



# The Electronic Cigarette: A Safe Alternative?

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# Participants will be able to...

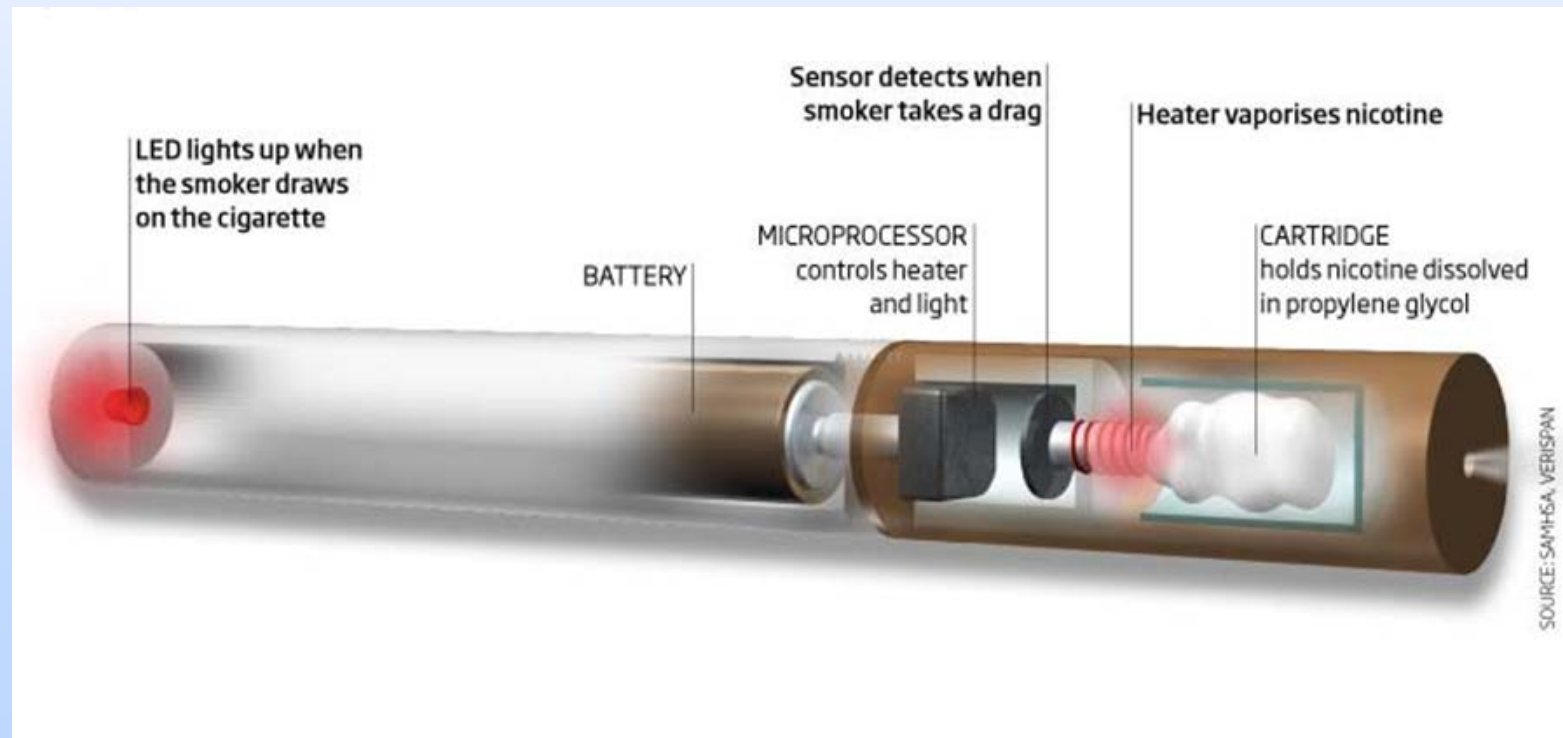
Explain the basic function and ingredients of the electronic cigarette

Verbalize current knowledge regarding the safety and efficacy of electronic cigarettes

Demonstrate how to discuss the use of an e-cigarette with clients/patients

# Electronic Nicotine Delivery System (ENDS)

A battery-powered device that provides inhaled doses of vaporized nicotine solution. It is used as an alternative to smoked tobacco products, such as cigarettes, cigars, or pipes.



# “Vaping”

To inhale vapor from an e-cigarette



# “E-Juice” or “Smoke Juice”

- Total nicotine = 720 mg
- Lethal nicotine dose =
- 40–60 mg (0.5-1.0 mg/kg)



# E-Liquid Solution Composition

- Propylene glycol
  - 95% of volume of e-liquids
  - Vapor that carries nicotine into body
  - Added to some foods, cosmetics, & medicines
- Nicotine
  - Varying amounts
- Flavoring & coloring agents
- Impurities & Additives




















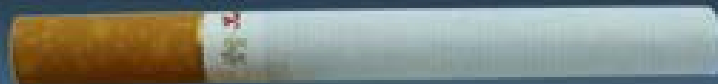
# Increasing Popularity

## Steady growth

- Sales
- Users
- Advocates

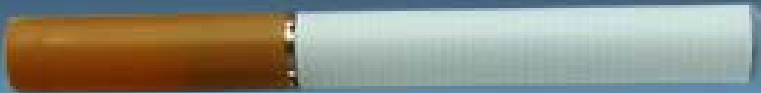
<http://www.e-cigarette-forum.com>

The E-Cigarette		Threads / Posts	Last Post
	<b>New Members Forum</b> <i>(269 Viewing)</i> All new members begin here. Please read the stickies in the New Members Information forum. These stickies will enhance your ECF experience and answer many frequently asked questions. <b>Sub-Forums:</b>  New Members Information	 Threads: 74,241 Posts: 1,046,861	 Thought I had it figured out. by klynnn Today, 03:19 AM
	<b>General E-Smoking Discussion</b> <i>(115 Viewing)</i> General PV discussion and chat. If you are posting on a specific hardware or e-liquid topic, please check to see if your topic is covered in its own forum, either in the sub-forums within, or in other forums further down the index page.	 Threads: 28,721 Posts: 482,165	 Off to the hospital, wish me... by oplholik Today, 03:20 AM
	<b>General E-Liquid Discussion</b> <i>(121 Viewing)</i> Discuss general e-liquid topics here. Please note that DIY e-liquid discussions and recipes have their own sub forums. <b>Sub-Forums:</b>  DIY E-Liquid	 Threads: 17,771 Posts: 276,807	 Fluid ruins protank heads? by Rocketpunk Today, 03:16 AM
	<b>APV Discussion</b> <i>(107 Viewing)</i> General discussion about Advanced Personal Vaporizers - generic battery models aka 2nd and 3rd-generation e-cigs - types, batteries, general questions, and all other aspects <i>except</i> building mods. For construction, please use the Modding Forum. <b>Sub-Forums:</b>  Variable Voltage APV Discussion,  Liquid Feed APV Discussion,  APV Model Specific Discussion	 Threads: 6,033 Posts: 127,765	 Orion 2.1 problem ... Help?? by Katz67 Today, 03:15 AM



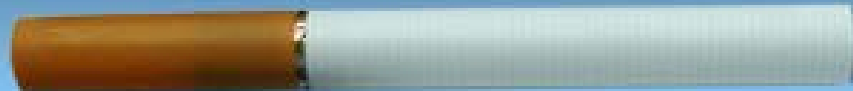
Cigarette

8.5(D)\*89(L)mm



KR-808A

8.5(D)\*98(L)mm



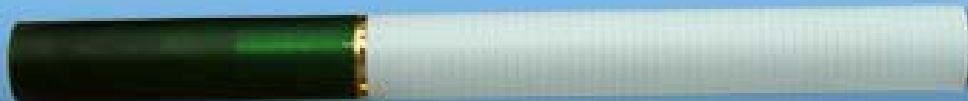
KR-808

9.2(D)\*110(L)mm



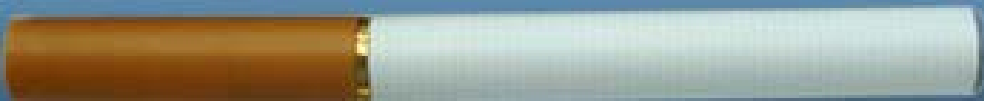
KR-308

9.2(D)\*110(L)mm



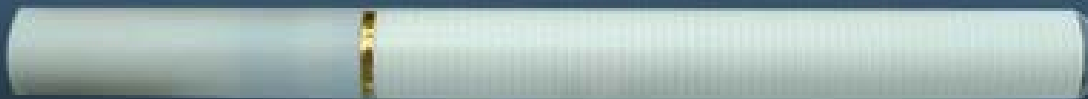
KR-308

9.2(D)\*110(L)mm



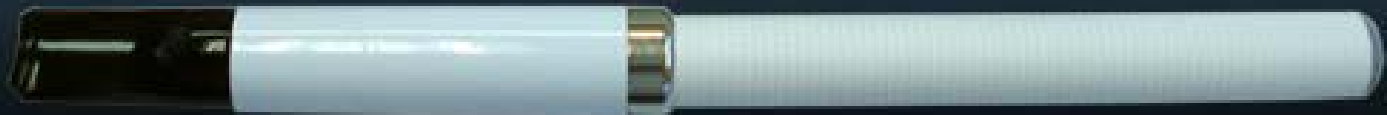
KR-308

9.2(D)\*119(L)mm



KR-208

9.2(D)\*153(L)mm



KR-108





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# Safety Considerations



- In 2009, FDA's Center for Drug Evaluation, Division of Pharmaceutical Analysis (DPA) analyzed:
  - 2 samples of electronic cigarettes & components from two leading brands
    - 18 of the flavored, nicotine, and no-nicotine cartridges
  - Nicotine inhaler (control)





**U.S. Food and Drug Administration**  
Protecting and Promoting *Your Health*



- DPA's analysis:
  - Diethylene glycol in one cartridge @ 1%
    - Ingredient used in antifreeze & toxic to humans
  - Tobacco-specific nitrosamines (TSNA's) in 1/2 of samples
    - Human carcinogen
  - Tobacco-specific impurities detected in a majority of the samples tested
    - May be harmful to humans
      - Anabasine
      - Myosmine
      - $\beta$ -nicotyrine



# Safety – Short-Term Effects

- Nicotine Poisoning
- Pulmonary Issues
- Cardiovascular Effects





# Safety – Long-Term Effects

- Research is extremely limited
- Concerns
  - Prolonged inhalation of chemicals
  - Net public health effect

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# Efficacy Considerations



# Viability of Stop Smoking Aid?

## FDA approved NRT

- Delivers consistent dose
- Reduces cravings & symptoms of withdrawal
- Effective as smoking cessation treatment
- Highly regulated

## Electronic Cigarettes

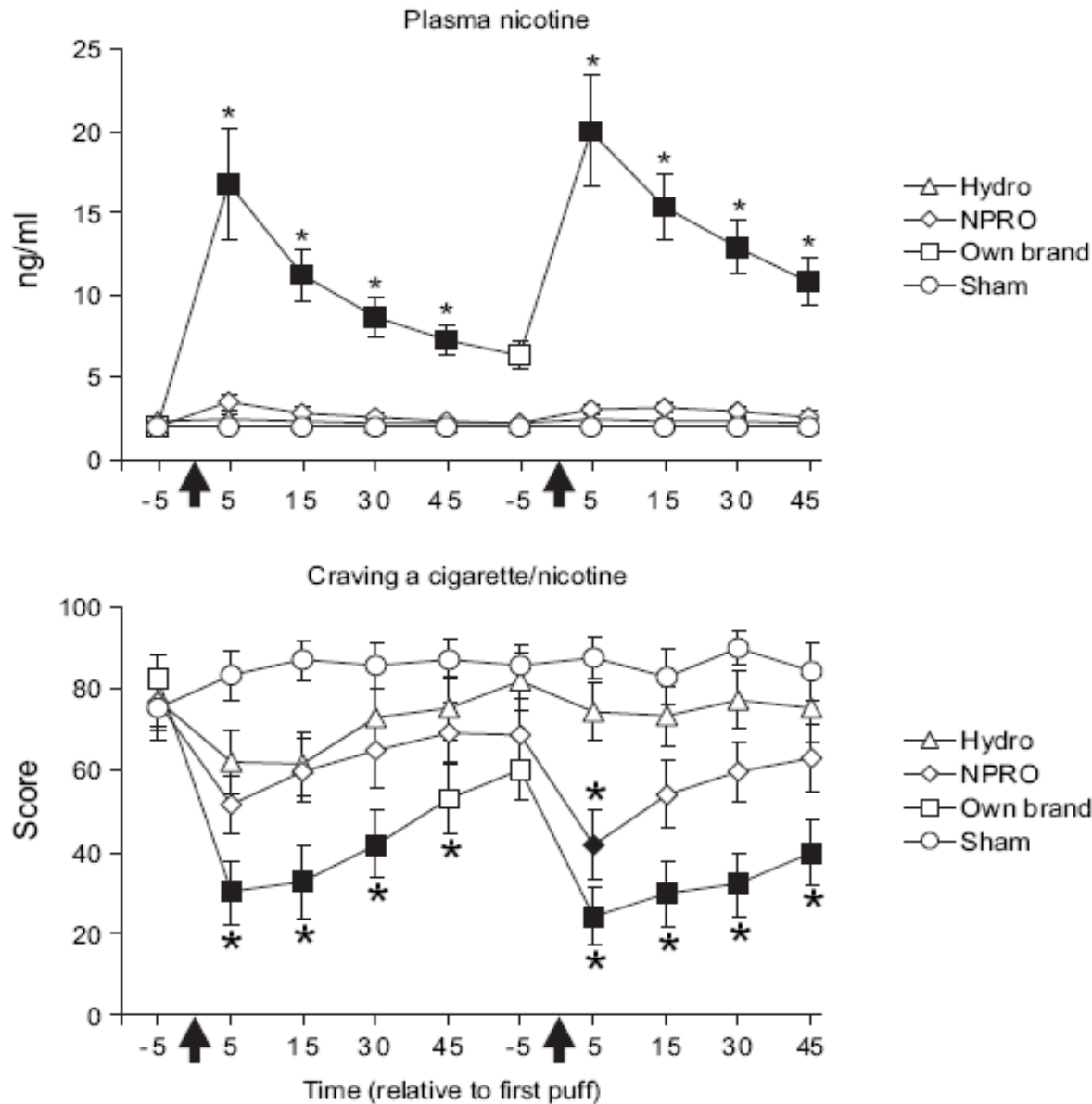
- Research mixed and very limited
- Relying on anecdotal accounts
- Little to no regulation



- E-cigarette cartridges labeled as “no nicotine”
  - Low levels of nicotine present in all cartridges tested, except one.
- 3 different E-cigarette cartridges
  - Same label
  - Markedly different amount of nicotine with each puff.
  - Range: from 26.8 to 43.2 mcg nicotine/100 mL puff
- One high-nicotine cartridge delivered 2 x as much nicotine as the nicotine inhaler



# Effects on Desire to Smoke



## Crown 7 Hydro



## Njoy NPRO



Eissenberg T. Tob Control. 2010  
Feb;19(1):87-8..

# Legal Timeline

- 2009 – FDA attempts to regulate E-Cigs as drug device
- 2010 – Judge Richard J. Leon states E-Cigs should be regulated as tobacco product
- 2011 – FDA appeals decision and loses

As of May 2013

- 12 states have banned sale to minors
- States increasingly pushing for taxation

# Addressing the E-Cig with Patients

- Determine your position
  - NDC Policy
- Using MI to exchange information
  - E-P-E
  - OARS
- Assist with evidence-based tobacco treatment

# Key Points

- Battery-powered device that vaporizes nicotine for inhalation
- Gaining in popularity
- Lack of evidence for safety with long-term use
- Lack of evidence to support use as a treatment to help smokers stop smoking
- Legal status in the US – regulated as tobacco
- Use of OARS & E-P-E when discussing with patients