum number of counseling sessions. Paid digital media campaigns, tailored to reach clinicians and Medicaid insured or those uninsured who use tobacco, were marketed to increase awareness of the new incentives and drive enrollment. From March through June 2021, incentives were distributed to four pregnant/post-partum callers, 30 menthol callers, and 155 Medicaid/uninsured callers.

Results: Among pregnant/post-partum callers to 802Quits, there was a 75% increase in calls 1-5 and a 50% increase in calls 6-10 over previous year. Comparing March through June 2021 call data over previous year, 802Quits recorded an increase of 16.8% for first-time callers and 6.9% for calls 2 - 5, suggesting incentives increase call completion.

Cigarette Smoking in Individuals with Concurrent Posttraumatic Stress Disorder and Opioid Use Disorder

Rebecca Cole, BA, Kelly Peck, PhD

Vermont Center on Behavior and Health, University of Vermont

Introduction: Posttraumatic stress disorder (PTSD) and opioid use disorder (OUD) are both associated with cigarette smoking and high levels of nicotine dependence. Thus, individuals with concurrent PTSD and OUD may be especially vulnerable to smoking-related health risks. This study examined smoking prevalence and frequency in individuals with concurrent PTSD and OUD to determine whether smoking frequency varied by trauma type.

Methods: Thirty adults completed an intake assessment and were enrolled in a randomized trial examining the efficacy of prolonged exposure therapy for treating PTSD in individuals with concurrent PTSD and OUD. At intake, participants completed a demographic and drug history questionnaire, Life Events Checklist for DSM-V, and Clinician Administered PTSD Scale for DSM-5. Independent-t tests were conducted to examine associations between trauma type and number of cigarettes smoked.

Results: The majority of participants (73.3%) were smokers. Smokers reported smoking an average of 15.3 cigarettes daily. Participants reported an average of 11.4 (SD=3.7) lifetime traumatic events. The most frequently reported traumas were physical assault (100%), sexual assault (87%), and transportation accidents (87%). However, there was no association between trauma type and cigarettes smoked daily.

Discussion: Smoking prevalence in this sample was greater than previously reported in individuals with PTSD and similar to individuals with OUD. Among individuals with concurrent PTSD and OUD, trauma type may not be associated with cigarette smoking. Future studies with larger samples of individuals with concurrent PTSD and OUD should examine other predictors of cigarette smoking. Such efforts may inform smoking interventions in this vulnerable population.

Incentivizing Pregnant Women to Quit Smoking in the Real World – A Community-Based Pilot Intervention

Bethany Yon, PhD¹, Rhonda Williams, MES¹, Jennifer Wedin, RN¹, Lisa Underhill, BSN, RN, RN-BC, CLC², Laurin Kasehagen, MA, PhD³

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Background: Smoking during pregnancy is a leading preventable cause of poor pregnancy outcomes. Research-based contingency management strategies yield quit rates of ~30% during pregnancy, compared to 4% with traditional smoking cessation programs. This pilot study assessed the feasibility of translating an efficacious University of Vermont research-based intervention, into a community setting delivered by the Vermont Department of Health.

Methods: Community partners received tobacco treatment training. Pregnant women who smoked were recruited from the Women Infants and Children program and Rutland Women's Healthcare. Women were provided in-person counseling based on the 5A's during scheduled meetings (up to 36) and received gift cards throughout pregnancy and 3 months postpartum contingent upon biochemically-verified smoking abstinence (salivary cotinine <30ng/ml). Abstinence monitoring began with high frequency (3 visits/week), tapering through postpartum to biweekly. Gift card values began at \$15, increasing by \$5 for consecutive negative samples, to \$40 maximum. Participants completed three surveys (enrollment, 4-6 weeks postpartum, 6-12 months postpartum) assessing smoking habits and barriers/facilitators of treatment engagement and success.

Results: From 2018-2020, we enrolled 20 participants. Six (30%) self-reported quitting tobacco at some point during the intervention, and three (15%) reported sustained abstinence at study completion. Facilitators of treatment engagement and success included ongoing support from staff, accountability of regular testing, and gift cards for baby supplies.

Conclusions: Challenges incorporating recruitment into clinical workflows limited enrollment. However, results suggest it is feasible to translate a research-based smoking cessation program into community settings. Consistent local champions may help achieve greater enrollment/retention and higher quit rates.

SESSION 2

GROUP 3: Behavioral Economics

Investigating Delayed Reward Discounting and its Neural Correlates as Predictors of Smoking Cessation Outcomes

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⁵ Department of Psychology, University of Georgia

Background: Delayed reward discounting (DRD) is a behavioral economic index of impulsivity, with a recent systematic review indicating steeper DRD predicts smoking relapse. Less is known about how the neural correlates of DRD relate to smoking cessation outcomes. This functional MRI study examined whether DRD decision-making and associated neural activity predict smoking relapse in adult smokers.

Methods: 41 adult smokers (32% female, $M_{age}=40.5$, $M_{cigarettes/day}=22.2$, $M_{FTND}=4.9$) who were motivated to quit smoking participated in a fMRI scan including a monetary DRD task. Participants then completed a nine-week smoking cessation protocol that combined nicotine replacement therapy and weekly counseling. Participants were categorized into relapse ($n=23$) or non-relapse ($n=18$) groups based on self-reported smoking and expired CO.

Results: Participants who later relapsed exhibited significantly steeper DRD in the scanner compared to the non-relapse group ($p<.001$, $\eta^2_p = .24$). DRD choices were associated with significant BOLD activation in a network of brain regions implicated in discounting decision-making, including the middle frontal gyrus, anterior insula, precuneus, dorsal striatum, and thalamus. Participants who did not relapse exhibited significantly greater activation when choosing immediate rewards in bilateral anterior insula, parahippocampal gyrus, dorsolateral prefrontal cortex, and orbitofrontal cortex. ($ps<.038$, $ds .32-.72$).

Discussion: These results replicate prior research indicating that impulsive DRD is associated with smoking relapse. This study extends understanding of relapse by showing that differential activation in brain areas involved in cognitive control, interoceptive processing, and memory processing may contribute to poor smoking cessation outcomes.

A Behavioral-Economic Examination of Differences in the Relative Reinforcing Value of Cigarette Smoking Among Those with Cumulative Vulnerabilities

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Introduction: Risk for smoking varies in an orderly, cumulative manner in association with the presence of co-occurring vulnerabilities. An important question examined in the present study is how the relative reinforcing effects of smoking vary across individuals with varying levels of cumulative vulnerability. Reinforcement is widely recognized to be the behavioral process underpinning chronic smoking.

Methods: We used data from 775 adult, daily smokers who participated in a 12-week multisite controlled trial evaluating the addiction potential of cigarettes differing in nicotine content. Vulnerabilities included rural residence, current substance use disorder, current affective disorder, low educational attainment, poverty, unemployment, physical disability. Participants were categorized as having 0-1 (low), 2-3 (moderate), or 4-5 (high) cumulative vulnerabilities. We used the hypothetical cigarette purchase task (CPT) to characterize the relative reinforcing effects of participant usual-brand cigarettes at a trial baseline assessment. The CPT is a valid behavioral-economic

measure of the relative reinforcing effects of smoking in which participants estimate how much they would smoke (demand) in a 24-hr period under escalating constraints on cigarettes (price). Demand is characterized using two factors: Amplitude (demand under minimal cost) and Persistence (demand despite increasing cost). Analysis of covariance was used to analyze study results.

Results: Demand Amplitude ($F[2,709]=16.04, p<.0001, \eta^2=.04$) and Persistence ($F[2,709]=8.35, p=.0003, \eta^2=.02$) each increased corresponding to increasing cumulative vulnerability, but effect size was larger for Amplitude compared to Persistence. With Amplitude, demand differed significantly between each level of cumulative vulnerability in post-hoc testing. With Persistence, the low and moderate groups each differed from the highest level but not each other.

Conclusions: Cumulative vulnerability is associated with a pervasive increase in the relative reinforcing effects of smoking encompassing demand Amplitude and Persistence, although changes in Amplitude are especially robust and may be an important clinical target for reducing smoking in vulnerable populations.

Examining the Factor Loading Pattern of a Hypothetical Cigarette Purchase Task

Carolyn G. Evemy, Allison N. Kurti, PhD, Joan M. Skelly, PhD, Norman A. Medina, BS, Harley Johnson, BS, Stephen T. Higgins, PhD

Introduction: The cigarette purchase task (CPT) is a valid behavioral-economic measure of demand that has smokers estimate hypothetical cigarette consumption under a range of escalating prices. The task involves no experimenter exposure of participants to smoking. CPT demand is measured in terms of five indices: Intensity (cigarettes consumed at \$0), O_{\max} (the highest expenditure a participant will incur), P_{\max} (the financial price associated with peak expenditure), Breakpoint (a price at which one would quit smoking rather than incur the cost), and Elasticity (the change of consumption as a function of increasing price). Out of concerns for collinearity, several prior studies have investigated a more parsimonious CPT latent-factor structure for these 5 derived indices reporting a two-factor solution. The present study examined whether that two latent-factor solution extends to pregnant women who smoke, a unique and highly vulnerable population of smokers due to the additional stigma and adverse effects associated with smoking during pregnancy. To our knowledge, this study is the first to examine this question with pregnant women.

Methods: 665 women completed the CPT as part of recruitment for a remote contingency management intervention to promote smoking cessation among pregnant women. A principal component analysis with a standard regression coefficient >0.40 on any particular factor was used to determine the loading pattern for the current analysis.

Results: Factor analysis confirmed a two-factor solution to the CPT accounting for 87% of the variance in the CPT indices with demand Intensity and O_{\max} loading onto one factor (i.e., Amplitude or volumetric consumption independent of price) and O_{\max} , P_{\max} , Breakpoint, and Elasticity loading onto the second factor (i.e., Persistence or consumption as a function of price).

Discussion: These results are consistent with prior CPT studies reporting a two-factor solution in other populations and extend them to pregnant women. These results further support the potential utility of using the CPT to examine individual differences in smoking among pregnant women in an efficient and ethical manner.

Loss Aversion and Risk for Cigarette Smoking and Other Substance Use

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Introduction: Cigarette smoking is among the leading preventable causes of global morbidity and mortality. We aimed to determine whether individual differences in loss aversion, a bias in decision-making wherein losses are valued greater than gains, predicts smoking and other addiction risk.

Methods: Current daily cigarette smokers (> 10 cigarettes per day) and never smokers (< 100 cigarettes lifetime) were compared on a measure of loss aversion after accounting for delay discounting, a decision-making bias strongly associated with cigarette smoking. Loss aversion was measured as willingness to accept hypothetical 50-50 gambles that offered a range of monetary gain and loss amounts. Delay discounting was measured with the 27-item Monetary Choice Questionnaire. Cigarette smokers (n = 181) and never-smokers (n = 237) were recruited using Amazon Mechanical Turk and matched on gender, educational attainment, and age. All completed items related to current cigarette smoking, alcohol use, other drug use, sleep problems, and depressed mood, and task-based measures of loss aversion and delay discounting.

Results: Smokers were less loss averse (accepted more gambles) than never-smokers, even after accounting for delay discounting. Loss aversion was also a significant independent risk factor for alcohol and other drug use, although not other behavioral-health conditions (i.e., sleep disturbance, depressed mood). Median splits of the entire sample revealed that co-occurring low loss aversion and high delay discounting were independently associated with greater risk for patterns of substance use.

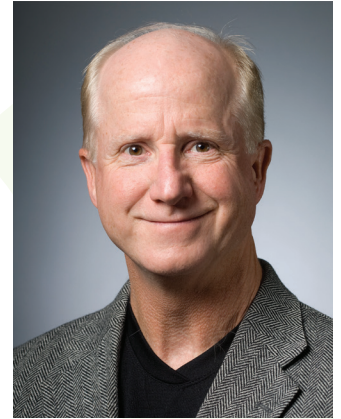
Conclusion: Loss aversion deserves attention as a protective factor and potential target for preventive intervention for substance use and addiction.

Conference Kickoff Biographies

Stephen T. Higgins, PhD

Director, Vermont Center on Behavior & Health

Stephen T. Higgins, PhD, is the director of the Vermont Center on Behavior and Health at the Larner College of Medicine, University of Vermont and is the principle investigator on five NIH grants on the general topic of behavior and health, including the UVM Center of Biomedical Research Excellence (COBRE) and the Tobacco Center of Regulatory Science (TCORS). He is the Virginia H. Donaldson Endowed Professor of Translational Science in the departments of psychiatry and psychological science and serves as vice chair of psychiatry. His research centers around behavioral economics and behavioral pharmacology to investigate tobacco, substance use, and other health-related risk behaviors in vulnerable populations. Dr. Higgins' projects focus on examining mechanisms underpinning vulnerability to tobacco and other risk behaviors, treatment interventions to reduce them and improve health outcomes, and regulatory science. He has held many national scientific leadership positions, including terms as president of the College on Problems of Drug Dependence and the American Psychological Association's Division on Psychopharmacology and Substance Abuse. He is the author of more than 400 journal articles and invited book chapters and editor of a dozen volumes and therapist manuals in the area of behavior and health.



Patricia Prelock, PhD

Provost and Senior Vice President, University of Vermont

Patricia Prelock, Ph.D., is provost and senior vice president of the University of Vermont, professor of communication sciences and disorders, and professor of pediatrics in the Larner College of Medicine at the University of Vermont. Dr. Prelock coordinates parent training programs designed for caregivers of children with ASD and has been awarded more than 11 million dollars in university, state and federal funding as a PI or Co-PI to develop innovations in interdisciplinary training supporting children and youth with neurodevelopmental disabilities and their families, to facilitate training in speech-language pathology, and to support her intervention work in ASD. She has over 182 publications and 531 peer-reviewed and invited presentations/keynotes in the areas of autism and other neurodevelopmental disabilities, collaboration, IPE, leadership, and language learning disabilities. Her current research investigates the nature and treatment of autism spectrum disorders (ASD) emphasizing the role of emotion regulation, social communication and perspective taking as important components of social cognition.



Conference Kickoff Biographies

The Honorable Patrick J. Leahy

United States Senator from Vermont

We are pleased that U.S. Senator Patrick Leahy of Vermont joins us again with a special video message of appreciation and support. Senator Leahy is the Chairman of the Senate Appropriations Committee. He is also the senior-most member of the Senate Judiciary Committee and of the Senate Agriculture Committee. Senator Leahy also chairs the Judiciary Subcommittee on Intellectual Property. As the most senior member of the United States Senate, Senator Leahy also serves as the President Pro Tempore of the body.



Neal L. Benowitz, MD

Keynote Speaker

Neal L. Benowitz, MD is emeritus professor of medicine, research program in clinical pharmacology, division of cardiology, Zuckerberg San Francisco General Hospital, University of California, San Francisco (UCSF). He was chief of the division of clinical pharmacology and experimental therapeutics at UCSF for 35 years. Dr. Benowitz's research interests have focused primarily on the human pharmacology and toxicology of nicotine and cannabis. He has published more than 700 research papers and contributed to several US Surgeon General's reports on smoking and health in the areas of nicotine addiction and the cardiovascular effects of tobacco use, including cigarettes, water pipe, and electronic cigarette use. Dr. Benowitz received his medical degree from the University of Rochester School of Medicine in 1969, and then served as a resident in internal medicine at the Bronx Municipal Hospital Center from 1969 to 1971. He completed a postdoctoral fellowship in clinical pharmacology at UCSF and joined the faculty in 1974. Dr. Benowitz maintains an active clinical practice in cardiovascular medicine and medical toxicology.



Session Chairs and Speaker Biographies

Matthew Carpenter, PhD

Matthew Carpenter received his PhD in clinical psychology from the University of Vermont in 2003 and relocated to the Medical University of South Carolina (MUSC) in Charleston, SC where he completed his internship and postdoctoral training. He joined the MUSC faculty in 2006 and is currently a professor of psychiatry and behavioral sciences. Dr. Carpenter is jointly affiliated with the addiction sciences division within the department of psychiatry and the Hollings Cancer Center, where he serves as co-leader of the Cancer Control Program and co-director of the Tobacco Research Program. His primary research interests relate to tobacco use across a broad methodological continuum, from lab-based studies of craving and nicotine dependence and small- and large-scale clinical trials for smoking cessation to public health policy for effective tobacco control. He has led numerous large, national cessation trials, including a large-cluster randomized trial in primary care. He currently leads a robust program of research on alternative products, including clinical trials of e-cigarettes. Dr. Carpenter has served on a wide number of NIH study sections, including Chair of both Addiction Risks and Mechanisms (ARM), and for Fellowship (F31/F32) Review Panels. He serves on the editorial board of both *CNS Drugs* and the *Journal of Behavioral Medicine*. Dr. Carpenter has mentored many junior investigators across various NIH grant mechanisms (T32, F32, K07, K12, K23). He regularly speaks to community and school groups on the science of smoking cessation, vaping, and health. Honored with several state and federal awards, Dr. Carpenter was most recently awarded with the South Carolina Governor's Award for Research Excellence.



Julia Chen-Sankey, PhD, MPP

Julia Chen-Sankey is an assistant professor at the Center for Tobacco Studies, School of Public Health, Rutgers University. She is a social and behavioral public health scientist with training in studying health behavior, health policy, and health disparities. Her research broadly involves investigating the influence of flavored tobacco use and tobacco marketing among youth and young adults, as well as cigar use disparities among racial and ethnic minority populations. She is especially interested in studying the intersection of tobacco use, tobacco policy, and health equity. Dr. Chen-Sankey received her Master of Public Policy degree in 2012 from the Johns Hopkins Bloomberg School of Public Health, and PhD in Behavioral and Community Health in 2018 from the University of Maryland School of Public Health.



K. Michael Cummings, PhD, MPH

K. Michael Cummings is a professor in the department of psychiatry and behavioral sciences at the Medical University of South Carolina. He co-leads an NCI funded program project grant (P01CA200512) with Geoffrey Fong at MUSC using cross-country comparisons and a common mediation model to evaluate the behavioral impacts of national-level tobacco control policies on smoking and vaping. He and his colleagues recently published a paper describing the impact of the Canadian menthol cigarette/small cigar ban and reported that the ban increased quit attempts but had a relatively small impact on smoking cessation rates. His talk will focus on the potential impact of a menthol ban on smoking prevalence in the United States.



Eric Donny, PhD

Eric Donny is a professor of physiology and pharmacology as well as a professor of social sciences and health policy. He is the founding director of the Wake Forest Tobacco Control Center of Excellence and program lead for Cancer Prevention and Control at the Wake Forest Baptist Comprehensive Cancer Center. He has published more than 160 scientific articles on nicotine, tobacco and addiction and is a fellow of both the Society for Research on Nicotine and Tobacco and Division 28 of the American Psychological Association. His work focuses on the behavioral, pharmacological, and neurobiological mechanisms underlying nicotine use and dependence. His current focus is on regulatory approaches to reducing the health burden of tobacco. For the past nine years, he has directed the Center for the Evaluation of Nicotine in Cigarettes (CENIC), a NIDA/FDA-funded cooperative agreement that aims to increase understanding of how behavior and health might be affected if the nicotine content of cigarettes is greatly reduced.



Pebbles Fagan, PhD, MPH

Pebbles Fagan is a professor and the director of the Center for the Study of Tobacco in the Fay W. Boozman College of Public Health, Department of Health Behavior and Health Education and the director of research in the Office of Health Initiatives and Disparities Research, College of Medicine University of Arkansas for Medical Sciences. She is also a senior advisor to the director of the Office on Smoking and Health, Centers for Disease Control and Prevention. She formerly served as program director for the Cancer Prevention and Control Program at the University of Hawaii Cancer Center and served as a health scientist in the Tobacco Control Research Branch at the National Cancer Institute. Dr. Fagan has more than 25 years of experience in conducting research that aims to prevent tobacco and cancer-related health disparities. Dr. Fagan is committed to using community-based strategies to reduce the burden of tobacco use and secondhand smoke exposure among African American women smokers. She examines factors that contribute to the dual use of tobacco, quitting and switching behaviors, and nicotine dependence among adults who consume flavored tobacco products including menthol cigarettes, cigars, and electronic cigarettes. She also collaborates with communities to reduce the impact of COVID-19 on racial/ethnic communities in Arkansas through the federally funded Community Engagement Alliance Against COVID-19 Disparities. Dr. Fagan serves as secretary on the Governor's Tobacco Prevention and Cessation Advisory Committee for the state of Arkansas. She is the vice president of the board of the Pacific Institute for Research and Evaluation. She serves on the National Academies of Sciences, Engineering, and Medicine ad hoc committee that is evaluating the health effects related to the use of "premium" cigars. She served on the Tobacco Products Scientific Advisory Committee, Center for Tobacco Products, Food and Drug Administration from 2015-2018. In 2012, she received an Outstanding Alumni Award from Texas A&M University and has received numerous other awards for her commitment to reducing health disparities and increasing the diversity of the research workforce.



Amanda Graham, PhD

Amanda Graham is chief of innovations at Truth Initiative, where she leads a cross-functional team that develops, evaluates, and markets digital products for tobacco cessation. Under her leadership and in collaboration with partners at the Mayo Clinic, Dr. Graham led the development of the EX Program, an enterprise digital tobacco cessation platform designed for employers and health plans, and This Is Quitting, a first-of-its-kind quit vaping program for teens and young adults. For more than 20 years, Dr. Graham's NIH-funded research has focused on digital tobacco cessation interventions. She is internationally recognized as a thought leader in web and mobile quit-smoking interventions and online social networks and has been awarded more than \$15 million in research funding. She has published over 100 peer reviewed manuscripts and serves on National Institutes of Health study sections and numerous journal editorial boards. Dr. Graham is an adjunct professor of medicine at the Mayo Clinic College of Medicine and Science and an adjunct professor of oncology at Georgetown University Medical Center/Lombardi Comprehensive Cancer Center. She earned her MS and PhD in clinical health psychology from the University of Health Sciences/Chicago Medical School and completed a postdoctoral fellowship in behavioral medicine at Brown Medical School.



Jamie Hartmann-Boyce, MA, DPhil

Jamie Hartmann-Boyce is a senior research fellow and departmental lecturer with the Centre for Evidence-Based Medicine at the Nuffield Department of Primary Care Health Sciences, University of Oxford. She services as the director of the Centre's DPhil program and supervises both DPhil and MSc students and their research projects. Her interests lie in evidence synthesis (both quantitative and qualitative) and the communication of complex information and data to inform policy and public action. Her research includes focused on health behaviors, long-term conditions, and new and multifaceted methodologies. She leads the Cochrane review of electronic cigarettes for smoking cessation, which is now a living review funded by Cancer Research UK, updated monthly, and is an editor for the Cochrane Tobacco Addiction Group.



Elias Klemperer, PhD

Elias Klemperer is an assistant professor of psychiatry and psychological science at the Vermont Center on Behavior and Health, Larner College of Medicine, University of Vermont (UVM). His research primarily focuses on policy and clinical interventions to address tobacco use with a particular focus on adults who express little or no motivation to quit smoking. Dr. Klemperer uses a range of research methodologies including clinical trials, controlled laboratory studies, meta-analysis, and fine-grained naturalistic research. His current research includes an ongoing trial to examine two nicotine reduction approaches among people who use tobacco and are not ready to quit as well as a national randomized controlled trial of smoking cessation treatment for young adults who use both cigarettes and e-cigarettes. As a co-Investigator within the Vermont Tobacco Center on Regulatory Science, Dr. Klemperer's research also includes a multi-site trial of very low nicotine content (VLNC) cigarettes among vulnerable populations. He also conducts research on addiction treatment for people who are incarcerated and is currently conducting a state-wide evaluation of the use of medication for opioid use disorder in Vermont's correctional facilities. Dr. Klemperer received his PhD in clinical psychology from the University of Vermont and completed his clinical internship at Yale University in 2019. He joined the University of Vermont faculty in 2020.



Michael Kotlyar, PharmD

Michael Kotlyar, PharmD is an associate professor at the University of Minnesota in the department of experimental and clinical pharmacology in the College of Pharmacy. His research has focused on evaluating various aspects of tobacco dependence, including assessing use of medications to assist in smoking cessation, assessing the role of stress on smoking behavior, and more recently, evaluating how bans on menthol characterizing flavor can affect tobacco use patterns among current menthol cigarette smokers. Dr. Kotlyar received his PharmD at Purdue University and completed his fellowship at the University of North Carolina School of Pharmacy.



Dustin Lee, PhD

Dustin Lee is currently an assistant professor in the behavioral pharmacology research unit at Johns Hopkins University in Baltimore. His research experience and interests involve use of laboratory and clinical approaches to identify risk factors that contribute to the progression and maintenance of problematic cannabis and tobacco use, and applying insights gained from that work to develop targeted prevention and treatment interventions. Dr. Lee received undergraduate degrees in psychology and philosophy in 2005 from the University of New Mexico, followed by a two-year research training award in the nicotine psychopharmacology research section at the National Institute on Drug Abuse in Baltimore. He completed his PhD in experimental psychology in 2013 at the University of Kentucky, followed by postdoctoral training focused on development of behavioral interventions for cannabis and tobacco use in the department of psychiatry at Dartmouth College from 2013 to 2016.



Danielle McCarthy, PhD

Danielle McCarthy is currently a professor in the department of medicine at the University of Wisconsin School of Medicine and Public Health where she serves as associate director for research at the Center for Tobacco Research and Intervention. Dr. McCarthy leads a program of research focused on the development, refinement, and implementation of treatments to help people stop smoking cigarettes. As part of this research program, she studies the psychological changes that people experience leading up to and during an attempt to quit smoking and ways in which treatments affect these experiences. Her recent work focuses on ways to enhance quitline services for socioeconomically disadvantaged adults who smoke and ways to equitably enhance the reach of evidence-based smoking cessation treatment in healthcare and community settings. Dr. McCarthy received her doctoral degree in clinical psychology from the University of Wisconsin-Madison in 2006.



Judith (Jodi) Prochaska, PhD, MPH

Jodi Prochaska is a professor of medicine at Stanford University, a member of the Stanford Cancer Institute, and a licensed clinical psychologist with addiction medicine privileges at Stanford Hospital and clinics. She is deputy director of Stanford Prevention Research Center (SPRC), co-director of SPRC's T32 postdoctoral training program in cardiovascular disease prevention, and the faculty director for Stanford's Master of Science program in community health and prevention research. Dr. Prochaska's work centers on identifying health solutions that address leading risk behaviors in neglected and disenfranchised individuals and populations. Her research spans community-based epidemiologic studies, randomized controlled treatment trials, and policy analysis. With attention to health equity, communities of interest include Alaska Native men and women, people with mental illness or alcohol and drug problems, the unemployed, the uninsured, and the unhoused. Dr. Prochaska has over 250 publications, serves on the editorial board for *JAMA Internal Medicine*, and was a contributing author to the 2020 Surgeon General's Report on Smoking Cessation. She is a fellow and past president of the Society for Research on Nicotine and Tobacco (SRNT), the international scientific society aimed at stimulating the generation and dissemination of new knowledge concerning nicotine and tobacco from bench to bedside, through to health policy. Dr. Prochaska received her bachelor's degree from Duke University and completed doctoral training in the Joint Doctoral Program in Clinical Psychology at the University of California, San Diego, and San Diego State University, where she also completed a master's degree in public health.



Bethany Raiff, PhD, BCBA-D

Bethany R. Raiff, PhD is a professor in the department of psychology at Rowan University. Her primary research activities involve developing and testing the integration of technological innovations with behavioral interventions for promoting drug abstinence and other health behavior. Currently, Dr. Raiff is refining and testing an Internet-based intervention that involves delivering incentives contingent on objective evidence of smoking abstinence in adult smokers. In addition to her work on smoking cessation, Dr. Raiff received an NIH grant to apply the same Internet-based monitoring system used with smokers to a novel behavior and population – to increase adherence with blood glucose testing recommendations among non-adherent teens diagnosed with Type 1 diabetes. Although incentive-based interventions can be very effective at promoting healthy behavior, they can be expensive to implement. To address this concern, Dr. Raiff recently received an NIH grant that will involve developing and testing a video game that will be used to deliver game-based incentives (in place of monetary incentives) contingent on smoking abstinence. She hopes to explore this, and other methods, for making the intervention more cost-effective and sustainable. Dr. Raiff received her PhD in psychology, with an emphasis in behavioral pharmacology, from the University of Florida in 2008.



Shyanika Rose, PhD, MA

Shyanika Rose is an assistant professor in the department of behavioral science at the University of Kentucky (UK) College of Medicine and the Center for Health Equity Transformation. She is also a member of the Markey Cancer Center Cancer Prevention program. Her background is in social and behavioral sciences, tobacco control policy, program evaluation, qualitative and quantitative research, and health equity. Her research focuses on the mechanisms by which policy initiatives can influence tobacco initiation and cessation, and how policy can contribute to the reduction or widening of racial/ethnic and socio-economic health disparities. Her primary research focuses on tobacco marketing at the point-of-sale and online, and she examines the potential equity impacts of tobacco control policies, including flavored and menthol tobacco sales restrictions. Prior to her position at UK, Dr. Rose was a director at the Truth Initiative Schroeder Institute conducting tobacco-related policy research.



Kevin Schroth, JD

Kevin R.J. Schroth, JD is an associate professor with Rutgers University's Center for Tobacco Studies and School of Public Health. He teaches public health law, and his research focuses on how tobacco regulatory science can improve tobacco control policy. He previously served as an attorney with the New York City Health Department, directing tobacco control policy for the city. During this tenure, Mr. Schroth played a principal role in drafting and passing more than a dozen tobacco control laws. He also developed policies designed to reduce consumption of sodium and sugary beverages. Before concentrating on public health, he worked as a commercial litigator, and clerked for federal and state judges in New Jersey. Mr. Schroth earned his JD from Rutgers Law School and BA from Bucknell University.



Christine Sheffer, PhD

Christine E. Sheffer, Ph.D., a clinical psychologist, a scientist-practitioner, and professor at Roswell Park Comprehensive Cancer Center. She leads the Bio-behavioral Health and Recovery Laboratory and is the director of both the Roswell Park Tobacco Treatment Service and the Research and Evaluation for Roswell Park Cessation Services, which operates the New York State Smokers' Quitline in addition to providing other contractual, remotely delivered cessation services. Dr. Sheffer is the current and founding president of the Council for Tobacco Treatment Training Programs. Her expertise includes bio-behavioral mechanisms involved with addictive and risky health behaviors. She espouses a translational model that iteratively integrates laboratory, population, community, and clinical studies to creatively develop new tools, or new applications of existing tools, to improve bio-behavioral cancer health outcomes. Dr. Sheffer joined the Roswell Park faculty in 2016. She previously served as faculty in the City University of New York Medical School and the University of Arkansas for Medical Sciences.



Michael Siegel, MD

Dr. Michael Siegel is a visiting professor in the department of public health and community medicine at the Tufts University School of Medicine. Prior to that, he spent 26 years at the Boston University School of Public Health, where he was a professor in the department of community health sciences. Throughout his career, the focus of his research has been tobacco control. He conducted a good deal of research on secondhand smoke and played a role in lobbying for smoke-free bars and restaurants throughout the country. He also conducted research on the role of advertising in youth smoking initiation. He served as an expert witness in seven different tobacco cases, including the Engle case which resulted in an unprecedented \$145 billion verdict against the tobacco industry. His current research focuses on electronic cigarettes and policy regarding these products. Dr. Siegel received his medical degree from the Yale University School of Medicine and his public health degree from the UC Berkeley School of Public Health.



Stacey C. Sigmon, PhD

Dr. Stacey Sigmon is the director of the UVM Center on Rural Addiction and a professor in the departments of psychiatry and psychological science at the Vermont Center on Behavior and Health at the Larner College of Medicine, University of Vermont. She has more than 25 years of experience conducting addiction research, particularly aimed at developing more efficacious treatments for opioid use disorder. She also conducts research evaluating smoking and smoking cessation interventions in challenging groups of smokers, including those with co-occurring substance use. Dr. Sigmon is the immediate past president of The College on Problems of Drug Dependence, the oldest and largest US organization dedicated to advancing the scientific study of addiction.



Eric Thrailkill, PhD

Eric Thrailkill is an assistant professor in the departments of psychological science and psychiatry at the University of Vermont. His work concentrates on fundamental learning, behavior, and decision-making processes. Dr. Thrailkill's current focus is on understanding loss aversion, a bias in decision making wherein potential losses have a greater behavioral impact than equivalent gains, as a protective factor against harmful behaviors, including cigarette smoking, and as a possible intervention target. He is also interested in connecting "active ingredients" that underpin effective behavior-change interventions, such as contingency management, to fundamental behavioral mechanisms in laboratory experiments. Dr. Thrailkill received his PhD from Utah State University and completed his post-doctoral work at the University of Vermont.



Jennifer Tidey, PhD

Jennifer Tidey is associate dean for research and professor of behavioral and social sciences at the Brown University School of Public Health, where she is affiliated with the Center for Alcohol & Addiction Studies (CAAS). She also holds a secondary appointment as professor of psychiatry and human behavior at the Alpert Medical School of Brown University. At CAAS, she is associate director of the NIDA T32 training program and director of the CAAS Laboratory. She is a deputy editor for the journal *Nicotine & Tobacco Research* and serves on the editorial board for *Experimental and Clinical Psychopharmacology*. Trained as a behavioral pharmacologist at Tufts University, Dr. Tidey completed postdoctoral training at Harvard University and the University of Vermont before joining CAAS in 1999. The goals of her research are to identify mechanisms underlying the high rates of tobacco dependence in priority populations, and to develop effective smoking cessation interventions for these individuals. She currently conducts research in tobacco regulatory science, the aim of which is to provide the FDA with information it needs to make regulatory decisions about tobacco products, with the goal of improving public health.



Andrea Villanti, PhD, MPH

Andrea Villanti is an associate professor in the departments of psychiatry and psychological science at the Vermont Center on Behavior and Health at the University of Vermont. Dr. Villanti's primary focus is on young adult tobacco use, including predictors and patterns of use and interventions to reduce tobacco use in young adults. She has expertise in population surveillance of tobacco and substance use and translational research to improve substance use-related policy and program decision-making, including tobacco regulatory science. She received her doctorate in social and behavioral sciences from the Johns Hopkins University and her master's degree in public health from Columbia University.





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