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E-Cigarette Use for Smoking Cessation

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E-Cigarette Use for Smoking Cessation

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Problem Identification

- As of 2023:
 - 11% of Vermonters use cigarettes
 - 8% of Chittenden county residents
 - 5% of Vermonters use e-cigarettes
 - 2% of Vermonters use smokeless tobacco
 - 47% of Vermonters have tried to quit smoking within 2022-2023**
 - 46% of Chittenden county residents have attempted
- Vaping is **~20x** safer than smoking according to current short- and medium-term data from the U.K.
- The goal of this project is to address knowledge gaps in individuals using and counseling others on the use of e-cigarettes in smoking cessation to avoid increased nicotine dependence while still helping people stop smoking cigarettes.
- AHEC Topic Areas: medical practice transformation, current and emerging health issue

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Public Health Cost

According to the CDC:

- Cigarette smoking cost the United States over \$600 billion (2018) including:
 - \$240 billion in health care spending
 - Almost \$185 billion in lost productivity from smoking related health conditions
 - Almost \$180 billion in lost productivity from smoking related premature death
 - \$7 billion in lost productivity from secondhand smoke exposure

- In Vermont in 2022:
 - \$404 million in tobacco-related healthcare spending
 - Cost for Medicaid tobacco-related expenses are \$93.7 million
 - If 2% of people who currently smoke in VT were to quit, the state would save \$12.2 million in Medicaid costs.

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Community Perspective

- Dr. Lauren Faricy, pediatric pulmonologist
 - In speaking with Vermont children and their parents frequently about smoking cessation and vape use, it is common that people use vapes to quit smoking then become more addicted to nicotine as a result. To help prevent this, she recommends trying to avoid mindless e-cigarette use inside among other things.
- Dr. Madelyn Sawyer, family medicine physician
 - E-cigarette use in adults trying to quit smoking is a harm reduction strategy. For people trying to quit cigarettes, they should focus on reducing the nicotine content of their vape, using the device when withdrawal symptoms come on, and work on reducing usage over time.

Intervention and Methodology

A handout meant for providers to review with patients was created and included information on:

- Nicotine content in e-cigarettes
- Recommended percent nicotine content in e-cigarettes based on current cigarette use
- Tips on e-cigarette use to avoid increased nicotine dependence

This is intended to be something providers review with patients before providing them with it to keep.

Intervention

Smoking Cessation Using E-Cigarettes

On your device packaging, look for **nicotine content** - given in percent (%) or milligrams (mg) - and **fluid amount (mL)**

1. Convert nicotine content to mg (e.g., 5% = 50 mg)

$$\underline{\quad\quad} \% = \underline{\quad\quad} \text{ mg}$$

2. Determine **total nicotine content** with value from #1

$$\underline{\quad\quad} \text{ mg} \times \underline{\quad\quad} \text{ mL} = \underline{\quad\quad}$$

Value from #1

This value tells you how many **packs of cigarettes** worth of nicotine are in your e-cigarette

$$\underline{\quad\quad} \div \frac{30 \text{ mg}^*}{\text{nicotine/pack}} = \boxed{\text{packs per vape}}$$

Value from #2

Using e-cigarettes to quit smoking

- We know cigarette use leads to many serious health events
- E-cigarettes, though not risk free, are currently believed to be much less harmful than traditional cigarettes

* A pack of cigarettes = 22-34 mg nicotine but this can vary widely, 30 is used as a rough average for calculations on this handout

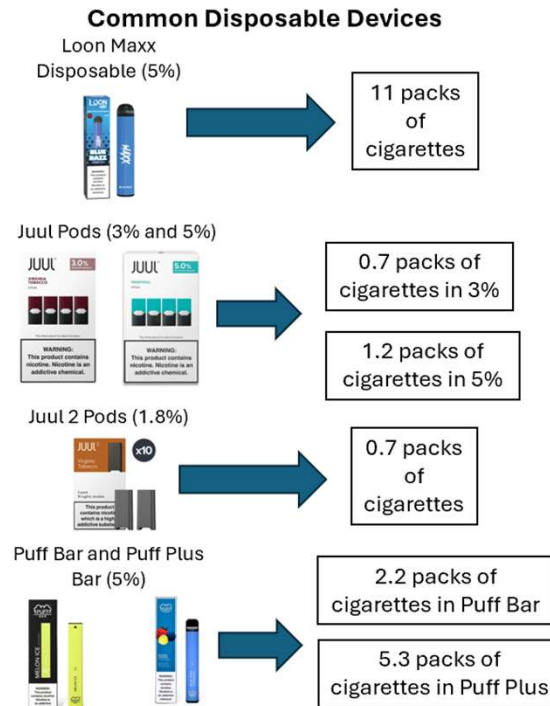
Below is a table showing recommended e-cigarette nicotine concentration based on current cigarette usage. Some concentrations are much easier to find than others (bolded) but dedicated vape shops are more likely to carry a wider variety of concentrations. Using refillable devices allows you to mix your own concentration using nicotine free solution.

Cigarette Smoking Equivalent	Nicotine Salt Concentration
No longer smoking	Nicotine free solution – 0 mg/mL, 0%
1-6 cigarettes per day	< 10 mg/mL (1%)
6-12 cigarettes per day	20 mg/mL (2%)
12-20 cigarettes per day	25 mg/mL (2.5%)
20-25 cigarettes per day	30 mg/mL (3%)
25+ cigarettes per day	35 mg/mL (3.5%)
2+ packs per day	50-60 mg/mL (5%-6%)

- Consider these ideas when using e-cigarettes for smoking cessation:
 - Avoid using your e-cigarette indoors
 - Treat it like a cigarette and go to a different location to use your e-cigarette
 - When you begin to feel withdrawal symptoms, use your e-cigarette until symptoms improve
 - Avoid using your e-cigarette mindlessly
 - Over time, consider buying lower nicotine content devices
- It is not recommended to use cigarettes and e-cigarettes at the same time long term as this is worse for your health than either product alone

Intervention

Smoking Cessation Using E-Cigarettes



These e-cigarette brands are the only FDA authorized devices sold in the U.S.

- Juul Devices (3% and 5%, menthol and Virginia tobacco)
- Logic Technology
- NJOY
- R.J. Reynolds – Vuse Devices

Other Quitting Resources:

- 802Quits.org
- Quitassist.org
- American Lung Association
 - Quit Smoking menu option
- Smokefree.gov
- Ask about medications and other supports!

References

- <https://newsroom.heart.org/news/smoking-and-vaping-had-overlapping-adverse-health-effects-dual-product-use-may-be-worse>
- <https://www.ahajournals.org/doi/10.1161/CIR.0000000000001160>
- <https://www.ahajournals.org/doi/full/10.1161/ATVBAHA.123.319575>
- <https://www.tga.gov.au/sites/default/files/2022-10/nicotine-vaping-products-flow-chart-university-wollongong.pdf>

Created by Lexi Amaio, UVM Larner College of Medicine

Results and Reflection

- This intervention will hopefully provide information and some direction to community members seeking to use e-cigarettes as an aid for smoking cessation.
- Given time, I would use surveys to assess the quality of the handout and in the long term, assess continued abstinence from cigarettes in people who had access to this information.
- Challenges with creating this intervention included finding research about e-cigarette use and nicotine content and delivery in e-cigarettes. Anticipated challenges in implementing this intervention include availability of the variety of nicotine concentrations studied and time needed to review this with patients.

Future Directions

- Next steps include incorporating this information into care and assessing its ease of utility and understandability by patients
- A follow up project could be to create an Epic dot phrase with information both for providers and patients about e-cigarette use in smoking cessation
- An interesting future project would be to implement this across several practices and assess rates of smoking cessation using e-cigarettes when patients have guidance versus without any provider guidance.

References and Citations

1. McNeill A, Simonavicius E, Brose L, et al. Nicotine vaping in England: an evidence update including health risks and perceptions. Published online September 29, 2022. <https://assets.publishing.service.gov.uk/media/633469fc8fa8f5066d28e1a2/Nicotine-vaping-in-England-2022-report.pdf>
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3. CDC. Health and Economic Benefits of Tobacco Use Interventions. National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). July 25, 2025. Accessed September 28, 2025. <https://www.cdc.gov/nccdphp/priorities/tobacco-use.html>
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