

Lessons Learned from Youth Tobacco Cessation and Considerations for Intervening with Youth E-cigarette Users

*Rachel Grana Mayne*  
 Program Director, Tobacco Control Research Branch  
 Division of Cancer Control and Population Sciences

**NIH NATIONAL CANCER INSTITUTE** May 15, 2019

1

**DISCLOSURE**

No financial relationships with the manufacturer(s) of any commercial product(s) or other conflict of interest related to the material in this presentation, no affiliation with brands or products, and the use of pictures and advertisements of products are solely for educational purposes as noted above.

The information, examples, and views expressed in this presentation represent the speaker's analysis of current research for educational purposes. They do not convey an official position of the NCI, NIH, FDA, or the United States Government.

**NIH NATIONAL CANCER INSTITUTE**

2

Lessons Learned from Youth Tobacco Cessation Literature

**NIH NATIONAL CANCER INSTITUTE**

3

**Intervening with Youth Smokers is Different than Adults**

- Youth are not mini-adults
- Intense period of brain development
  - Impulse control and decision-making areas of the brain still developing
  - Period of emotional lability, risk-taking
- Youth do not think of themselves as smokers or addicts
- Youth have unstable smoking patterns
- Nicotine dependence can develop differently for youth
- Importance of peers and social motivations for use

**NIH NATIONAL CANCER INSTITUTE**

4

**Lessons Learned from Youth Tobacco Cessation**

- Demand – focus on increasing motivation for quitting
- Tailoring – match messages to stage in trajectory of smoking, "windows of opportunity"
- Attend to the unique cognitive and emotional needs of adolescents
- Address interpersonal context - peer and parent factors important, help them adapt their social and environmental context while quitting
- Support for some behavioral interventions; promise for mobile technology delivery modes (text messaging, apps)

**NIH NATIONAL CANCER INSTITUTE** Curry, Mermelstein and Sporer 2009; Curry et al., 2012

5

**Intervention Research with Youth Smokers is Challenging**

**Recruitment and retention challenges**

- Parental consent
- Youth have logistical challenges to participating in research studies (need reliable transportation, rely on parents)
- Lighter smokers (≤ 5 cpd) easier to recruit but heavier smokers (≤ 6 cpd) were easier to retain (Backinger et al., 2008)
- Older youth, low academic achievement and low SES more challenging to retain (Kalkhuis-Beam et al., 2011)
- Conducting intervention soon after enrollment as possible may improve retention (Kalkhuis-Beam et al., 2011)

**NIH NATIONAL CANCER INSTITUTE**

6

### Intervention Research with Youth Smokers is Challenging

- Establishing a threshold of cigarette consumption as an enrollment criteria can impact enrolling sufficient numbers of youth in a study
- Adequate sample size is often hard to obtain
- Need to screen large numbers of youth
- Often need multisite study design (complex and more expensive)

NIH NATIONAL CANCER INSTITUTE 7

7

### Considerations for Intervening with Youth E-cigarette Users

NIH NATIONAL CANCER INSTITUTE 8

8

### Challenges Posed by Product Class

- Product diversity presents challenges for assessing frequency, intensity, use patterns and dependence
  - Impacts ability to decide "who" to provide a particular treatment, or "who" to enroll in a particular study
- No standard unit of consumption for the product
- No standard size of reservoir and capacity for amount of e-liquid
- No standard e-liquid composition in terms of nicotine content
- No standard terminology for consumption behavior (e.g., time, puff, pod)




Image from cdc.gov 9

9

*"The most commonly cited reasons for using e-cigarettes among both youth and young adults are **curiosity, flavoring/taste, and low perceived harm compared to other tobacco products.**"*

SGR 2016, Conclusion #6, Chapter 2

NIH NATIONAL CANCER INSTITUTE 10

10

### Correlates of Youth E-cigarette Use

- Evidence that e-cigarettes are attracting youth with intermediate risk profiles for using cigarettes
  - Some correlates of e-cigarette use are the same as for cigarette use but some weaker associations compared to cigarette smoking or dual use
  - E-cigarette-only user has an overall lower risk profile than cigarette-only and dual user, greater than non-user
  - The longitudinal relationship between e-cigarette use and onset of cigarette smoking among never smokers was stronger for youth at lower risk of smoking vs. higher risk
- Dual and poly use of e-cigarettes with other products and substances
  - E-cigarettes and other tobacco products, especially cigarettes
  - E-cigarettes and other substances, especially marijuana

Barrington-Trimm et al., 2015; Wills et al., 2015; Leventhal and Susman, 2016; Miller et al., 2017; Case et al., 2017; Dutra and Glantz, 2017; Sawday et al., 2018; Wills et al., 2016; SGR, 2016 11

11

### Unique Challenges to Addressing Youth E-Cigarette Cessation – Fewer Perceived Negatives for Use

- Lack of knowledge about nicotine presence/level in products, think they are just using flavors (ex. 63% 15-24 didn't know JUUL contains nicotine)
- Low perceived addictiveness of e-cigarettes, lack of understanding about vulnerability to consequences of nicotine addiction
- Low harm perceptions compared to cigarettes
- Lack of stigma compared to cigarettes – odor minimized or smells sweet, flavors are appealing (taste and novelty)
  - E-cigarette use among close friends and friends' positive attitudes toward e-cigarette use is associated with susceptibility to e-cigarette use and cigarette smoking
  - Greater acceptance of using e-cigarette in indoor or outdoor environments than cigarettes

Willett et al., 2019; SGR, 2016; Gorunskanti et al., 2017; Kwon et al., 2018; Lechner et al., 2018; Kowitz et al., 2018 12

12

### Unique Challenges to Addressing Youth E-Cigarette Cessation – Appeal of the Devices

Product and social images from istock and CDC.gov  
Vaper cloud image from paveth, Bridgport, US, Creative Commons Attribution 3.0 Generic, no changes were made to the image

13

### Considerations for Youth E-cigarette Cessation Intervention

- Increase motivation among youth e-cigarette users
- Increase understanding of vulnerability to addiction
- Increase harm perceptions
- Critical to address perceived benefits/lack of negatives and social context
- Consider stage of e-cigarette use, interrupt progression to regular use

NATIONAL CANCER INSTITUTE (Soneji et al., 2017; SGR 2016; Li et al., 2019) images from cdc.gov and istock

14

### NIH E-cigarette Funding Opportunity Announcement

- **PAR 18-847/848: Electronic Nicotine Delivery Systems (ENDS): Population, Clinical and Applied Prevention Research (R01/R21)** - NCI, NIDA, NIDCR, NIMHD
- **Purpose:** to support studies on ENDS that examine population-based, clinical and applied prevention of disease (including cancer, dental, oral, and/or craniofacial) including etiology of use, epidemiology of use, potential risks, benefits and impacts on other tobacco use behavior among different populations
- Specific topics of interest to NCI include, but are not limited to:
  - Studies to identify risk and protective factors for ENDS use, including dual/poly-tobacco product use among youth and young adults (such as, but not limited to, perceptions of risk/benefit, parent influences, peer influences, relationship to other substance use, proximity to tobacco outlets, density of tobacco outlets and other environmental factors)
- NCI's Scientific Contact: Rachel Grana Mayne, PhD, MPH
- Last receipt date: June 27, 2020

NATIONAL CANCER INSTITUTE

15

### Summary

- Opportunity to learn from teen smoking cessation interventions to plan research and interventions for e-cigarette cessation and dual/poly use cessation
- Need to develop evidence base for youth e-cigarette cessation
- Address the unique factors contributing to appeal and use of e-cigarettes by youth
- Youth tobacco cessation interventions best addressed as part of a comprehensive tobacco control program

NATIONAL CANCER INSTITUTE

16

NATIONAL CANCER INSTITUTE

[www.cancer.gov](http://www.cancer.gov)      [www.cancer.gov/espanol](http://www.cancer.gov/espanol)

17