The NIDA Standardized Research E-Cigarette (SREC) and its Evaluation in Risk Reduction and Related Studies (PAR-17-156)

Kevin Walton, Aidan Hampson
Division of Therapeutics and Medical Consequences
National Institute on Drug Abuse , NIH

Slides will be posted at:
https://www.drugabuse.gov/funding/supplemental-information-nida-ecig

NIH
National Institute on Drug Abuse

NIDA and NIH Interest in E-Cigarettes

The full impact of e-cigarettes on public health remains to be determined.

Questions include:

- Evaluation of associated harms and how these compare with smoked tobacco (Harm Reduction)
- The relative addictive potential
- Their appeal to vulnerable populations
- Second-hand aerosol safety and extent and characteristics of exposure

NIH
National Institute on Drug Abuse

Current E-Cigarettes in Clinical Research

Currently available commercial e-cigarettes are limited by the availability of information concerning:

- Actual nicotine concentration
- Other components of the e-liquid
- How well does the device deliver nicotine?
- How reproducible is the nicotine delivery during cartridge and battery lifetime?
- How long will the chosen device be commercially available?

NOTE:

- Products introduced after August 2016 need FDA authorization
- Earlier products can only be sold until 2018/9 (unless authorized)
- FDA authorization will require a Product Master File

NIH
National Institute on Drug Abuse

NIDA Standardized Research E-cigarette

To address the needs of clinical researchers, NIDA launched a competitive SBIR contract to produce a standardized e-cigarette

NIDA funded NJOY LLC to produce a SREC

- SREC has a detailed Product Master File (PMF)
- SREC is available for purchase by all NIH Grantees
- SREC is expected to be available for an extended period (to serve as a standard between studies)
- SREC devices and refills will be purchased directly from NJOY LLC
- Each device costs $10/unit and each refill cartridge costs $10/unit
- All purchasers will get a Letter of Authorization to allow them to cross-reference the PMF in FDA filings

NJOY will have a poster at SRNT 2017 (3/9/17), POS# 2-39

NIH
National Institute on Drug Abuse

NIDA Standardized Research E-cigarette

Device Characteristics

- Rechargeable (USB): 180mm (L) x 14 mm (D)
- Mass: 43.3g (with full tank)
- Breath actuated (0.5-0.8LPM), child-resistant
- Single charge outlasts an individual e-liquid cartridge

E-liquid Characteristics

- "Tobacco" flavored 3 mL sealed disposable tanks
- Nicotine (15 mg/ml) and placebo versions available
- Delivers 100 ug nicotine / puff, >350 puffs / cartridge
- Puff-to-puff reproducibility data available

NOTE:

Product Master File is expected to satisfy FDA-CTP requirements for harm reduction studies (ITP), but will NOT currently satisfy FDA-CDER requirements for nicotine cessation studies (IND)

NIDA SREC Pharmacokinetic (PK) Study

Study Overview

Subjects were users (n=14) of unmodified commercial e-cigarettes that contain between 10-20 mg/ml nicotine

Study Outline

Day 1: PK assessments using own e-cigarette
Day 2: Use the SREC at their leisure
Day 3: PK assessments using SREC

Subjects abstained from nicotine overnight then completed a 10-inhalation session over 4.5 minutes followed by 2h abstinence with regular PK blood draws

Top Line Results

- Tmax range: SREC = 5-7 min, Own device = 3-10 min (one user = 30 min)
- Cmax range: SREC = 4-30* ng/mL, Own device = 2-29 ng/mL
- Individual variability between users was generally reproduced with both devices
- Full data sets with additional (safety) measures will be published ASAP

**one user Cmax=72ng/mL, (under investigation)*

NIH
National Institute on Drug Abuse

Funding opportunities using SREC

- Grantees are welcome to write grant applications to use the SREC in response to any appropriate investigator-initiated funding announcement.
- In order to rapidly gain clinical data on the SREC and its use in harm reduction studies, PAR-17-156 has been released to support 2 year studies.
- PAR-17-156 is a cooperative agreement (U01) mechanism, ie, it requires a NIDA Project Scientist to be involved as part of the team overseeing final study design and coordination.
- **Budget:** - same guidance as for R01 applications
- **Receipt date:** April 24, 2017
- **Funding:** end of FY2017 (August), may also be considered for Oct 2017 Council

NIH
National Institute on Drug Abuse

PAR-17-156

Evaluating the NIDA Standardized Research E-Cigarette in Risk Reduction and Related Studies

Studies examining the following areas are encouraged:

- E-cigarette characteristics that influence their use relative to other tobacco products
- Characteristics that affect relative addictive potential
- Health effects and toxin exposure from aerosol relative to tobacco smoke
- Factors that influence switching between combustible tobacco and e-cigarette use
- Factors that drive co-use of combustible tobacco and e-cigarettes
- Factors influencing e-cigarette appeal to smokers in vulnerable populations
- Environmental nicotine and toxin exposure from aerosol relative to tobacco smoke

NIH
National Institute on Drug Abuse

PAR-17-156
If submitting an application, please send letter of intent (LOI)*

- The LOI allows us to estimate number of applications, thereby assess review workload and potential number of required devices
- Information to include:
  - Name(s), address(es), telephone number(s) of the PD(s)/PI(s)
  - Number and title of this funding opportunity
  - Descriptive title of application
  - Brief description of the project is desirable but not required
  - Names of other key personnel and participating institution(s)
- Submit LOI by **March 24, 2017** to: NIDALetterofIntent@mail.nih.gov

NIH
National Institute on Drug Abuse

*LOI is not mandatory, but is very helpful