DETECTING AND PREVENTING RELAPSE TO SMOKING

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Disclosures

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Previous Training
Previous Training

National Drug Abuse Treatment
Clinical Trials Network
Research Interests

- Technology
- Pharmacotherapy
Relapse to Smoking

Most relapse occurs within 8 days

Hughes et al., 2004
Technology and Health
"The problem [with wearables]: The hype is years ahead of the market. Big and unresolved questions remain about pricing (too high), battery life (too short), utility (too limited), looks (too ugly) and privacy (too scary)."

– Forbes, Connie Guglielmo and Parmy Olson
Technology and Smoking

- Technology may improve how we prevent, detect, and treat smoking
- Reach of interventions could be improved and could circumvent geographical location and limited mobility
- Reduces the need for lab- and clinic-based visits
**Technology and Smoking**

**mPuff: Automated Detection of Cigarette Smoking Puffs from Respiration**

**A Wearable Sensor System for Cigarette Smoking**

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**Laboratory Validation of Inertial Measurement Unit Cigarette Smoking Arm Movements**

Bethany R. Raiff, Çağdaş Karataş, Erin A. McCauley

Figure 1. Wearable sensors comprising the PACT. The hand-to-mouth sensor captures the proximity of the subject's wrist and chest to detect the transportation of the cigarette to the mouth; the airflow sensor is a thermocouple that measures the changes in air temperature based on oral/nasal air inhalation and exhalation; the respiratory band and the zRIP module capture respiration; the push button is used to self-report instances such as smoke inhalations. All sensors are connected to a data logger, and the data are stored on a microSD card.
Research Questions

• How do we detect and PREVENT relapse to smoking among adolescents and adults?

• Which treatment strategies will help to improve abstinence outcomes?

• How might we use technology to study and treat smoking?

• How does tobacco and marijuana co-use impact abstinence outcomes?
Relapse Detection

- Breath carbon monoxide monitoring among adolescents and emerging adults during a quit attempt
- Remote assessments conducted (ecological momentary assessment) to isolate variables associated with relapse
My Mobile Monitor (M³)
Future Research and Application

• New devices, integrated platforms, sensor suites, longer battery life, advanced computing, predictive algorithms, and personalized approaches….
Prevalence of Tobacco and Marijuana Use (In Isolation)

Past-Month Marijuana Use Mostly Steady

- 1996 - 2016
- 2016

- 12th graders: 22.5%
- 10th graders: 14.0%
- 8th graders: 5.4%

68.9% of high school seniors do not view regular marijuana smoking as harmful, but 68.5% say they disapprove of regular marijuana smoking.

Past-Month Cigarette Use Continues Steady Decline

- 1996 - 2016
- 2016

- 12th graders: 10.5%
- 10th graders: 4.9%
- 8th graders: 2.6%

Monitoring the Future, 2016
Trends in Co-Use, NSDUH, 2005-2014

Schauer & Peters, under review
Co-Administered Products: Blunts, Spliffs, Mulling
Co-Use and Implications for Treatment

- Substitution or compensatory use
- Abstinence rates among co-users
- Dual interventions – timing of cessation