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# Tobacco Use Dependence and Approaches to Treatment

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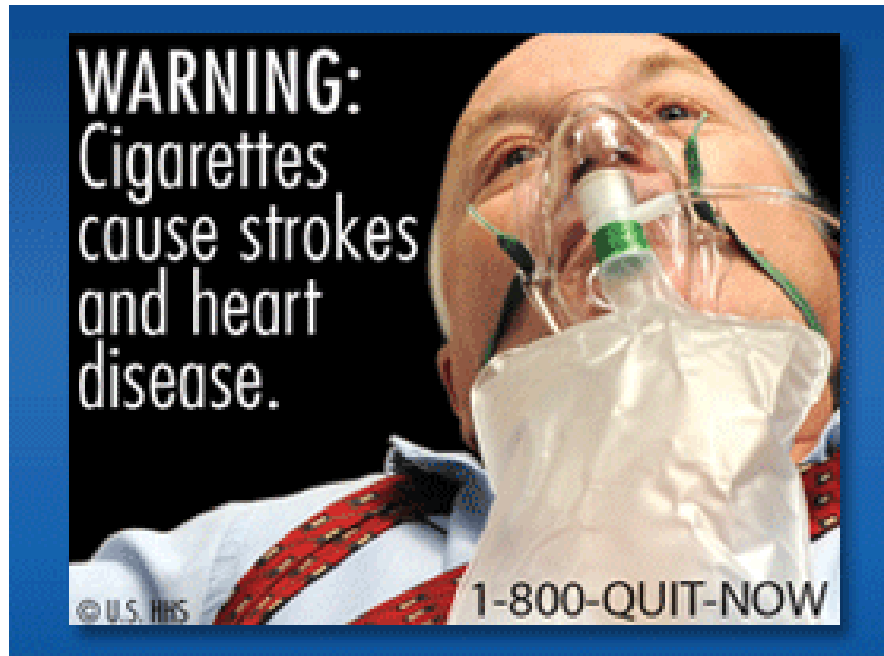
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# Tobacco Use Dependence and Approaches to Treatment

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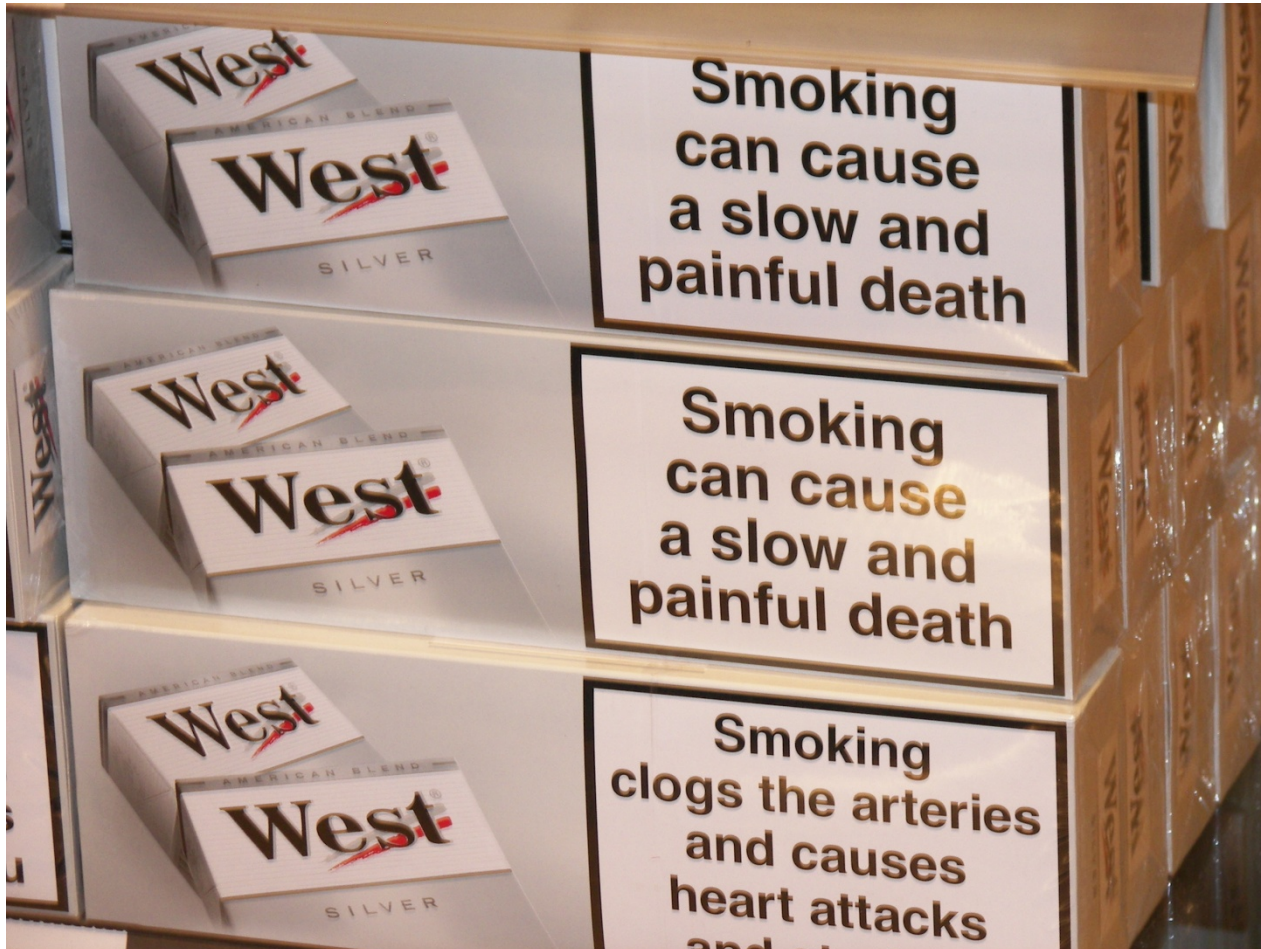
Chizimuzo Okoli, PhD, MPH, RN



**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

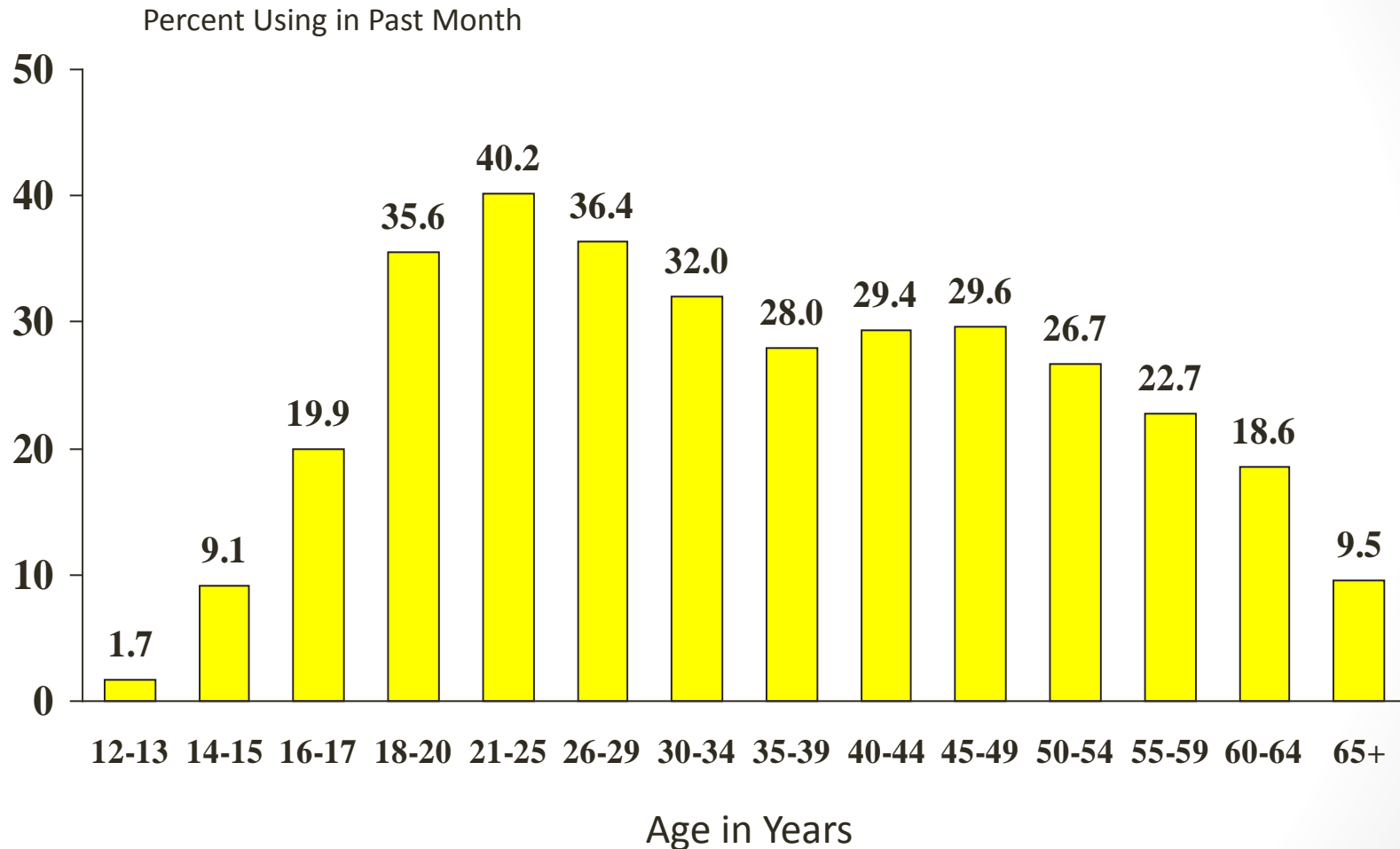
**3,000 children and adolescents in the U.S. become regular tobacco users and almost half of the world's children regularly breathe air polluted by tobacco smoke.**



# 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

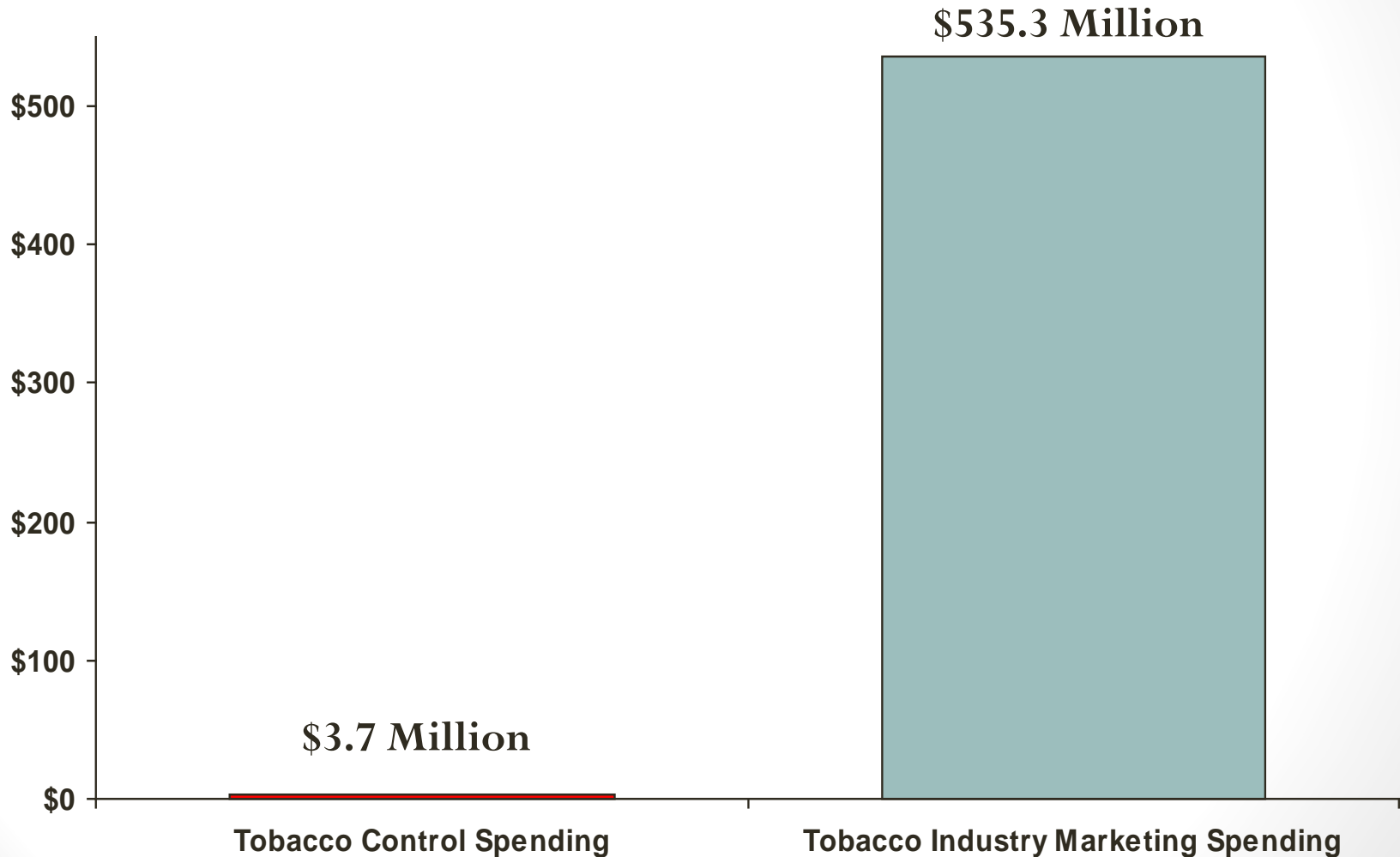
- Access to evidence based cessation treatment
- Increasing the cost of tobacco products and limiting access, particularly to youth
- Providing tobacco free environments which make not smoking the easy choice



# 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.**

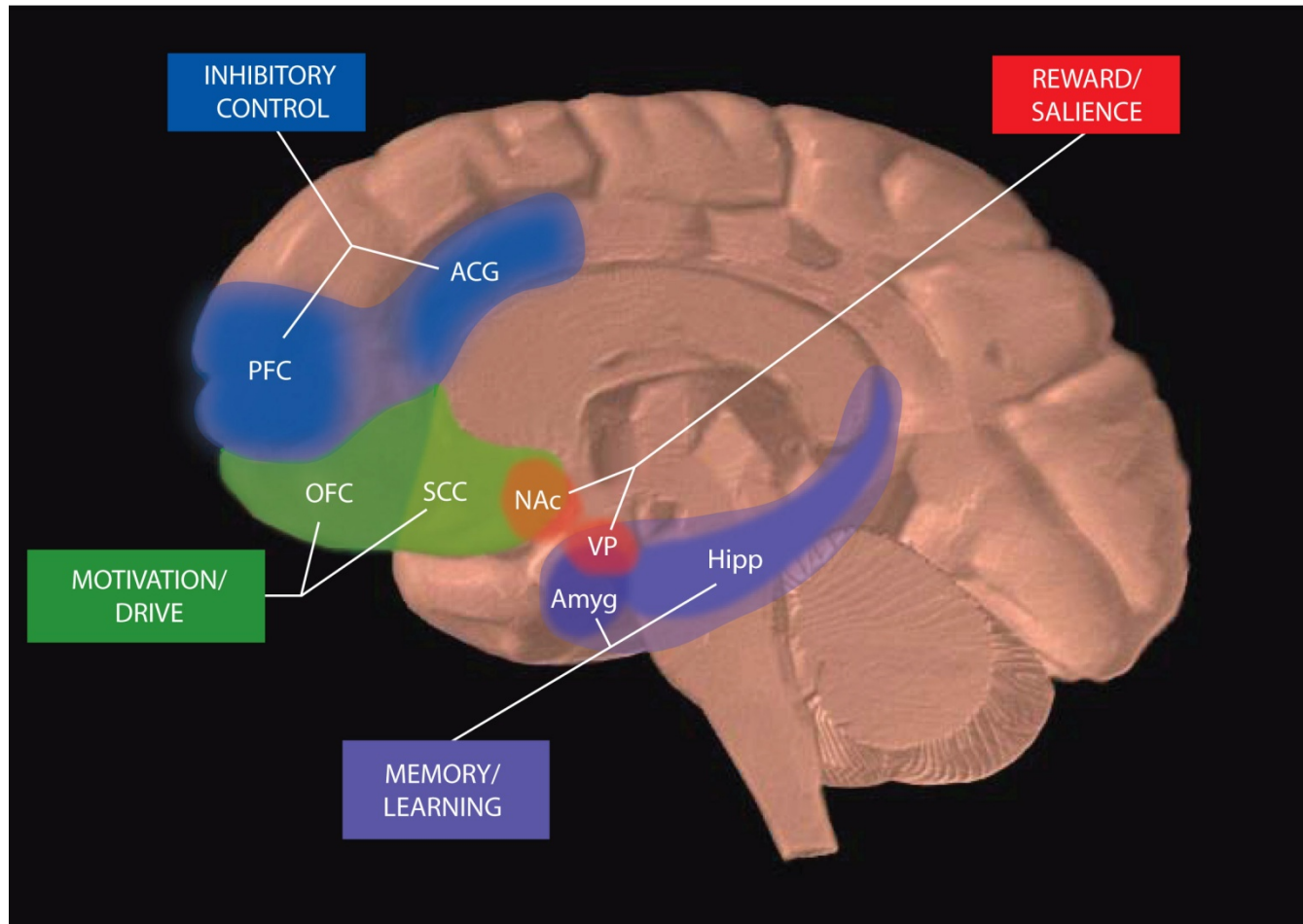
**Source: U.S. Food and Drug Administration, 1996.**

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](http://becomeanex.org), [smokefree.gov](http://smokefree.gov), [mylastdip.com](http://mylastdip.com))
- Cooper Clayton Classes at many local health departments; schedules and provision of medication varies
- I-Phone apps/text to quit



# Medication Options:

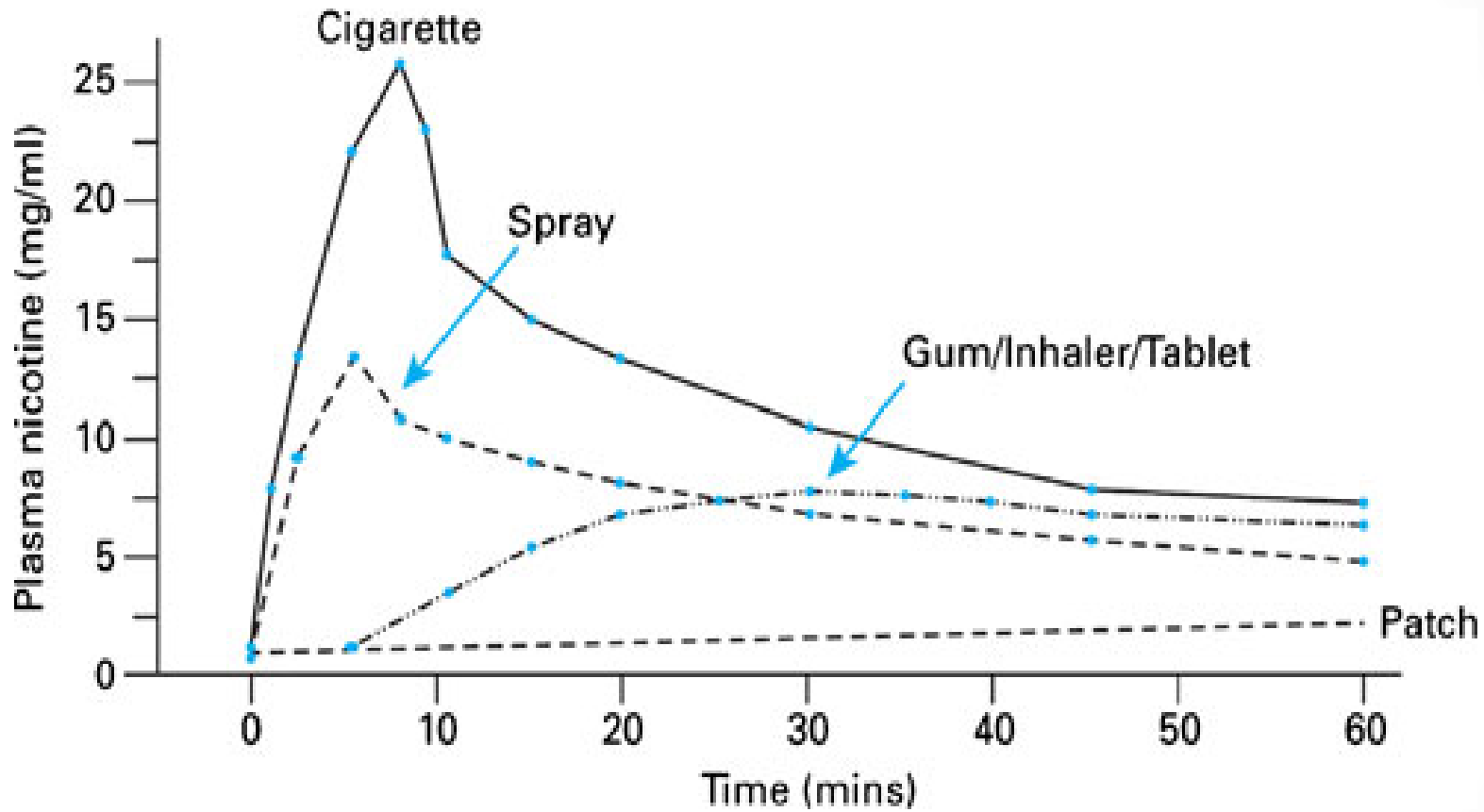
- **Nicotine replacement therapy:** patches, gum, lozenges, “inhalers” (nicotine is actually deposited in the oral cavity, not the lungs), nasal spray. Patches, gum and lozenges are available over the counter without a prescription
- **Bupropion\*** (Zyban, Wellbutrin): contraindicated for those with 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):

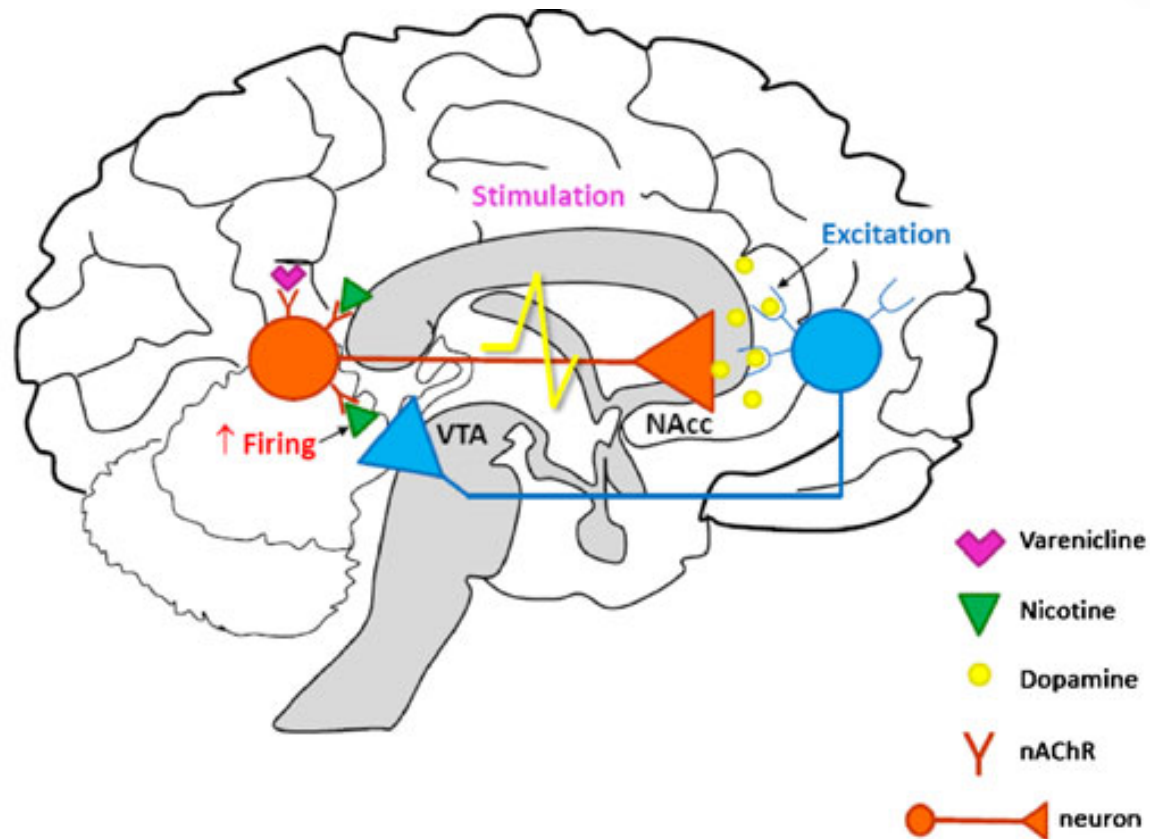
- Adjustable dosing: Usually 150 mg in AM first 3-5 days, then 150 bid, last dose with supper helps minimize insomnia
- Has been shown to be effective used once daily with NRT
- Contraindicated with history of seizures
- Carries black box warning regarding neuropsychiatric symptoms/suicide risk
- Available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