

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

Bethany R. Raiff, PhD, BCBA-D



# Acknowledgments

- No conflicts of interest to disclose.
- Thanks to my research team for helping with this project.
  - Jack Bowker
  - Mariana Cardenas
  - Schyler Newman
  - Caitlyn Upton
  - Connor Burrows

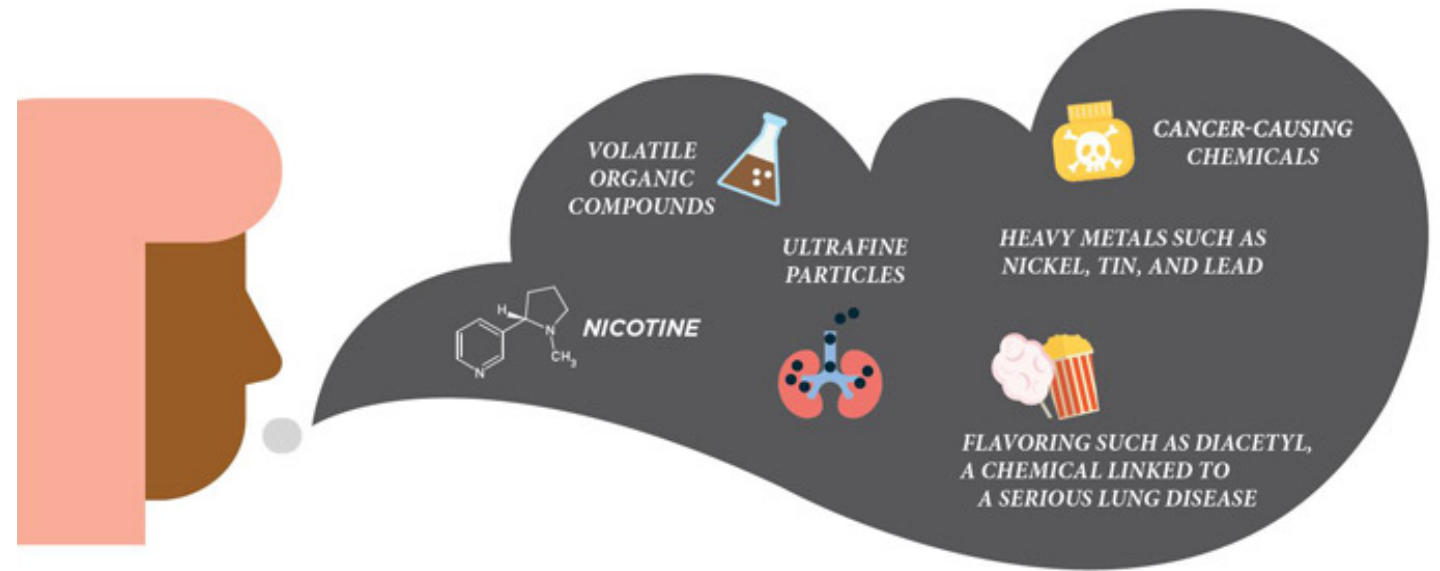
# Vaping Prevalence in Young Adults

- Young adults 18-20 years old (Cwalina et al, 2020)
  - 45% lifetime use
  - 27% past 30-day use
- Similar prevalence of vaping in college students living in rural, South-central Appalachia (Omoike & Johnson, 2021)
  - 43%



# Why focus on vaping cessation?

- Unknown health effects
  - EVALI
- Pathway to combustible cigarette/ cannabis use
- Interest in quitting



# What can we do about it?

- *Contingency management*: Deliver incentives **immediately** to individuals contingent on *objective evidence* of healthy behavior.

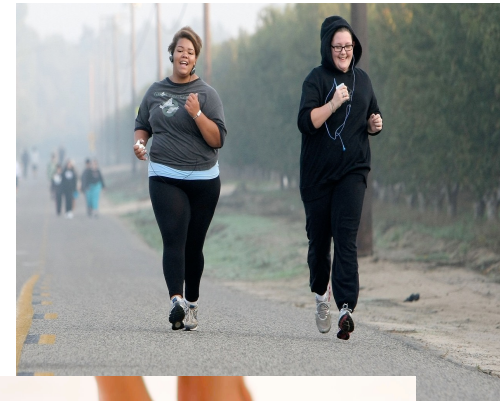
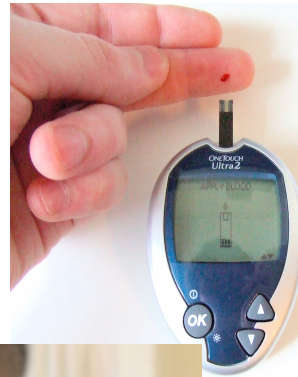
Evidence of  
Healthy  
behavior



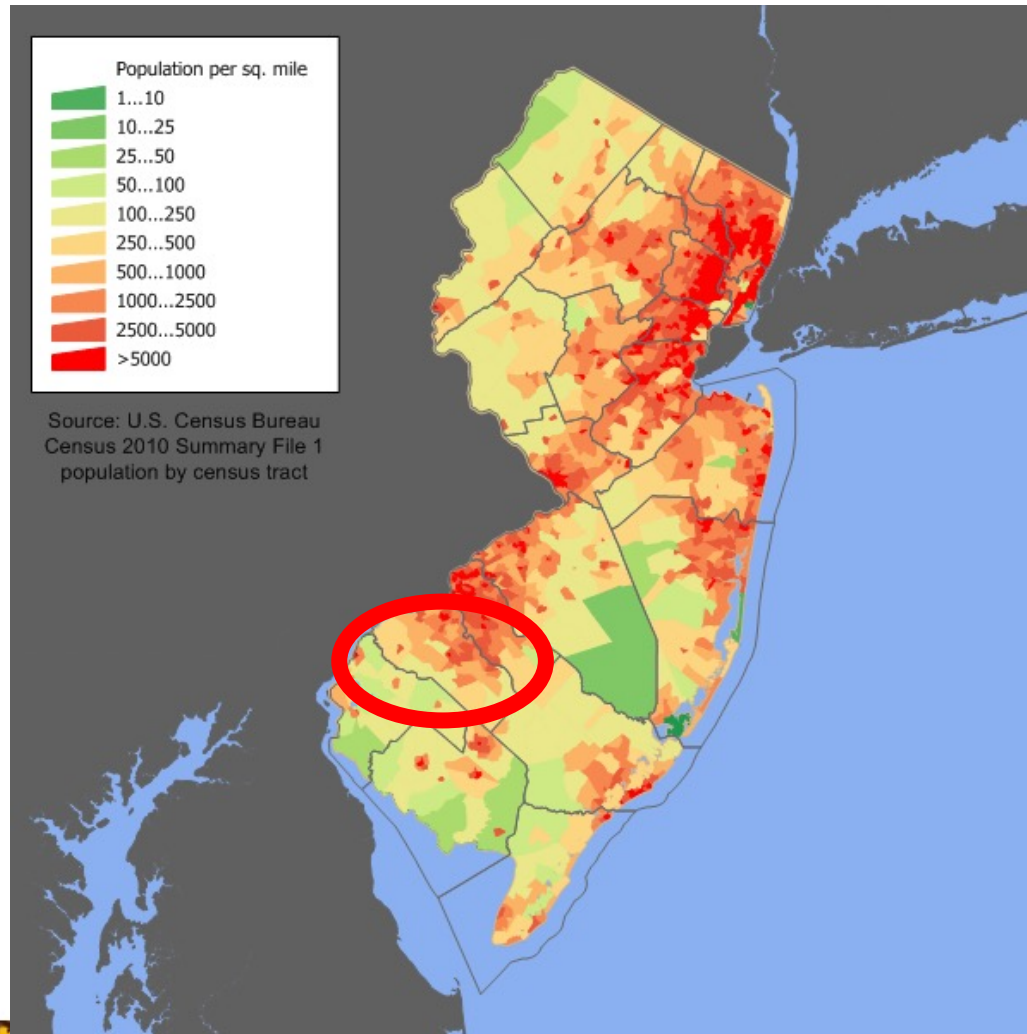
Incentives



# Contingency Management



# Recruitment site: Rowan University



- Glassboro, NJ
  - Population ~20,000
- Rowan University
  - Student Population ~15,000

# Methods | recruitment

## Inclusion Criteria

- Vaping for at least 25 of the past 30 days, for at least 6 mos
- Not using other nicotine products
- <35 years of age
- Desire to quit vaping
- Internet and video-conferencing capability, using Doxy.me





# Methods | recruitment

Recruitment took place from February-March 2020



# Methods | Participant Demographics

**Table 1**  
*Participant Demographics*

Participants	Participant ID								Mean or %	St. Dev.
	V01	V02	V03	V04	V05	V06	V07	V08		
Age	22	18	22	20	19	19	20	19	19.88	1.46
Gender	F	M	F	M	F	F	F	M	63 (F)	N/A
Race	White	White	White	White	White	White	White	White	100 (W)	N/A
Ethnicity	Non- hispanic	Hispanic	Non- hispanic	Non- hispanic	Non- hispanic	Non- hispanic	Non- hispanic	Hispanic	25 (Hisp)	N/A
Age first vaped	19	15	16	17	17	17	17	16	16.75	1.16
# Years vaping	1.5	3	1	4	2	2	4	3	2.56	1.12
Vaping (VAP) dependence score	19	4	13	16	14	17	11	17	13.88	4.73
Flavored vape	Y	Y	Y	Y	Y	Y	Y	Y	100 (Y)	N/A
Black market	Y	N	N	Y	N	N	N	N	25 (Y)	N/A
Desire to quit (10 = very much)	9	8	8	9	9	9	9	8.5	8.69	0.46
Vape anything other than nic	N	N	Y	N	Y	Y	N	Y	50 (Y)	N/A
History with combustible cigs	Y	N	Y	N	N	N	N	N	25 (Y)	N/A

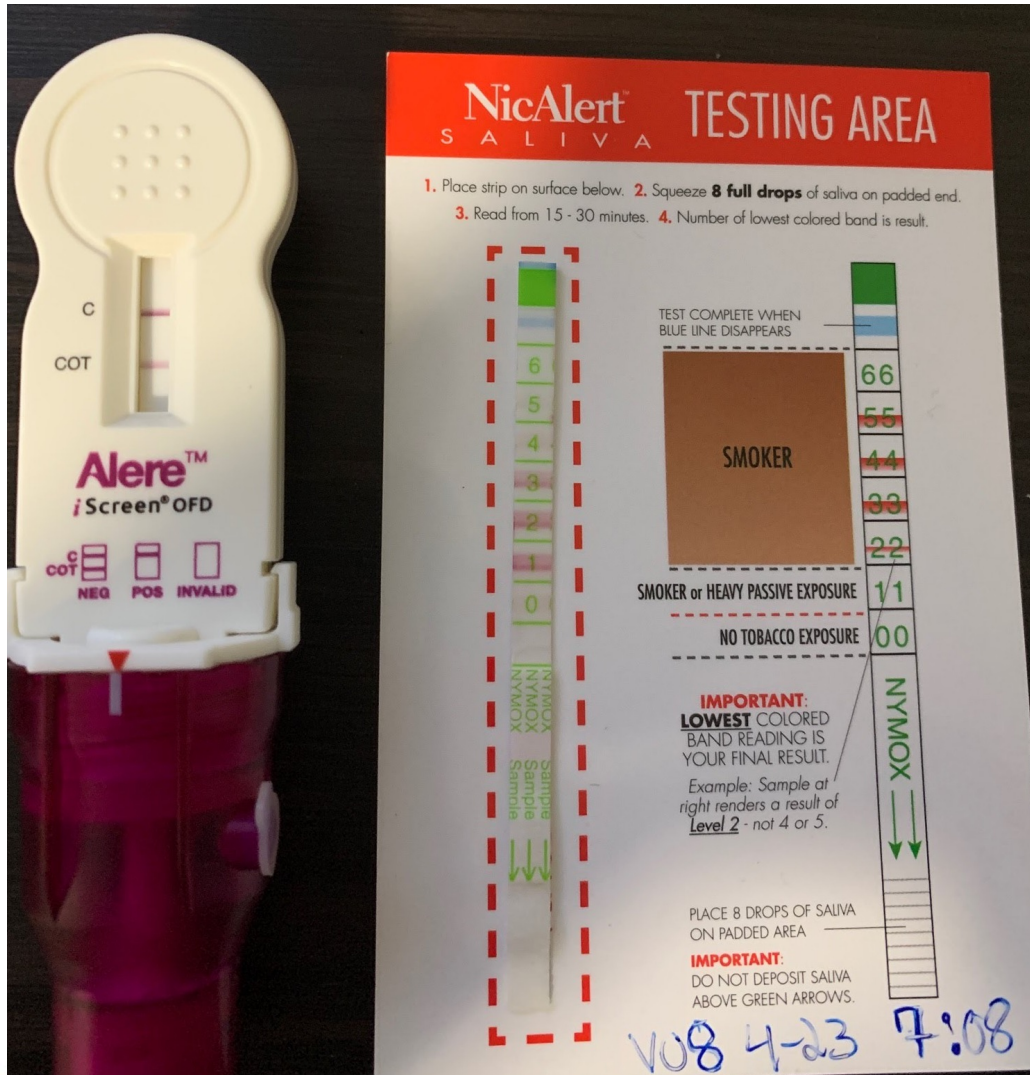
*Note.* Black Market refers to vaping cartridge or solutions purchased from a non-reputable source.

# Methods | Covid Impacts

- Rowan University Covid-19 lockdown – March 12, 2020
  - 50% recruited pre-lockdown
- Always designed to be remotely delivered – easy pivot
  - Strength for participants living in rural environments



# Verification of Vaping Status



## Salivary Cotinine

- Primary outcome based on Alerc iScreen
  - binary outcome
- NicAlert
  - semi-quantitative

# Methods | Procedure

2 days

4 days

6 days

## Multiple Baseline

- Randomly determined BL
- \$3/submission
- 1-3 depending on duration
- No abstinence goals



14 days

## Abstinence Induction

Escalating schedule with reset

\$3 + \$2

\$3 + \$7

\$3 + \$12

\$3 + \$17

\$3 + \$22

\$3 + \$27

\$3 + \$32

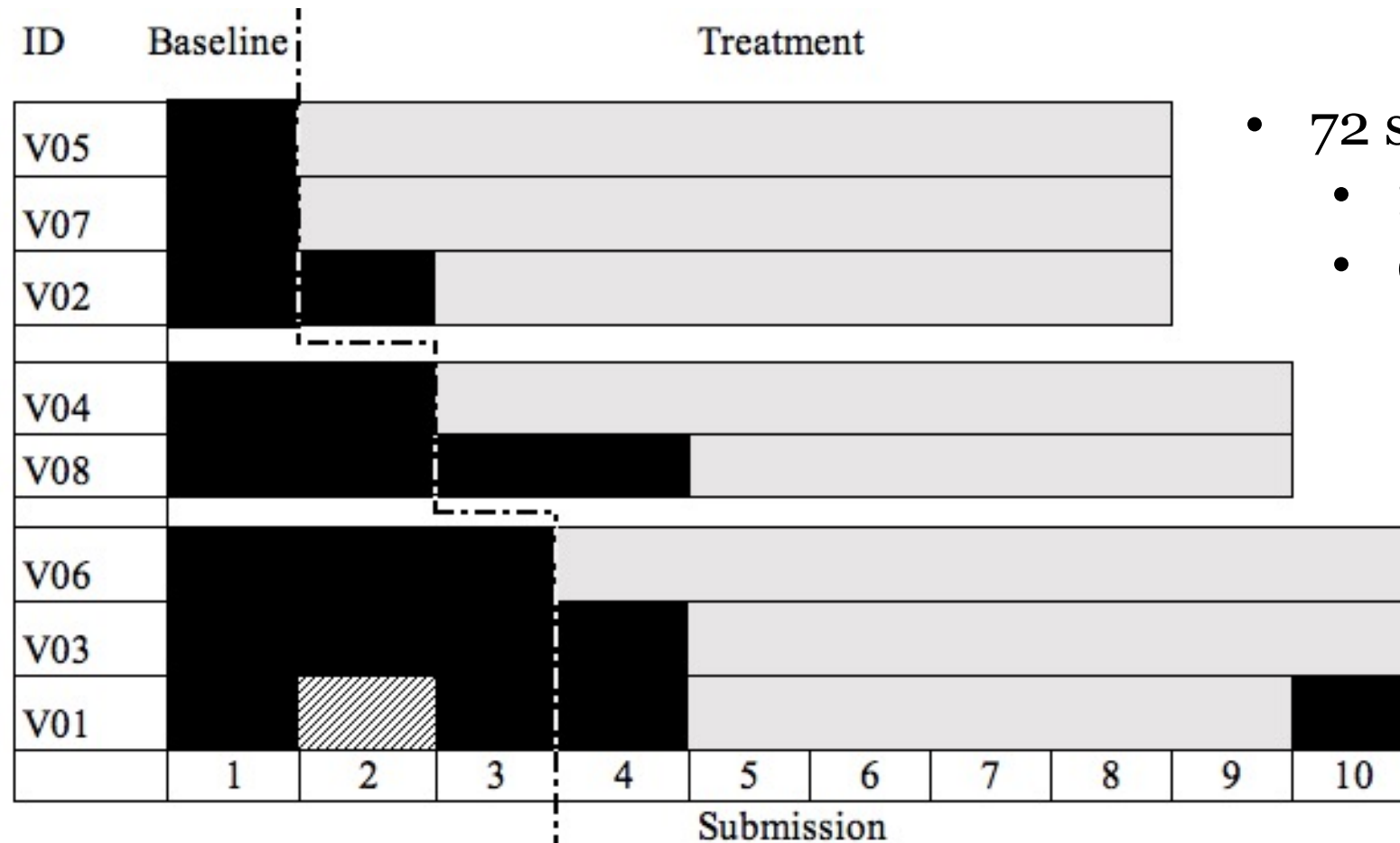
Total: \$140

# Video Calls

- 20 minutes
- NicAlert submitted first
- iScreen submitted second
- Calls included
  - Counseling (Motivational Interviewing)
  - Social support and encouragement
  - Discussing problems and stressors



# Results | Alere iScreen

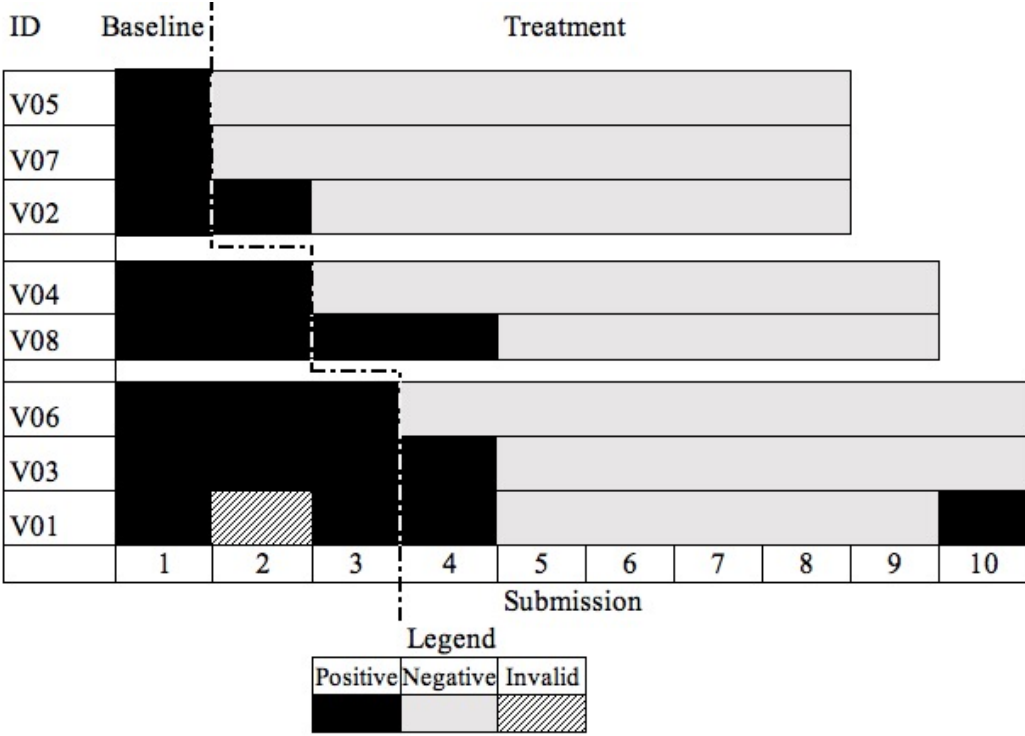


- 72 scheduled samples
  - 1 invalid
  - 0 missed

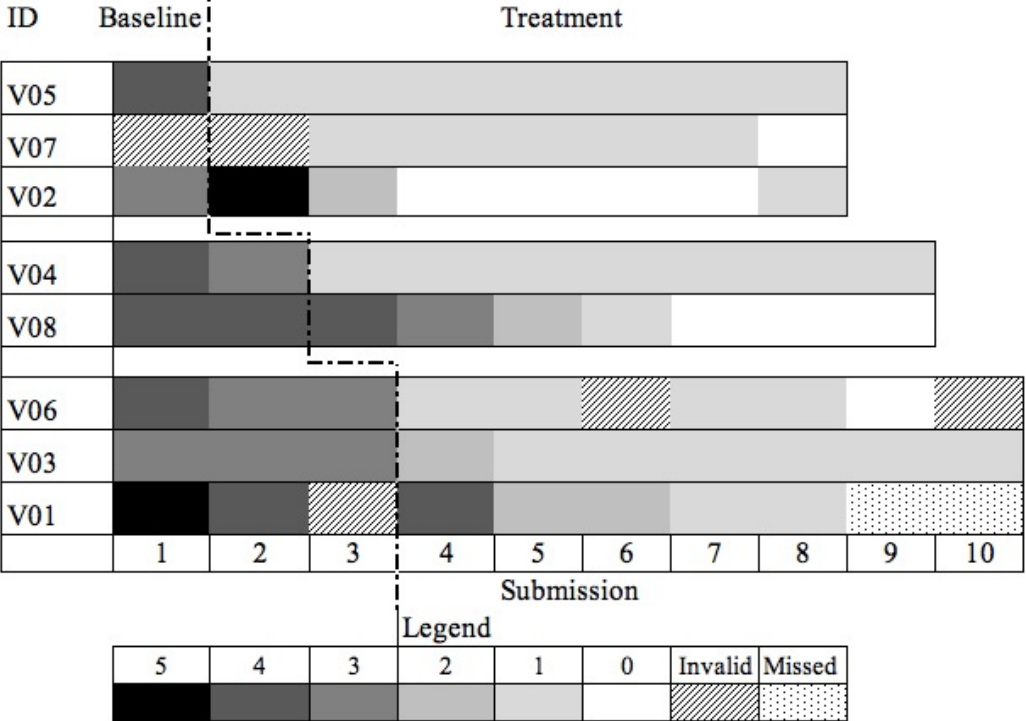
### Legend

Positive	Negative	Invalid

# Results



iScreen



NicAlert



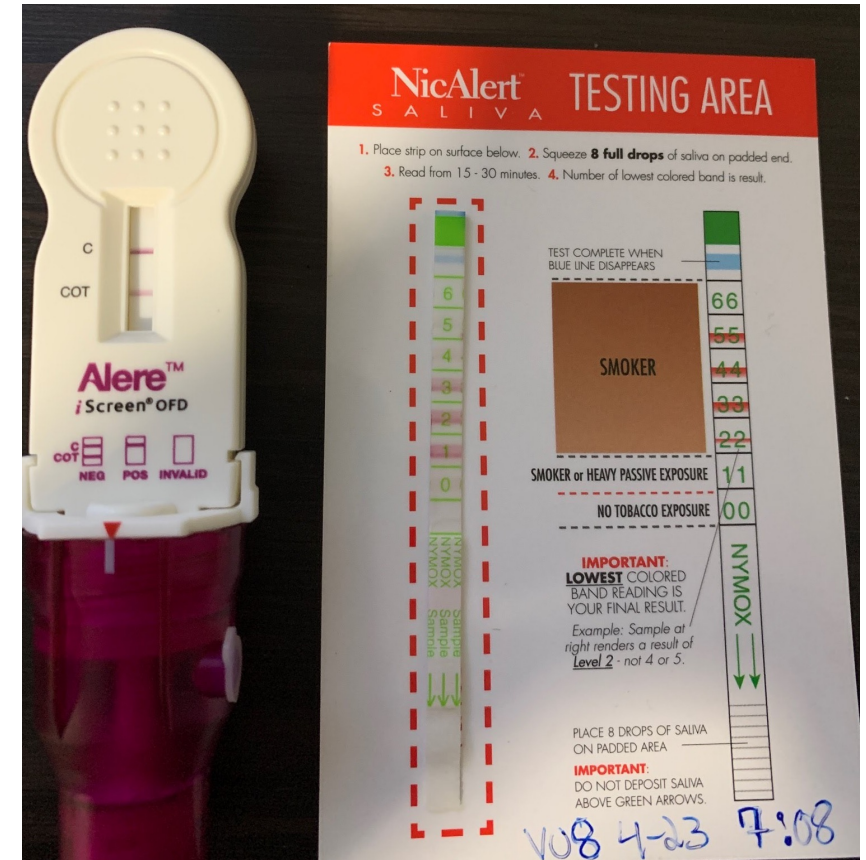
# Treatment Acceptability

- Intervention was rated convenient, effective, fair
- Would recommend to a friend
- Every other day, 20-min meetings were “just right”
- 40% of participants thought it should be longer than 14-days
- 75% would use treatment again if needed in the future
- Supportive staff and every other day calls (63%) were best part of the intervention



# Participant Perspective

- iScreen vs NicAlert
  - Easier to use (9.75 vs 7.38)
  - More accurate (9.13 vs 6.5)
  - Liked more (9.63 vs 7.25)
- Some potential advantages to NicAlert, but not sure if they are worth the costs



# Discussion and Considerations

- It is feasible, and potentially effective, to use CM for vaping abstinence
- Value of 20-min telemedicine calls
  - Asynchronous delivery
- Access to broadband internet & technology
  - Low income populations
  - Rural areas

# Future Plans

- Co-use/ substitution with other nicotine and/or non-nicotine products
  - Cotinine will not distinguish nicotine source
    - Addresses concerns raised by Dr. Siegel's talk yesterday
  - V01 reported using CBD during quit attempt
  - V03 reported using marijuana
- Long-term maintenance
- Accessibility of technology is an issue



# The Feasibility, Acceptability, and Initial Efficacy of a Remotely Delivered, Financial-Incentive Intervention to Initiate Vaping Abstinence in Young Adults

Bethany R. Raiff, Schyler T. Newman, Caitlyn R. Upton, and Connor A. Burrows  
Department of Psychology, Health and Behavioral Integrated Treatments (HABIT) Research Unit, Rowan University

# THANK YOU!

Questions?

Contact: [raiff@rowan.edu](mailto:raiff@rowan.edu)