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Tobacco Use Dependence and Approaches to Treatment

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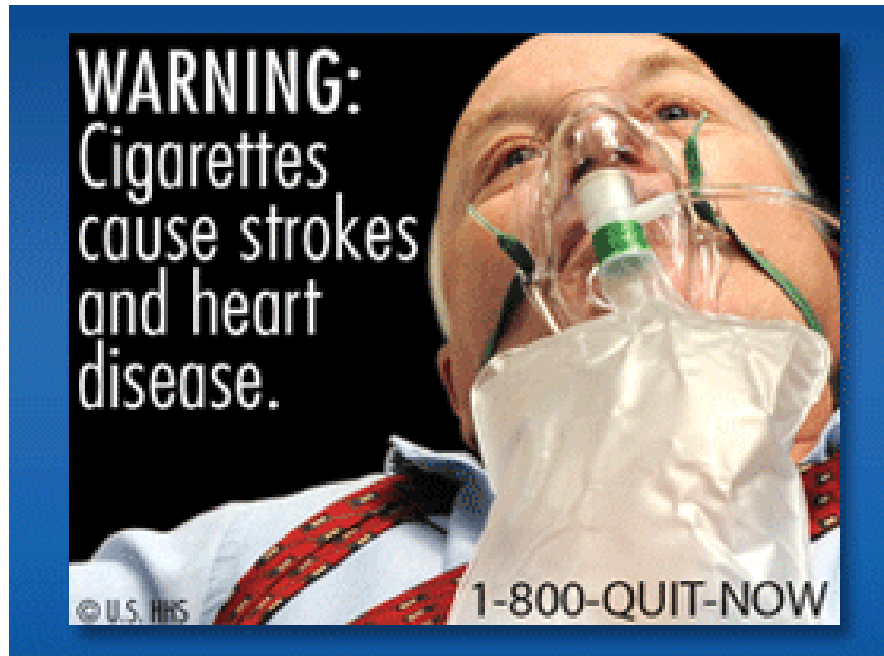
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Tobacco Use Dependence and Approaches to Treatment

Audrey Darville

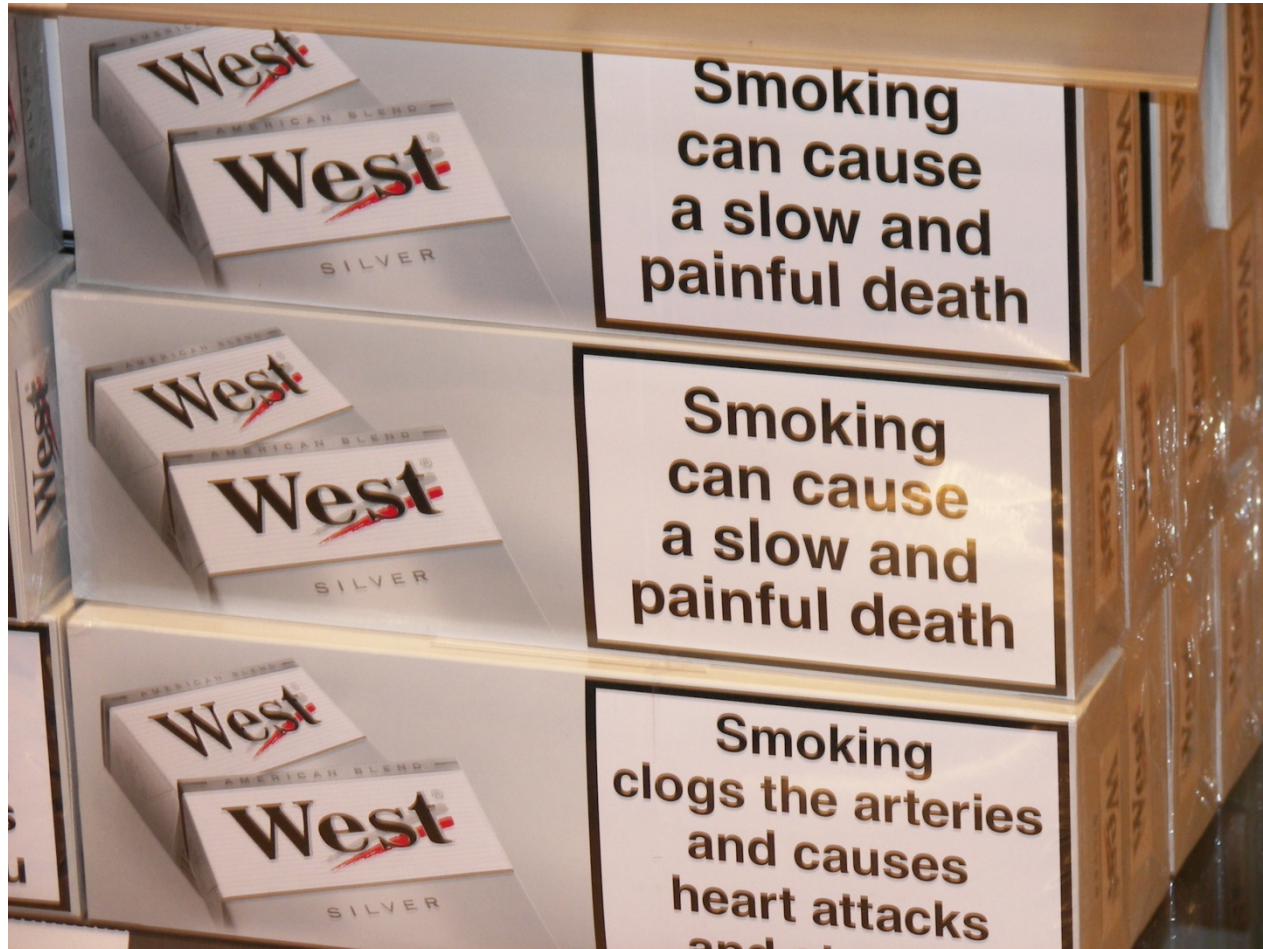
Chizimuzo Okoli, PhD, MPH, RN



**Tobacco Use is Considered a Global Epidemic:
causing 5.4 million deaths per year, or 1
person dying every 6 seconds.**

***Tobacco use is increasing worldwide, and this figure is expected to reach 8
million deaths per year by 2030.***

For every person who dies of a smoking related illness, 20 people develop a tobacco related disease.



Every Day

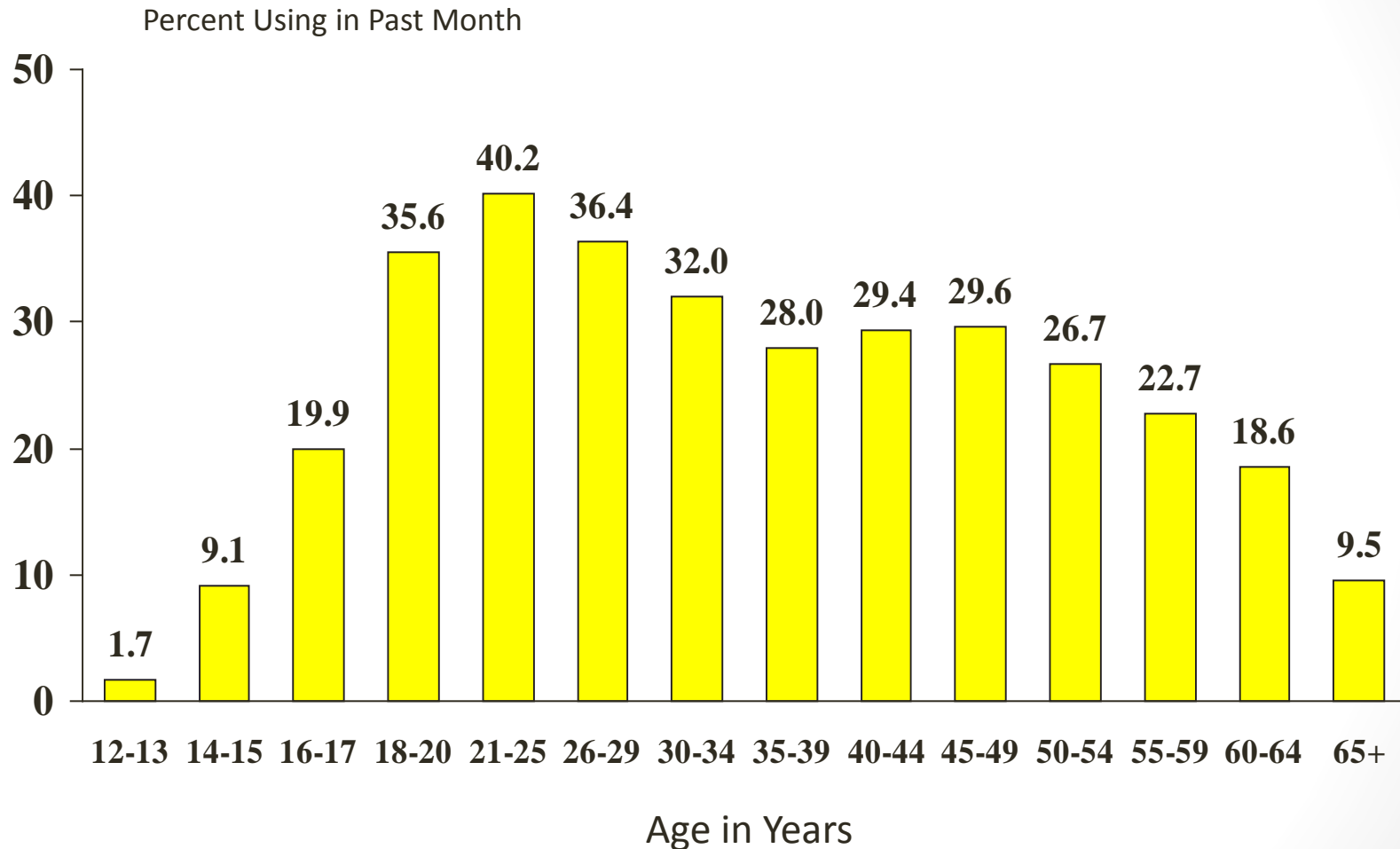
3,000 children and adolescents in the U.S. become regular tobacco users and almost half of the world's children regularly breathe air polluted by tobacco smoke.



Smoking in Kentucky

- ✓ Young adults (18-24) are the largest percentage of smokers: 38.1%
- ✓ 40.5% of persons without a high school education smoke.
- ✓ Nearly 10% of Middle School student smoke compared to 6% nationally.
- ✓ A startling 26.8% of High School Students smoke compared to 19.7% nationally

Past Month Cigarette Use among Persons Aged 12 or Older, by Age: 2006



Source: National Survey on Drug Use and Health, SAMHSA

Smoking: An Expensive Habit

- Smoking one pack a day results in spending over \$1,380 per year on cigarettes
- The CDC estimates that the average smoker costs an employer \$3400 per year in smoking-attributed lost productivity and direct medical costs
- The real cost of smoking is about \$40 per pack
- Low income persons are more likely to smoke
- Costs of programs like Medicaid and Medicare are increased

Financial costs of smoking are passed along to nonsmokers:

Tobacco related illness costs *each household* in Kentucky nearly \$600 per year.

Cessation Programs: A Bargain!

- Cost for a comprehensive smoking cessation benefit (medication and counseling) is \$2.80 per Kentuckian *per year*, or 2 -45¢ per member per month (PMPM) (2006)
- Medication alone for diabetes, hypertension, and depression ranged from \$3.41 to \$7.95 PMPM

The Problem

- Tobacco dependence is not “just a habit”; it’s a **chronic disease** with devastating health effects Fiore, et al (2008) *Clinical Practice Guidelines*
- Controlling for confounders, over **half a million people die** annually in the US from tobacco related causes ***that could have been prevented*** Rostron (2011), *Epidemiology*
- Even exposure to *small amounts* of **direct or indirect** tobacco smoke increase risk of CV mortality, the relationship is not linear Pope, et al (2009), *Circulation*

The Solution

States with aggressive tobacco control policies **and funding for treatment programs** have significantly **reduced tobacco use** in their populations.

“Trifecta” of Controlling the Tobacco Epidemic

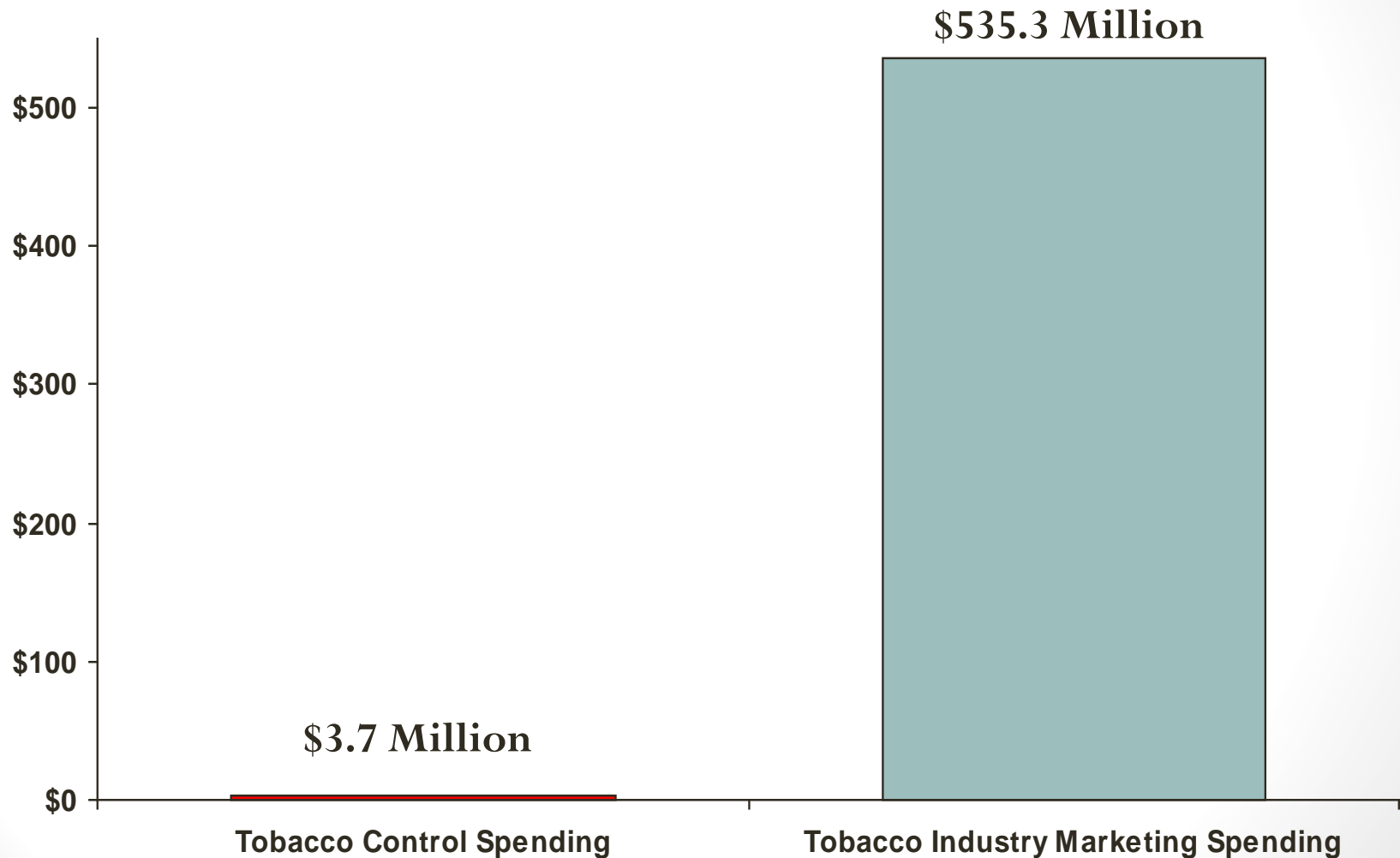
- Access to evidence based cessation treatment
- Increasing the cost of tobacco products and limiting access, particularly to youth
- Providing tobacco free environments which make not smoking the easy choice



The Tobacco Industry wants us to believe tobacco use is a personal choice



Kentucky's Tobacco Control Spending vs. Tobacco Industry's Marketing Spending



We know:

- 70% of smokers want to quit.
- 30% of ever smokers in Kentucky HAVE quit.
- 50% of Kentucky smokers have quit for at least 1 day.

Strong Evidence Tells Us Treatment Works!

- Tobacco use is more than a habit or individual weakness
- Effective treatment which is individually tailored and targeted is most effective
- Anticipating and planning for relapse is important
- Controlling tobacco exposure is critical: it takes more than just “willpower” to quit

Cigarettes contain over 4000 chemicals. Of these, many are known cancer causing agents.

In 1972, a spokesman for Phillip Morris said: "...if our product is harmful, we'll stop making it."



Philip Morris on Nicotine....

“Think of the cigarette pack as a storage container for a day’s supply of nicotine....

Think of the cigarette as a dispenser for a unit dose of nicotine...

Think of a puff of smoke as a vehicle of nicotine...

Smoke is beyond question the most optimized vehicle of nicotine and the cigarette the most optimized dispenser of smoke.”

Dr. William Dunn; Philip Morris Tobacco Company, 1972.

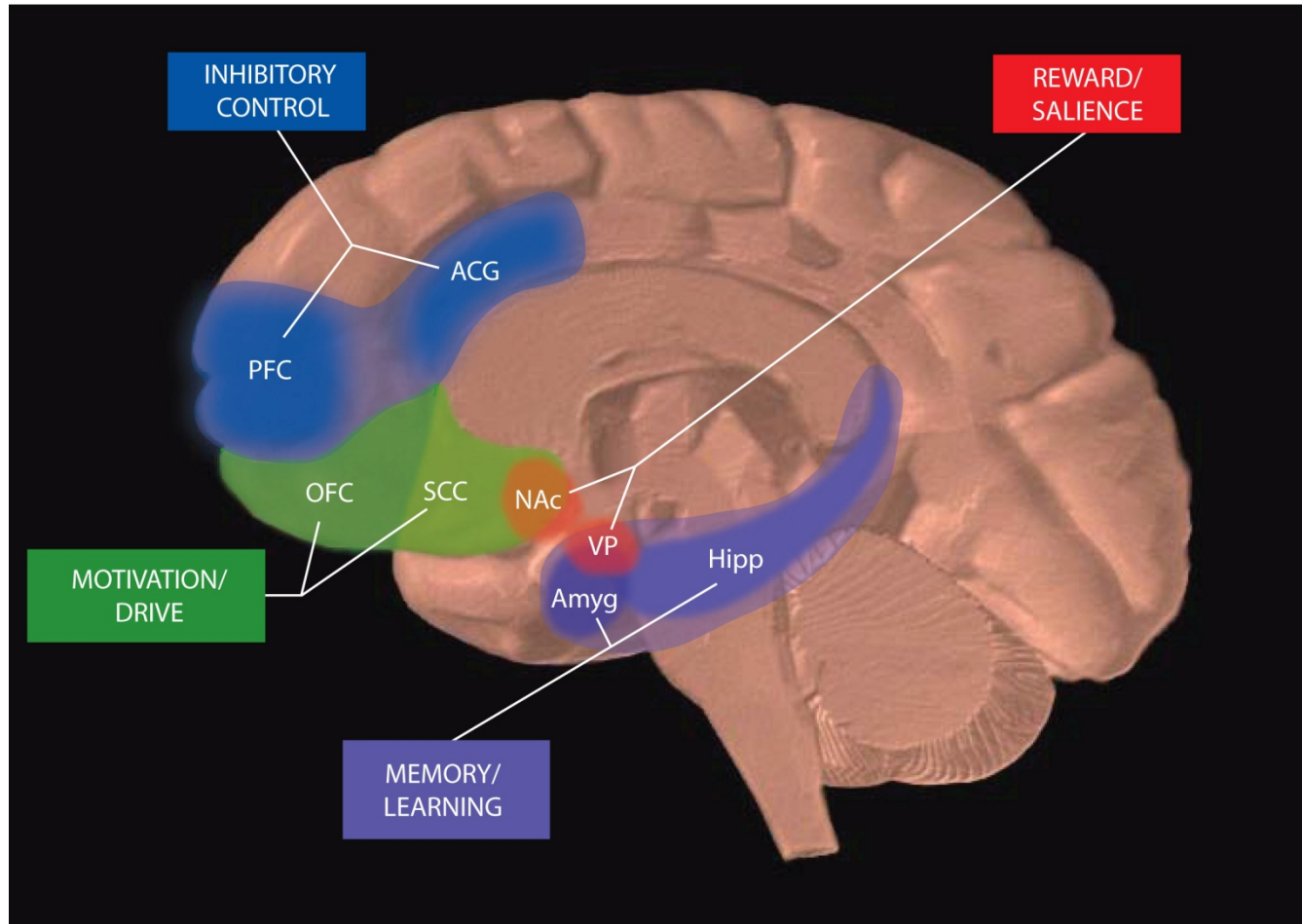
Source: U.S. Food and Drug Administration, 1996.

Nicotine addiction is a major component of continued tobacco use.

Quitting is hard, and over 95% of unassisted quit attempts fail.

Staying quit is just as hard or harder than quitting.

Known Pathways of Addiction



Quitting is a *Process*

- Most tobacco users try to quit multiple times
- Motivational counseling can help all tobacco users, even those “not ready” to quit
- Practical plans that are tailored to the individual and recognizes potential barriers to quit & triggers for smoking work best
- Plans to prevent are an important to help tobacco users stay quit

Components of Effective Addiction Counseling

- Promoting **Motivation** to Quit:
 - Develop discrepancies between current behavior and desired behavior
 - “Decisional Balance”
- Promoting **Confidence** to quit:
 - Develop a plan and useful tools (including medication) to assist in changing behavior
 - “Building Self-Efficacy”

Counseling Demonstrates a Dose-Response Effect/Comes in Many Forms

- Brief advice during a “window of opportunity” can increase quit attempts by 40%
- Medication combined with counseling doubles the success rate
- Quitlines: proactive fax to quitline most effective
- Online (becomeanex.org, smokefree.gov, mylastdip.com)
- Cooper Clayton Classes at many local health departments; schedules and provision of medication varies
- I-Phone apps/text to quit

Medication Options:

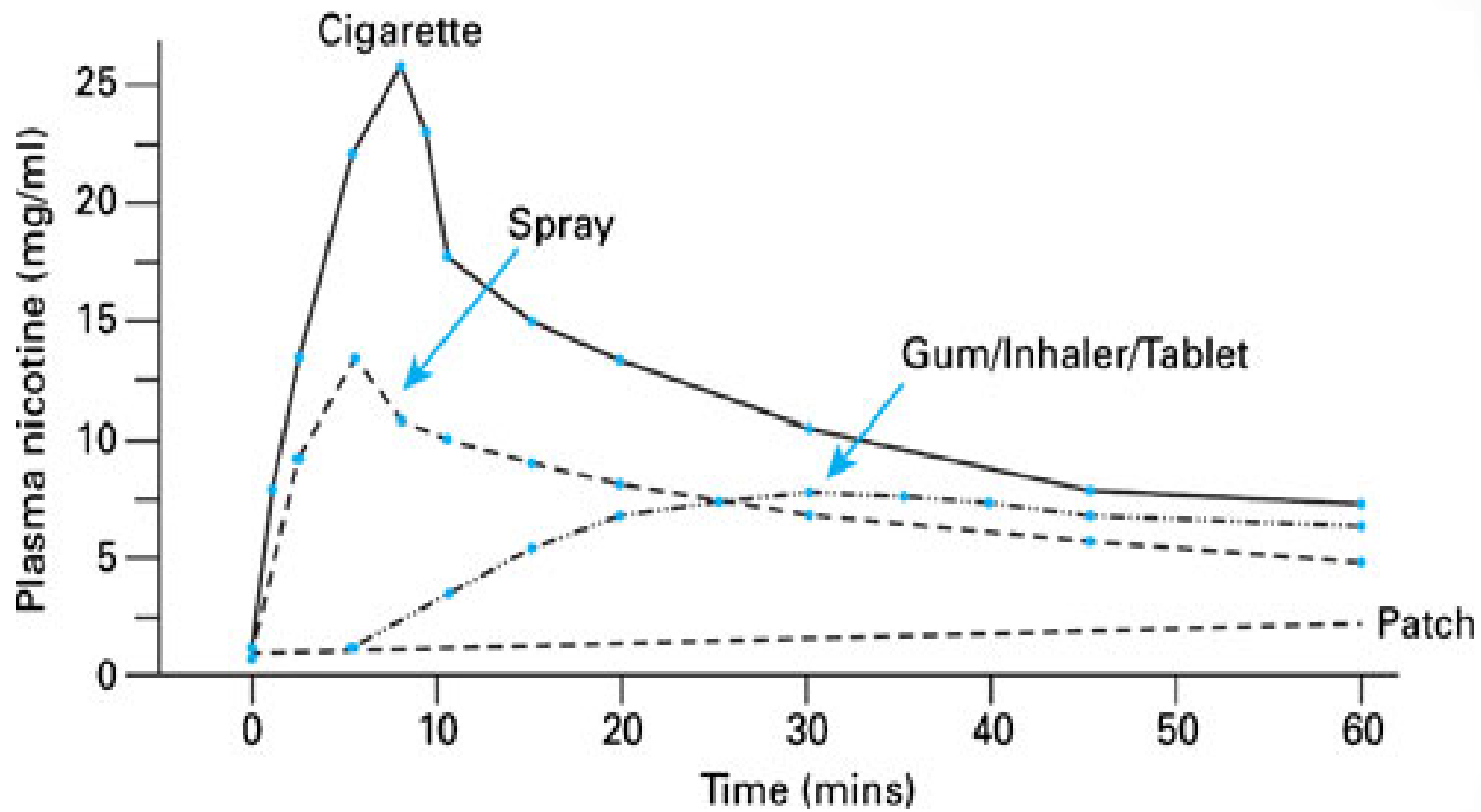
- **Nicotine replacement therapy:** patches, gum, lozenges, “inhalers” (nicotine is actually deposited in the oral cavity, not the lungs), nasal spray. Patches, gum and lozenges are available over the counter without a prescription
- **Bupropion*** (Zyban, Wellbutrin): contraindicated for those with history of seizures
- **Varenicline*** (Chantix): monitor for side effects (high incidence of nausea)

*Both carry a “Black Box Warning” for risk of neuropsychiatric symptoms and suicidality

Tailoring NRT to the tobacco user

- Studies show efficacy in smokers and smokeless tobacco users (Ebbert, et al, 2010)
- Combining patch with shorter acting form of NRT has been shown to be safe and effective (Stead, et al, Cochrane Review, 2008; Kozlowski, et al, 2007)
- Extended use of NRT or other medications is being shown to reduce relapse rates (Schnoll, et al, 2010)
- High dose NRT is safe and effective for heavy smokers (Fredrickson, et al, 1995)





From: McNeil, et al, 2010

Zyban (bupropion SR):

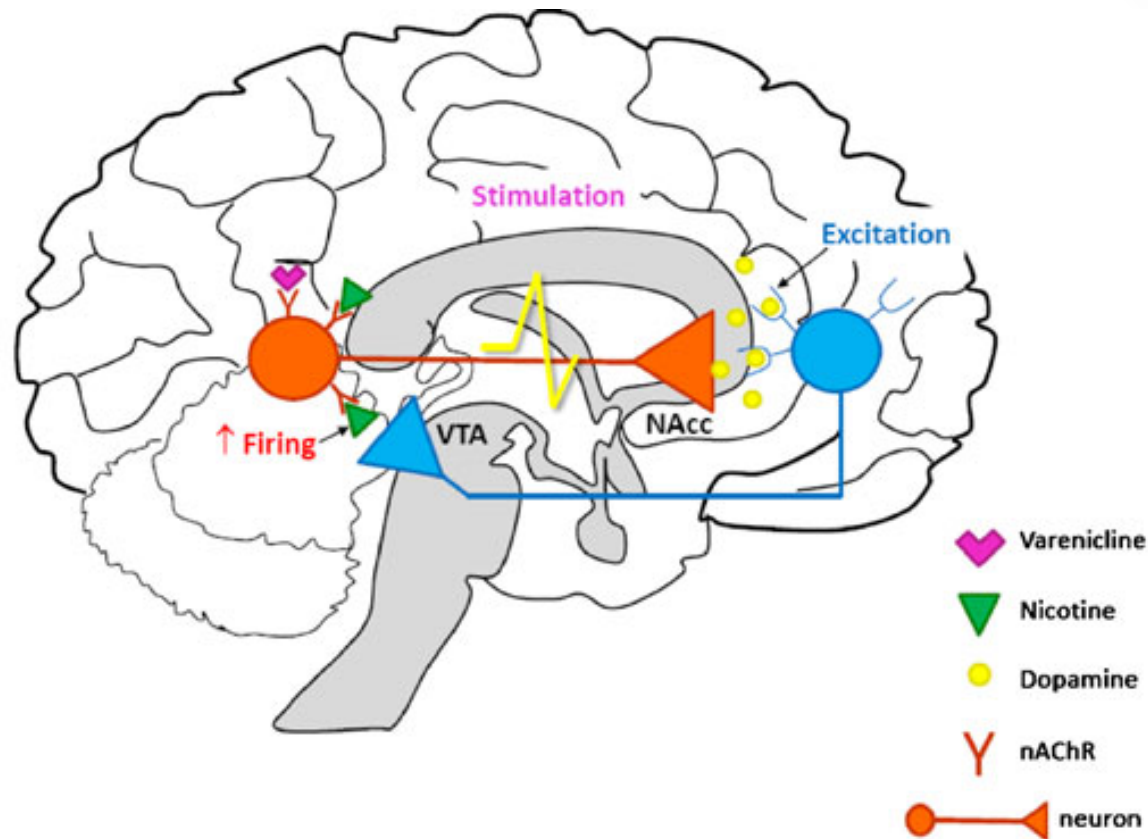
- Adjustable dosing: Usually 150 mg in AM first 3-5 days, then 150 bid, last dose with supper helps minimize insomnia
- Has been shown to be effective used once daily with NRT
- Contraindicated with history of seizures
- Carries black box warning regarding neuropsychiatric symptoms/suicide risk
- Available generic; coverage/cost varies



Chantix (varenicline):

- Titrated dosing: begin with starter pack then continuation pack (1 mg. bid) for 14 weeks...or more
- Nausea (up to 30%) and vivid dreams most common side effects; can be helped with slower titration of dose
- Carries Black Box warning about serious neuropsychiatric symptoms
- Most expensive option; available on KY Medicaid, State health plan, PAP





nAChRs - nicotinic acetylcholine receptors (ion channels comprised of α - and β -subunits);

VTA- Ventral Tegmental Area;

NAcc- Nucleus Accumbens.

Binding of nicotine at the $\alpha 4 \beta 2$ nicotinic receptor in the VTA is believed to cause large amounts of dopamine to be released at the Nucleus Accumbens. Varenicline has dual agonist and antagonist activities resulting in a lesser amount of dopamine release from the VTA at the Nucleus Accumbens and prevention of nicotine binding at the $\alpha 4 \beta 2$ receptors.

From: McNeil, et al, 2010

Medication Caveats

- Nicotine replacement is a safe and effective treatment for tobacco dependence
- Varenicline is probably most effective for promoting long-term abstinence
- Safety concerns with varenicline and bupropion have been raised and should be considered
- Remember **smoking causes the greatest harm**

Special Populations

- **Adolescents** -NRT not recommended by US Clinical guidelines
- Those with **substance use** and **psychiatric disorders**- May need more intensive treatment (longer duration, more medication)
- **Pregnant and breast feeding women** -NRT can be teratogenic

Tobacco Free Policies and smoking cessation

- Protect smokers and non-smokers alike from the KNOWN harmful effects of tobacco smoke
- Shown to reduce smoking prevalence
- Help quitters stay quit
- Encourage cessation by increasing awareness of resources and decreasing social acceptability of smoking over time