# Welcome

Please stand by. We will begin shortly.

# E-cigarettes: Challenges for Clinicians

Wednesday, April 23, 2014 · 1pm ET (90 minutes)





## Moderator



#### **Catherine Saucedo**

- Deputy Director, Smoking Cessation Leadership Center, University of California, San Francisco
- csaucedo@medicine.ucsf.edu

# Agenda

- Welcome
  - Catherine Saucedo
- Introduction to ATTUD
  - Thomas J. Payne, PhD
- Clinical Scenarios
  - Jonathan Foulds, PhD
  - Pamela M. Ling, MD, MPH
- Q&A
- Closing Remarks

Disclosure: Faculty speaker, moderator, and planning committee members have disclosed no financial interest/arrangement or affiliation with any commercial companie who have provided products or services relating to their presentation or commercial support for this continuing medical education activity.

#### E-cigarettes: Challenges for Clinicians

#### Webinar objectives

- Describe the various types and components of electronic cigarettes (e-cigarettes)
- Describe the current evidence for the clinical use of e-cigarettes among tobacco users
- Understand the potential clinical and health risks and benefits of e-cigarette use
- Respond to clinical inquiries regarding e-cigarettes from patients and colleagues

# Housekeeping

- All participants will be in listen only mode.
- Please make sure your speakers are on and adjust the volume accordingly.
- If you do not have speakers, please request the dial-in via the chat box.
- This webinar is being recorded and will be available on SCLC's website, along with the slides.
- Use the chat box to send questions at any time for the presenters.

## Today's Speaker





#### Thomas J. Payne, PhD

 Professor, Department of Otolaryngology and Communicative Sciences; Director, ACT Center for Tobacco Treatment, Education and Research, University of Mississippi Medical Center; President, Association for the Treatment of Tobacco Use and Dependence (ATTUD)

Association for the Treatment of Tobacco Use and Dependence

- Non-profit, multi-disciplinary organization of professionals
- Dedicated to increased access to evidence-based treatment of tobacco dependence
- Membership open to individuals with interest in the treatment of tobacco dependence

www.attud.org

- Professional Association
  - Standards or Core Competencies as proficiencies
- Accreditation of Training Programs
  - Council for Tobacco Treatment Training Programs (CTTTP)
- Individual Credentialing or Certification
  - Collaboration with Center for Credentialing and Education
- Collaboration with other Professional Societies
  - SCLC, SRNT

# [Poll Question #1]

- 1. How open are you to discussing the potential benefits of e-cigarettes as a smoking cessation tool?
- Not at all open
- Somewhat open
- Very open

# [Poll Question #2]

How willing are you to incorporate e-cigarettes into a smoking cessation treatment plan?

- I am against incorporating e-cigarettes into a smoking cessation treatment plan.
- I am hesitant to incorporate e-cigarettes into a smoking cessation treatment plan.
- I would consider incorporating e-cigarettes, with some patients, into a smoking cessation treatment plan.
- I would incorporate e-cigarettes into a smoking cessation treatment plan.

# Today's Speaker



PENNSTATE HERSHEY

College of Medicine

#### Jonathan Foulds, PhD

 Professor of Public Health Sciences and Psychiatry, Penn State University, College of Medicine

# Today's Speaker

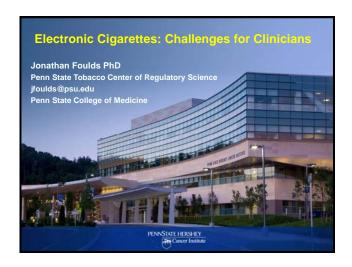






#### Pamela M. Ling, MD, MPH

Associate Professor of Medicine, School of Medicine, University of California, San Francisco



#### Acknowledgements and conflicts.

- I am supported primarily by research funds from the National Institutes of Health and FDA Center for Tobacco Products (Award #s P50DA036107 and P50DA036105), but also Penn State Hershey Cancer Institute, and the Clinical & Translational Science Institute, Social Science Research Institute and the Center for Integrated Healthcare Delivery Systems at Penn State University and a grant from Pfizer Inc. The content of my presentation today is solely my responsibility and does not reflect the views of NiH, FDA or any other funder.
- I undertake research and consultancy for pharma companies that develop and manufacture smoking cessation medications (including GSK, Pfizer, Novartis, J&J).
- I don't do consulting for tobacco companies or e-cig companies.
- Wrote a regular weblog for a health website at:
- Volunteer as a "Health Expert" on the smoking cessation community on
- Thanks to numerous colleagues for sharing their slides.

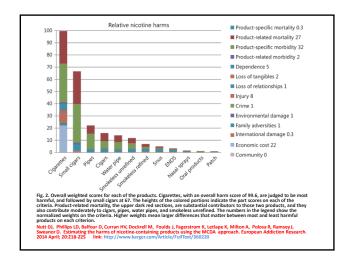
"If people have difficulty overcoming both nicotine dependence and long-term habit change, then surely the solution is to help them avoid most of the health risks with only a minimal alteration in their nicotineseeking habits. This implies a nicotine replacement device which looks like a cigarette and delivers cigarette-like boli of nicotine, but does not deliver the tar and carbon monoxide which cause the vast majority of smoking-related disease..... the development and promotion of such a product (and its eventual replacement of tobacco) could have massive beneficial public health implications lasting into the 21st century." (Foulds, 1994)

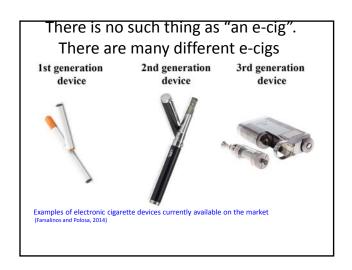
Foulds J. Nicotine replacement therapy does work: time to stop sitting on the fence. A reply. Addiction 1994; 89:438-9.

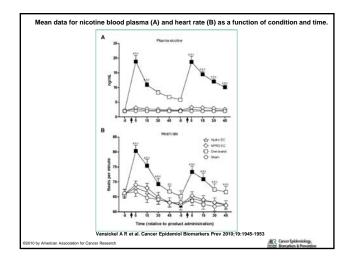
"There is a fine line between being visionary and being wrong.

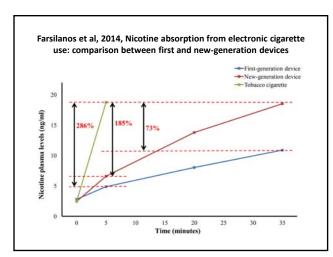
Unfortunately you have to be a visionary to see it."

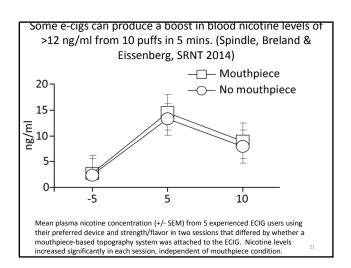
Dr Sheldon Cooper The Big Bang Theory

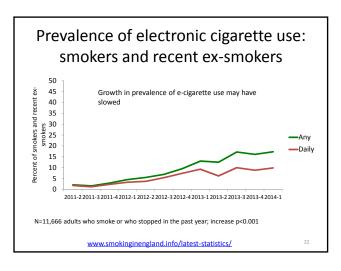


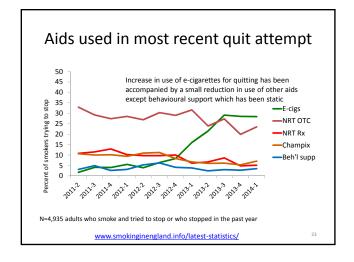


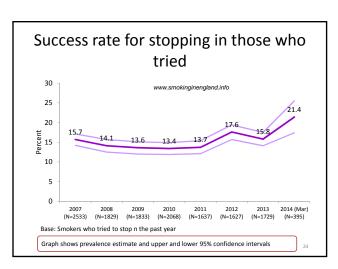












#### Cigarette smoking prevalence 25 22.0 21.4 20.0 19.3 20 17.8 15 15 10 www.smokinginengland.info (N=22079) (N=18990) (N=21137) (N=24794) (N=21879) (N=21330) (N=22167) Base: All adults Graph shows prevalence estimate and upper and lower 95% confidence intervals

#### **Conclusions**

- The increase in electronic cigarette use prevalence continues but may have slowed
- Growth in electronic cigarette use has been accompanied by a reduction, albeit smaller, in use of licensed nicotine products and prescription medication but not use of behavioural
- Evidence does not support the view that electronic cigarettes are undermining motivation to quit or reduction in smoking prevalence
- Use of e-cigarettes by never smokers remains extremely rare
- Evidence conflicts with the view that electronic cigarettes are undermining tobacco control or 'renormalizing' smoking, and they may be contributing to a reduction in smoking prevalence through increased success at quitting smoking

#### Conclusions

- · Some countries have already banned e-cigs (e.g. Brazil, Australia). Is banning the appropriate response to e-cigs while allowing toxic cigarettes to dominate the nicotine market?
- E-cigs should be regulated so they cannot be sold to under 18s, should have adequate safety standards (e.g. childproof) and quality controls (e.g. no toxicants in e-liquid). E-cigs should not be used in indoor public/workplaces covered by clean indoor air legislation.
- E-cigs can do most good NOT in the clinician's office, but rather by competing effectively in the nicotine marketplace against much more harmful smoked tobacco products (primarily cigarettes).





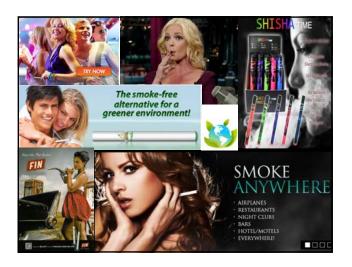
# Electronic cigarettes: Challenges for Clinicians

#### Pamela Ling, MD MPH

Center for Tobacco Control Research and Education University of California San Francisco

April 23, 2014

Thanks to: Rachel Grana, PhD MPH, Stanton A Glantz PhD, Neal Benowitz MD Image sources: <a href="www.trinketsandtrash.org">www.trinketsandtrash.org</a> and SRITA (tobacco.stanford.edu) Funding: National Cancer Institute R01-CA-141661































#### Clinical Scenario #1 (Foulds)

 "I'm a heavy smoker and both my parents were smokers who died of lung cancer. I've tried all the meds but never quit for more than a week. I've heard that e-cigarettes can help smokers to quit and I really want to give it a shot. What can you tell me about them?"

#### Clinical Scenario #1 (Foulds)

- 1. Support Quit Attempt
- 2. Assess motivation and dependence
- 3. Assess prior quit attempts and inform about all treatment/support options
- Inform on what we know and what we don't know about ecigs.
- 5. Assist smoker to develop a plan to quit smoking
- 6. Arrange a follow-up

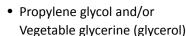
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#### Clinical Scenario #1 (Foulds)

- If patient has only tried NRT monotherapy, inform about (a) combination NRT (b) reduce to quit (c) bupropion and varenicline options.
- Inform about additional support available: 1-800 QUIT-NOW
- <u>www.smokefree.gov</u> <u>www.becomeanex.org</u>
- Inform on what we know and what we don't know about ecips
- Many different types, currently unregulated, no smoke
- Not proven as safe and effective, no clear instruction for use
- Clinical trials to date have had disappointing results but have exclusively used first generation models.

#### Liquid

#### <u>Conte</u>nts



- Nicotine (in mg/ml; ranging from 0-36)
- Flavourings (e.g. tobacco, mint, fruit, menthol etc)
- Additives

## Clinical Scenario #1 (Foulds)

- "The evidence from clinical trials suggests that the best quit rates are
  achieved by maximizing your psychosocial support (e.g. group faceto-face support plus quitline plus online) and pharmacological
  support (e.g. combination NRT or varenicline for as long as it takes). If
  you choose to use these treatments they will likely increase your
  chances of quitting by 2 to 4 times"
- An e-cigarette may help, but we don't yet have very solid data on how helpful they are or what the longer term health risks may be.
- If you choose one that provides you with a decent amount of nicotine
  it is likely it will help you in much the same way as NRT. As the e-cig
  delivers nicotine plus a few more chemicals it is very likely to be
  much less harmful than smoking.

#### Clinical Scenario #1- Ling response

- E-cigarettes are unregulated devices that are not approved by FDA for smoking cessation
- Device variability makes it near impossible to recommend a product or type
- Not "Harmless Water Vapor"
- Data on cessation is scant
  - Convenience samples of users report success
  - One reasonably sized RCT

#### Electronic cigarettes for smoking cessation: a randomised controlled trial Nicotine Patch (N=295) N (%) cigarettes (N=73) 67 (23.2)\* 12 (16.4) 47 (15.9)\* 1 month 38 (13.1) 5 (6.8) 27 (9.2) 3 months 6 months (Primary 21 (7.3) 3 (4.1) 17 (5.8) outcome) Data from: Lancet 2013, 382: 1629-37

#### Electronic cigarettes for smoking cessation: a randomised controlled trial Nicotine e-cigarette (N=289) Placebo e-Nicotine Patch (N=295) Pharmacological Treatments cigarettes (N=73) 1 month 67 (23.2)\* 12 (16.4) 47 (15.9)\* 3 months 38 (13.1) 5 (6.8) 27 (9.2) 6 months NRT 17.3% Bupropion 18.9% Varenicline 27.6% (Primary 21 (7.3) 3 (4.1) 17 (5.8) outcome) Placebo 10.3-11.9% \*p<0.05 Data from: Lancet 2013, 382: 1629-37 JAMA 2014; 311(2):193-4.

Quitting: Population Studies		
Study	Location/ Length of followup	Odds of quitting (95% CI)
Adkison (2013)	US, UK, Canada, Australia (ITC) (1 yr)	0.81 (0.43,1.53)*
Grana (2014)	US (1 yr)	0.76 (0.36,1.60)
Vickerman (2013)	US quit line callers (7 mo)	0.50 (0.40,0.63)**
*Odds ratios obtained by cont **Computed by authors of thi	acting authors s report based on the numbers repor	ted in the paper
Thanks to: Rachel Grana, PhD MPH		

#### Advice for Clinical Scenario #1

- Support quit attempt
- Guide towards approved therapies
- Encourage complete switching not dual use
  - Most e-cigarette users →dual use
  - This is unlikely to reduce cardiovascular risk
- If patient truly only wants to use e-cigarette, set a quit date for e-cigarette too

Godtfredsen N, et al. Smoking Reduction, Smoking Cessation, and Incidence of Fatal and Non-Fatal Myocardial Infarction in Denmark 1976–1998: A Pooled Cohort Study. *Journal of Epidemiology and Community Health*. 2003;57:412-6.

#### Clinical Scenario #2 (Ling)

- 50 yo woman primary care patient with back pain, hypertension, hyperlipidemia, depression and PTSD, here for routine follow up, incidentally noted she is still smoking 3 to 5 cpd, reduced from 10 cpd.
- She quit once "cold turkey" for 9 months 2 years ago
- "not interested" in any medications, counseling, or nicotine replacement
- She is willing to set a quit date in the next 30 days (her son's birthday) and remarks, "Maybe I'll get one of those electric cigarettes to quit, what do you think?"

#### Clinical Scenario #2

- · Opportunity to engage patient in counseling
- This is a "light" smoker
- Significant psychiatric history
- ASK: why is she interested in e-cigarette?
- What does she think is different from approved therapies?
- History of past quit attempts and assistance?

#### "not interested"

- "I've tried everything"
  - Frequently NRT misused or incorrectly used
  - Unassisted quit attempts
- Correct misperceptions of approved therapies
- Correct misperceptions of e-cigarettes
- Treat Depression, PTSD

Shiffman S, Ferguson SG, Rohay J, Gitchell JG. Perceived safety and efficacy of nicotine replacement therapies among US smokers and ex-smokers: relationship with use and compliance. Addiction. 2008 Aug;103(8):1371-8









#### Clinical Scenario #2

- Use e-cigarette question to open door to patient perceptions and expectations
- Exhaust all options prior to e-cigarettes
- Correct misperceptions
  - About NRT or medications
  - About electronic cigarettes

#### Clinical Scenario #2

- This patient ended up with
- Nicotine inhaler prescription (unfilled)
- Quit with nicotine gum and counseling on proper use
- Saw a therapist to help manage stress
- Remains tobacco free today

#### Clinical Scenario #2 – Foulds response

#### Clinical Scenario #3 (Foulds)

52 year-old woman, smoked a pack a day, had more than 7 quit attempts over past 10 years. Some success with meds(NRT or Varenicline) and counseling, but always relapsed between 2 and 6 months after the initial quit date. She returns for an annual follow-up, and this time is 9 months tobacco free (exhaled CO=1ppm, FEV1 improved significantly compared with smoking baseline), ever since started using an e-cig on a daily basis...initially a disposable from a gas station, then a rechargeable cigalike, then an "Ego Tank" with a button, and now she is in love with some fancy e-cig called a "Provari" that she found online. I asked her to complete the Penn State Electronic Cigarette Dependence Index, and she obtained a very high score (15/20), only a couple of points lower than she obtained on the PS Cigarette Dependence Index at initial assessment. She feels the e-cig has really helped her stay off cigarettes and has no plans to quit, but asks about the long term health effects.

#### Penn State Electronic Cigarette Index

1. How many times per day do you usually use your electronic cigarette? (assume one "time" consists of around 15 puffs, or lasts around 10 minutes)

\_\_\_\_30\_\_\_\_ times per day (5)

2. On days that you can use your electronic cigarette freely, how soon after you wake up do you first use your electronic cigarette?

\_\_\_20\_\_\_ minutes (3)

3. Do you sometimes awaken at night to use your electronic cigarette? Yesx No (1)

4. If yes, how many nights per week do you typically awaken to use your electronic cigarette?  $\_\_3$  $\_\_$  nights (2)

5. Do you use an electronic cigarette now because it is really hard to quit? Yes Nox (0)

#### Penn State Electronic Cigarette Index

6. Do you ever have strong cravings to use an electronic cigarette? xYes No (1)

7. Over the past week, how strong have the urges to use an electronic cigarette been?

No urges Slight Moderate xStrong Very strong Extremely strong (1)

(check one)

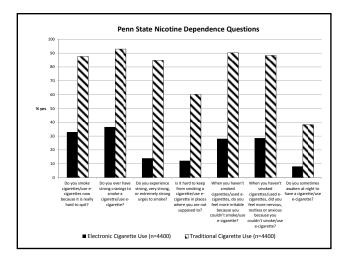
8. Is it hard to keep from using an electronic cigarette in places where you are not supposed to? Yes NoX

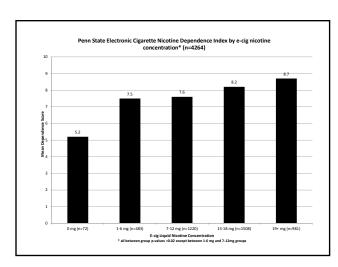
When you haven't used an electronic cigarette for a while... OR when you tried to stop using...

10. Did you feel nervous, restless or anxious because you couldn't use an electronic cigarette?

x Yes No (1)

11. What concentration of nicotine is in the liquid you typically use with your e-cig? \_\_\_18\_\_\_ mg/ml.





#### Clinical Scenario #3 (Foulds)

- The long term health effects of inhaling nicotine, propylene glycol, vegetable glycerin, flavorings and other unknown additives are unknown
- They are very likely worse for health than inhaling fresh air
- They are very likely much less harmful to health than smoking cigarettes.
- The most important thing for this patient is to stay off cigarettes in the immediate future
- Encourage to start thinking about weaning herself off the e-cigs, possibly by gradually reducing the nicotine concentration in her liquid....but only if she feels secure in not relapsing back to smoking

Clinical Scenario #3 – Ling response

- Support quit attempt (already quit)
- Long term health effects unknown
- Rapidly evolving products have unknown effects

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PLOS |

Metal and Silicate Particles Including Nanoparticles Are Present in Electronic Cigarette Cartomizer Fluid and Aerosol

Monique Williams<sup>1</sup>, Amanda Villarreal<sup>1</sup>, Krassimir Bozhilov<sup>2</sup>, Sabrina Lin<sup>1</sup>, Prue Talbot<sup>1</sup>\*

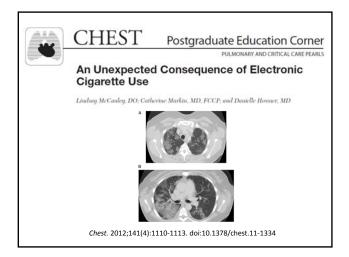
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Moscoscopy and Monoparky, University of California Reveale, Activation, Landon States of America.

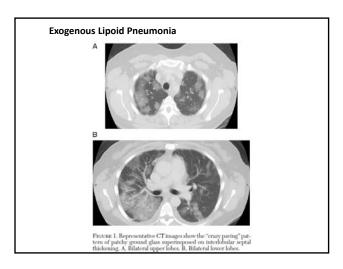
2. California Revealed States of A

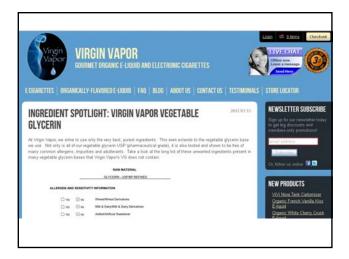
- E-cigarette fluid and vapor contains toxic metals and nanoparticles
- Vapor contains tobacco-related toxins and chemicals less than cigarettes, more than nicotine inhaler
  - > Formaldehyde
  - > Acrolein
  - Acetaldehyde
  - ➤ VOCs
  - NNN and NNK
- Exposure studies Puff Topography not accounted for

Goniewicz et al, Tobacco Control 2013.









### Clinical Scenario #3 - Advice

- Note product being used, perhaps liquid
- Set a quit date for e-cigarette
  - Can patient transition to an approved therapy?
- Continue dialogue, symptom review

#### Clinical Scenario #4 (Ling)

- 21 yo female presents for work physical for restaurant job. Denies significant PMH except Asthma, treated with Albuterol PRN (once or twice a day)
- Denies smoking. Drinks 4-5 alcoholic drinks on weekends. Has been using a vapor pen when out at parties sometimes.
- She lives with his mom and five siblings. Mom (39) recently quit smoking using an electronic cigarette, which she continues to use.
- Is his nicotine exposure significant? How do you counsel her?

#### Clinical Scenario #4

- Screening challenges
  - Binge drinkers frequently smoke
  - May present themselves as nonsmokers
  - Need to screen specifically (pt smokes when drinks)
  - Vapor pens = e-cigarettes
    - Also e-hookah, vapes, sticks, hookah pens
- Recreational use common
  - Young adults have highest rates of use
  - May lead to or increase nicotine addiction







#### Clinical Scenario #4 - Asthma

- Inadequately controlled
- Personalized reason not to smoke or be exposed to secondhand smoke or aerosol
- One study found acute pulmonary effects
  - 5 minutes of e-cigarette use in healthy smokers increased airway resistance
  - Unknown clinical significance
  - May affect susceptible people

Vardavas CI et al. Chest. 2012;141:1400-6.





"But who knows? Maybe the research will show that e-cigs (without nicotine) are just fine and dandy through





E Cigarettes: Some Are "Vaping" Instead

🖁 pregnancy."

### Nicotine and the Developing Brain

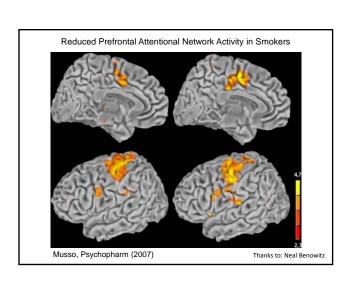
- Nicotine alters the structure and function of the brain and is highly addictive
- Animal studies demonstrate that the adolescent brain is sensitive to nicotine and results in long-lasting neurochemical and behavior changes
- Nicotine interferes with maturation of the prefrontal cortex

Thanks to: Neal Benowitz

# Nicotine effects on prefontal cortex functions

- Nicotine in adolescent rats results in longterm cognitive impairment (accuracy, impulse control)
- Adolescent smokers show reduced PFC activity, including memory and attention
- Adolescent smoking associated with later life behavioral disturbances, including substance abuse and mental health problems

Thanks to: Neal Benowitz







### Clinical Scenario #4 - mom

- Aerosol exposure results in detectable serum cotinine levels in nonsmokers
- Modeling what appears to be smoking for kids
- Products themselves are attractive "toys"







Morbidity and Mortality Weekly Report

#### Notes from the Field

Calls to Poison Centers for Exposures to Electronic Cigarettes — United States, September 2010–February 2014

- Average 1 per month increased to 215/month
- Most common adverse events were vomiting, nausea, and eye irritation

#### Clinical Scenario #4 - Advice

- Discourage recreational "vapor pen" use
- Personalize to patient's medical conditions
- Fetal exposure to nicotine not harmless
- Support mom's quit attempt!
- Preserve smoke and vapor free homes
- E-cigarettes are not harmless toys

#### Advice for Clinicians

- Screen for poly tobacco use including e-cigarettes
- · Field and devices are rapidly evolving
- Engage with new opportunities to discuss smoking cessation
- Misinformation and false claims are rampant
- · Data is scarce
- Continue to recommend approved therapies
- Monitor use in your patients, document and report health concerns

# Advocacy and Community Action

- Include e-cigarettes in tobacco free policies
- Prohibit cessation and health claims
- Apply cigarette advertising restrictions to electronic cigarettes

Clinical Scenario #4- Foulds response

# Questions and Answers



 Feel free to submit questions via the chat box

# [Repeat Poll Question #1]

- 1. How open are you to discussing the potential benefits of e-cigarettes as a smoking cessation tool?
- Not at all open
- Somewhat open
- Very open

# [Repeat Poll Question #2]

How willing are you to incorporate e-cigarettes into a smoking cessation treatment plan?

- I am against incorporating e-cigarettes into a smoking cessation treatment plan.
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# Contact SCLC for technical assistance



CME/CEUs of up to 1.5 credits are available to all attendees for a fee of \$35 per certificate. Instructions will be emailed after the webinar.

#### Visit us online

• http://smokingcessationleadership.ucsf.edu

#### Call us toll-free

• 1-877-509-3786



# Closing remarks

- Please help us by completing the post-webinar survey.
- Thank you for your continued efforts to combat tobacco.
- Register now for SCLC's next webinar,
   "Tobacco Cessation Coverage:
   Implementation of the Affordable Care Act in 2014" at 1pm ET on May 15, 2014.

#### **CME/CEU Statement**

#### Accreditation

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Physician Assistants: The National Commission on Certification of Physician Assistants (NCCPA) states that the  $\mathit{AlkAPACategory1Credits}^M$  are acceptable for continuing medical education requirements for recertification.

California Pharmacists: The California Board of Pharmacy accepts as continuing professional education those courses that meet the standard of relevance to pharmacy practice and have been approved for AMA PFA category 1 candiff. If you are a pharmacist in another state, you should check with your state board for approval of this credit.

Social Workers: This course meets the qualifications for 1.5 hours of continuing education credit for MFTs and/or LCSWs as required by the California Board of Behavioral Sciences. If you a social worker in another state, you should check with your state board for approval of this credit.