

University of Vermont

UVM ScholarWorks

Family Medicine Clerkship Student Projects

Family Medicine Community

2022

Increasing Awareness of Pharmacologic Interventions for Smoking Cessation

Jeremy Frank

Larner College of Medicine

Follow this and additional works at: <https://scholarworks.uvm.edu/fmclerk>




Part of the [Medical Education Commons](#), and the [Primary Care Commons](#)

Recommended Citation

Frank, Jeremy, "Increasing Awareness of Pharmacologic Interventions for Smoking Cessation" (2022).
Family Medicine Clerkship Student Projects. 808.
<https://scholarworks.uvm.edu/fmclerk/808>

This Book is brought to you for free and open access by the Family Medicine Community at UVM ScholarWorks. It has been accepted for inclusion in Family Medicine Clerkship Student Projects by an authorized administrator of UVM ScholarWorks. For more information, please contact schwrrks@uvm.edu.



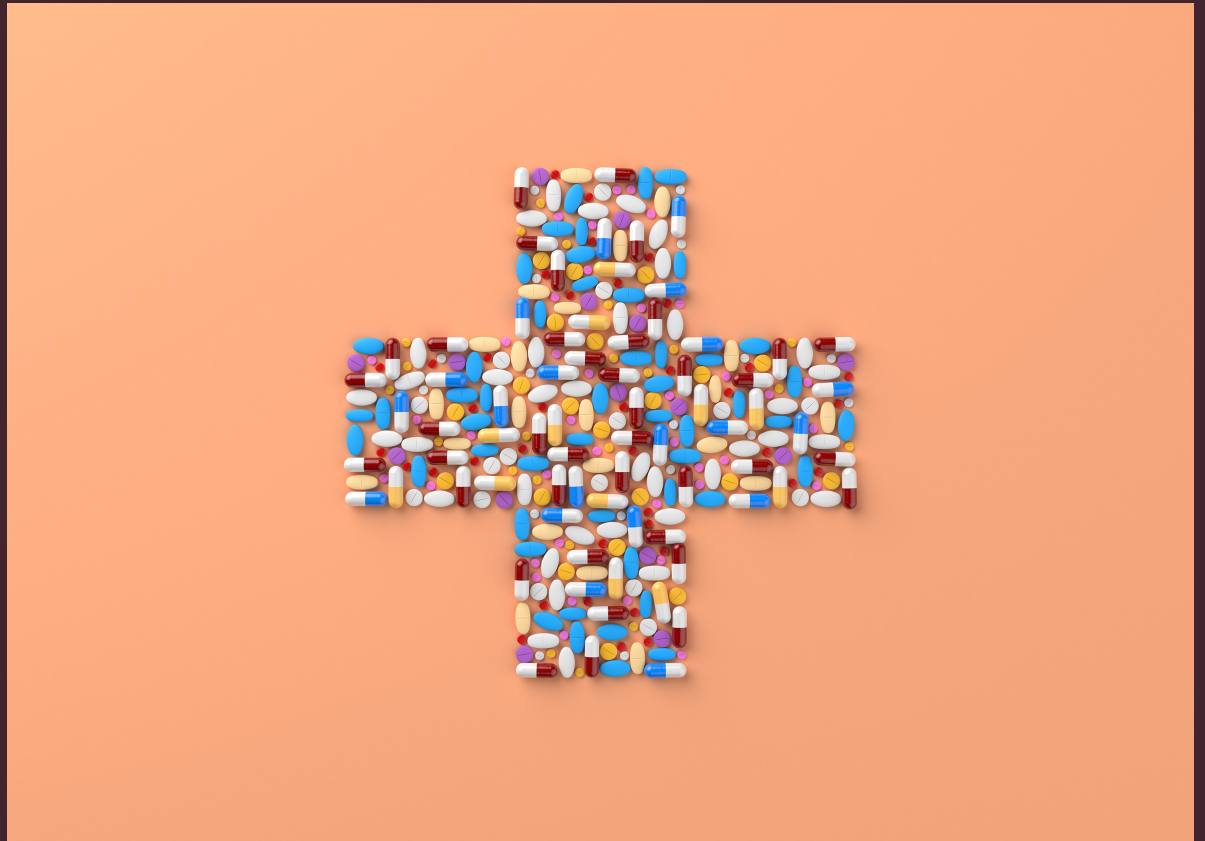
Increasing Awareness of Pharmacologic Interventions for Smoking Cessation

Location: Mountain Health Center (Bristol VT)

Student: Jeremy Frank

Date: September 2022

Mentors: Brian Bates, MD & Jennifer Wisdom-
Behounek, MD



Problem: Quitting Smoking is HARD

- Smoking is a significant cause of morbidity and mortality, that is especially prevalent in the rural towns surrounding Mountain Health Center
 - According to the CDC it is the leading cause of preventable disease, disability, and death in the US¹
- Current studies show that the highest quit rate is with pharmacotherapies in addition to behavior changes and counseling
 - Medications have been shown to significantly increase rates of long-term smoking abstinence
- Providers at Mountain Health Center did a great job initiating the conversation with patients to quit, however, it seemed that the main recommendations from providers were behavioral interventions
 - Often aided with nicotine gum or patches
 - There were several circumstances when I interviewed a patient and they seemed to want an extra push towards help with quitting as they have tried before without success, such as medication, but providers did not discuss medications outside of nicotine replacement
- Problem: patients were not given the most effective interventions for smoking cessation
- Solution: educate both providers and patients on current smoking cessation guidelines
- AHEC Focus Area: high risk patient population (smokers); medical practice transformation



Public Health Cost: Expenses of Smoking

- Smoking in the US is estimated to cost \$170-\$225 billion in direct medical care^{3,4}
- Approximately 11.7% of annual non-pregnancy related healthcare expenditure is attributable to smoking⁴
- Estimated that just a 10% reduction in smoking prevalence would equate to a \$63 billion reduction in healthcare expenditure the very next year⁵
- According to the CDC Vermont has the 31st highest smoking rate at 15.10%⁶
- Smoking is clearly a problem across the US, VT, and the rural towns surrounding
 - Smoking interventions will save overall health care costs and (former) smokers money in the immediate future



Community Perspective on Smoking Cessation

- Interview with Mountain Health Center provider

- Goal of the interview was to find out a concrete example of a Mountain Health Center's smoking cessation management & then to provide insight into current guidelines regarding medication treatment for smoking cessation. This provider started off the interview by saying *"The importance of smoking cessation is top 5 [with regards to overall health of a patient]"*. As far as her style, this provider uses a very individualized treatment plan, saying that patients often come in with a treatment goal in mind: *"Usually they come in with some kind of an idea of, you know, I did patches before and I was able to quit for three months, so I'd like to try to that again and see. So it is very individualized to the patient."* At the base of all of this provider's treatment plans are lifestyle modifications and counseling, she always recommends patients to call the quit line for help. This provider thinks that $\approx 75\%$ of her patients that want to quit smoking get one form of pharmacotherapy. Treatment plans are constantly having to be switched around; *"So there's, I think about like a whole big toolbox of things we can do, and we're going to keep pulling different tools out depending on where they're at."* However, this provider says that recently, she has not been prescribing Chantix (varenicline) frequently because of the (previous) black box warning on varenicline induced psychosis. She was pleasantly surprised to learn about the black box warning removal and to learn about the American Thoracic Society's recommendations for varenicline as the go to first line medication. This provider felt this was a good refresher on the treatment options for smoking cessation. As a final take away, she seemed optimistic about her use of varenicline in the future.

- Interview with an anonymous patient

- The goal of this interview was to get a better understanding of what information patients have for their own smoking cessation. This anonymous patient had tried to quit smoking previously with nicotine gum and was unsuccessful at quitting but was able to reduce his quantity *"I was able to cut back a little bit from. My high, which was about a pack or two a day. Now I usually smoke like a pack every two days."* He was aware of nicotine replacement therapy, gum and patches, but when asked if he knew anything about non-nicotine medications, he was completely unaware. I showed him the FDA approved medication list and the current recommendations on using varenicline to quit smoking; *"Yeah, I would love to [learn more about varenicline]. It sounds like it's a good path, especially because I've tried to quit in the past and haven't been successful."*

Intervention & Methodology

- Methodology:

- Researched guidelines for smoking cessation:
 - CDC recommends using counseling and medication together to give the best chance of quitting
 - Pharmacotherapy improves cessation rate
 - American Thoracic Society Guidelines for medications for smoking cessation:
 - Varenicline (Chantix) is the most effective single treatment for smoking cessation⁷
 - Varenicline with nicotine replacement therapy seems to be the most effective treatment plan⁷

- Intervention:

- Distributed information to providers for pharmacologic interventions to stop smoking cessation: *Medications for Smoking Cessation: Guidelines from the American Thoracic Society*⁷ and the AAFP's *Pharmacologic Guide: FDA-Approved Medications for Smoking Cessation*⁸
- Patients received an education sheet by the American Thoracic Society entitled *Prescription Medications to Help You Stop Smoking*⁹

PHARMACOLOGIC PRODUCT GUIDE: FDA-Approved Medications for Smoking Cessation

DRUG	NICOTINE REPLACEMENT THERAPY (NRT)	CHANTIX (VARENICLINE)	BUPROPION	OTHER
CHANTIX (VARENICLINE)	Not applicable	Chantix (varenicline) is a partial agonist at the alpha4beta2 nicotinic acetylcholine receptor. It is thought to act by stimulating these receptors, which in turn reduces the effects of nicotine. It is also thought to block the effects of nicotine on the brain, which may help reduce the craving for nicotine. It is approved for the treatment of nicotine dependence in adults.	Not applicable	Not applicable
BUPROPION	Not applicable	Not applicable	Bupropion is a norepinephrine-dopamine reuptake inhibitor. It is thought to act by increasing the levels of norepinephrine and dopamine in the brain, which may help reduce the craving for nicotine. It is approved for the treatment of nicotine dependence in adults.	Not applicable
NICOTINE REPLACEMENT THERAPY (NRT)	Nicotine replacement therapy (NRT) products include transdermal patches, gum, lozenges, inhalers, and nasal sprays. They provide a controlled dose of nicotine to help reduce withdrawal symptoms and cravings. NRT is approved for the treatment of nicotine dependence in adults.	Not applicable	Not applicable	Not applicable

Note: This table provides a summary of the pharmacologic product guide. For detailed information, please refer to the full guide.

Prescription Medications to Help You Stop Smoking

CHANTIX (VARENICLINE)

Chantix (varenicline) is a partial agonist at the alpha4beta2 nicotinic acetylcholine receptor. It is thought to act by stimulating these receptors, which in turn reduces the effects of nicotine. It is also thought to block the effects of nicotine on the brain, which may help reduce the craving for nicotine. It is approved for the treatment of nicotine dependence in adults.

BUPROPION

Bupropion is a norepinephrine-dopamine reuptake inhibitor. It is thought to act by increasing the levels of norepinephrine and dopamine in the brain, which may help reduce the craving for nicotine. It is approved for the treatment of nicotine dependence in adults.

NICOTINE REPLACEMENT THERAPY (NRT)

Nicotine replacement therapy (NRT) products include transdermal patches, gum, lozenges, inhalers, and nasal sprays. They provide a controlled dose of nicotine to help reduce withdrawal symptoms and cravings. NRT is approved for the treatment of nicotine dependence in adults.

Summary of Recommendations

- For tobacco-dependent adults in whom treatment is being initiated, we recommend varenicline over a nicotine patch (strong recommendation, moderate certainty in the estimated effects). *Remarks: To promote adherence to pharmacologic therapy, providers should be prepared to counsel patients about the relative safety and efficacy of varenicline treatment compared with a nicotine patch.*
- For tobacco-dependent adults in whom treatment is being initiated, we recommend varenicline over bupropion (strong recommendation, moderate certainty in the estimated effects).
- For tobacco-dependent adults in whom treatment is being initiated, we suggest varenicline plus a nicotine patch over varenicline alone (conditional recommendation, low certainty in the estimated effects).
- For tobacco-dependent adults in whom treatment is being initiated, we suggest varenicline over electronic cigarettes (conditional recommendation, very low certainty in the estimated effects). *Remarks: The recommendation's strength reflects very low certainty in the effects used to derive the recommendation. After our evidence synthesis, new evidence emerged regarding serious adverse effects of electronic cigarettes. If these serious adverse effects continue to be reported, the strength of the recommendation should be reevaluated. Note that this recommendation is intended for*
- In tobacco-dependent adults who are not ready to discontinue tobacco use, we recommend that clinicians begin treatment with varenicline rather than waiting until patients are ready to stop tobacco use (strong recommendation, moderate certainty in the estimated effects).
- For tobacco-dependent adults with comorbid psychiatric conditions, including substance-use disorder, depression, anxiety, schizophrenia, and/or bipolar disorder, for whom treatment is being initiated, we recommend varenicline over a nicotine patch (strong recommendation, moderate certainty in the estimated effects).
- For tobacco-dependent adults for whom treatment is being initiated with a controller, we recommend using extended-duration (>12 wk) over standard-duration (6-12 wk) therapy (strong recommendation, moderate certainty in the estimated effects).

Introduction

Tobacco dependence remains a pervasive clinical problem in pulmonary practice. In 1988, the U.S. Surgeon General first described tobacco use as the cardinal sign of addiction to nicotine (1). The report established that treatment of this intransigent addiction requires shifting from episodic models of care to sustained,

treatment of tobacco dependence under the supervision of a clinician; it should not be extrapolated to unsupervised treatment or recreational use.

Optimistic Response



- While there is no firm data and a very limited time course for this community health intervention, I would say that it was an overall success.
- Providers were happy to get updated guideline information on smoking pharmacotherapies, consensus was that most providers did not know that varenicline was by far the recommended first line for smoking cessation
 - Providers seemed open to the idea of more regularly having conversations with patients regarding pharmacotherapy for smoking cessation
 - Providers seemed open to the idea of using varenicline more as a first line therapy and more medications outside of simply nicotine replacement therapy
- Patients that were intent on quitting seemed very receptive to having a more thorough discussion with providers about varenicline and other pharmacotherapy options



Limitations



- **Time:** Although there seemed to be a receptive response to all the information that I distributed to both providers and patients, there was very limited time between my distribution and departure from Mountain Health Center so I was unable to see if there was any true impact on patient's treatment plan and effectiveness of smoking cessation
- **Economics:** While varenicline is the deemed to be the most effective treatment option for smoking cessation, it is also extremely expensive. It costs \$15.90 per a day for a 12 week course⁸ which equates to a \$1,335.60 treatment plan, whereas nicotine replacement therapies are significantly cheaper at \$2-5.00 per day for the same treatment length. Mountain Health Center is a federally qualified health center, which deals with many uninsured or under-insured patients that would likely not be able to afford any of these pharmacologic treatments, let alone varenicline.
- **Patient Population:** There are many patients in the Mountain Health Center patient population that will not take medications, not even those with minimal side effects. A drug to help with smoking cessation like varenicline, which used to have a black box warning for inducing psychosis, may not be a treatment that patients are willing to try in this population.

Recommendations for Future Studies

- Future interventions could target all 3 of the limitations discussed on the previous slide
 - **Time:** future studies could follow up longitudinally on the effectiveness of the sheets I distributed. A future study would see if providers felt they had noticed any change in their management of smoking cessation since being made aware of the current guidelines and recommendations for pharmacotherapy as an aid in smoking cessation. They could also see if there were any patients that experienced success with the 12 week treatment course of varenicline or other pharmacotherapies.
 - **Economics:** future studies could look into insurance coverage and federally sponsored treatment plans. Varenicline is an extremely expensive treatment option and is not a realistic treatment option for most patients, especially those with low socioeconomic status that that may be attending federally qualified health centers.
 - **Patient Population:** future studies could determine better ways to distribute information regarding pharmacologic smoking cessation in a patient friendly way. The information sheet that I distributed is a bit dense and may be intimidating to those that are inclined to deny medications to begin with. However, creating a more patient friendly fact sheet that demonstrates the effectiveness of varenicline and other medications for smoking cessation, may help those on the fence about medication and may ultimately decrease the population of those who smoke.

Works Cited

1. Centers for Disease Control and Prevention. Smoking and Tobacco Use. How to Quit Smoking Infographic. https://www.cdc.gov/tobacco/quit_smoking/pdfs/cdc-osh-how-to-quit-smoking-infographic-web-508.pdf
2. Tobacco Use and Dependence Guideline Panel. Treating Tobacco Use and Dependence: 2008 Update. Rockville (MD): US Department of Health and Human Services; 2008 May. <https://www.ncbi.nlm.nih.gov/books/NBK63952/>
3. Hall W, Doran C. How Much Can the USA Reduce Health Care Costs by Reducing Smoking? [published correction appears in PLoS Med. 2017 Apr 12;14 (4):e1002295]. PLoS Med. 2016;13(5):e1002021. Published 2016 May 10. doi:10.1371/journal.pmed.1002021
4. Xu X, Shrestha S, Trivers KF, et al. U.S. Healthcare Spending Attributable to Cigarette Smoking in 2014. Preventive Medicine 2021 (150): 106529. <https://doi.org/10.1016/j.ypmed.2021.106529>
5. The PLOS Medicine Staff (2017) Correction: How Much Can the USA Reduce Health Care Costs by Reducing Smoking? PLoS Med 14(4): e1002295. <https://doi.org/10.1371/journal.pmed.1002295>
6. Center for Disease Control and Prevention. State Tobacco Activities Tracking and Evaluation (STATE) System. <https://www.cdc.gov/statesystem/cigaretteuseadult.html>
7. Leone FT, Zhang Y, Evers-Casey S, et al. Initiating Pharmacologic Treatment in Tobacco-Dependent Adults. An Official American Thoracic Society Clinical Practice Guideline. Am J Respir Crit Care Med. 2020;202(2):e5-e31. doi:10.1164/rccm.202005-1982ST
8. AAFP. Pharmacologic Product Guide: FDA-Approved Medications for Smoking Cessation. https://www.aafp.org/dam/AAFP/documents/patient_care/tobacco/pharmacologic-guide.pdf adapted from:
United States Public Health Service Office of the Surgeon General; National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health. Smoking Cessation: A Report of the Surgeon General [Internet]. Washington (DC): US Department of Health and Human Services; 2020. Table 6.2, Pharmacologic product guide: FDA-approved medications for smoking cessation. <https://www.ncbi.nlm.nih.gov/books/NBK555596/table/ch6.tab2/>
9. Reddy K, Kher S, Kathuria H. Prescription Medications to Help You Stop Smoking. Am J Respir Crit Care Med. 2020;201(6):P11-P12. doi:10.1164/rccm.2016P11