

# Smoking during pregnancy

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FACOG

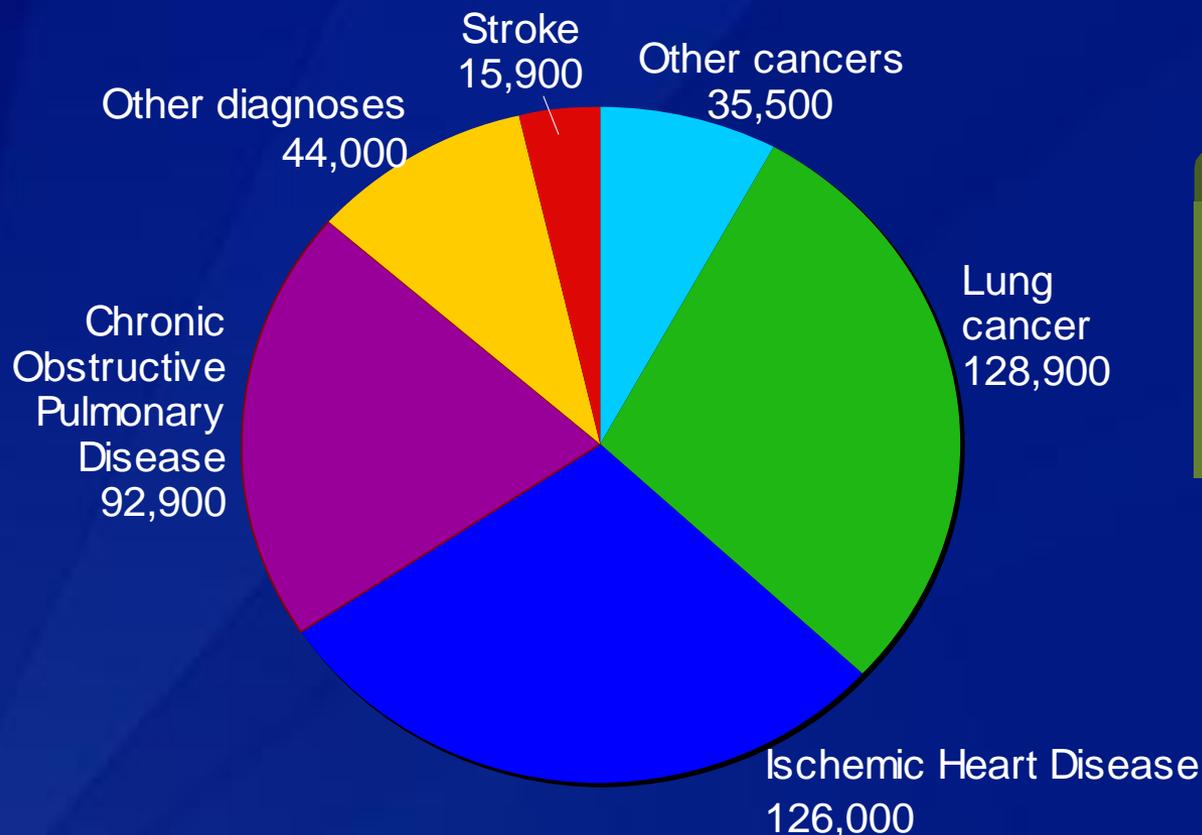
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# Objectives

- \* To discuss risks associated with in-utero exposure to tobacco
- \* To discuss risks of tobacco use to the mother
- \* to discuss how to increase smoking cessation during pregnancy
- \* Tools available to assist smoking cessation

# About 443,000 U.S. Deaths per Year Attributable to Cigarette Smoking



## EVERY YEAR:

- \$96 billion in medical costs
- \$97 billion in lost productivity

Average annual number of deaths, 2000-2004.

Source: CDC. Smoking-attributable mortality, years of potential life lost, and productivity losses – United States, 2000-2004. *MMWR* 2008;57(45):1226-1228.

# 2004 REPORT of the SURGEON GENERAL:

## HEALTH CONSEQUENCES OF SMOKING

### FOUR MAJOR CONCLUSIONS:

- \* Smoking harms nearly every organ of the body, causing many diseases and reducing the health of smokers in general.
- \* Quitting smoking has immediate as well as long-term benefits
- \* Smoking cigarettes with lower machine-measured yields of tar and nicotine provides no clear benefit to health.
- \* The list of diseases caused by smoking has been expanded.

# Tobacco Facts



← Cigarettes contain over **4000 chemicals**, more than **50** of which are known to cause cancer!



→ Smokeless tobacco contains over 28 known cancer causing agents<sup>14</sup>



## SMOKING AND PREGNANCY

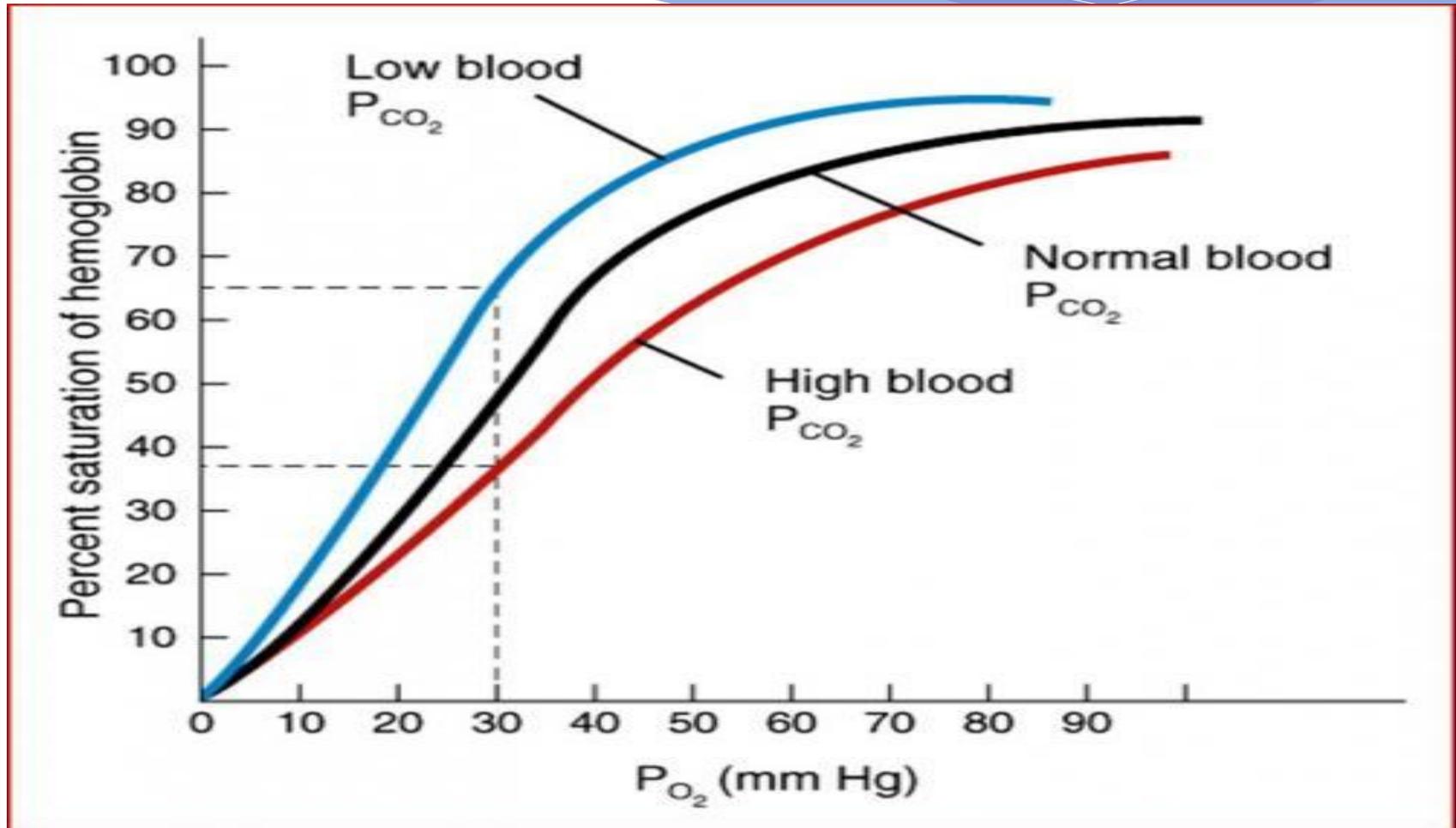
Most important modifiable risk factor  
for adverse pregnancy outcomes

5 % infant **deaths**

10% **preterm** births

30% of **small** for gestational age

# Oxygen disassociation curve



# Nicotine

- \* Potent vasoconstrictor on placental and fetal vessels
- \* **Neuroteratogen** based on rodent studies
- \* Most likely cause of cognitive, emotional and behavioral problems seen in children of smokers
- \* Increases likelihood of addictive behaviors in adulthood
- \* Activates platelets and increases thrombosis in animal models
- \* Highly **addictive**

Now That You're Pregnant...

Your not just

**EATING** for two



Your **BREATHING** for  
two



# Risks during pregnancy

- \* Ectopic pregnancy RR 3.9
- \* Fetal growth restriction-RR 1.5-3.5
- \* Placenta previa-RR 1.4-4.4
- \* Abruptio placenta-RR 1.4-2.5
- \* Preterm Premature Rupture of Membranes RR 1.9-4.2
- \* Preterm delivery-RR1.3-2.5
- \* Stillbirth-RR 1.2-1.4;
- \* Miscarriage-RR 1.2-3.4
- \* Decreased risk preeclampsia RR 0.5

# Preterm Premature Rupture of Membranes

- \* Smoking >10 cigarettes per day
- \* Odds Ratio of PPRM
- \* <28 weeks 5.28
- \* <32 weeks 2.36
- \* <37 weeks 1.97



# Low birth weight infants

- \* Defined as weight <2500 grams
- \* (LBW) 1.5-3.5RR for smokers Vs non smokers
- \* (SGA) 1.3 to 10.0 RR for smokers Vs non smokers
- \* Smokers have term infants who weigh on average 200-300 grams smaller than nonsmokers
- \* Increased risk NICU admission for LBW
- \* Increased risk of infant death

# Preterm infant/NICU



# Congenital malformations

- \* **Unclear** whether smoking increases risk
- \* May increase anomalies associated with focal vascular disruption
- \* Gastroschisis
- \* Cleft lip and palate
- \* Anal atresia
- \* Transverse limb reduction defects
- \* Possible increase in congenital heart defects

# Infant morbidities post delivery

- \* Increased risk neonatal death in first 28 days of life: RR of 1.2-1.4
- \* SIDS increased RR 2.0-7.2
- \* Abstinence syndrome and nicotine withdrawal
- \* Increased risk behavior and learning disabilities
- \* Possible increased risk childhood leukemia
- \* Respiratory infections increased
- \* Asthma
- \* Possible increased risk Type 2 diabetes

# Breast feeding

- \* Decreased milk volume production
- \* Lower milk fat concentration
- \* Breast fed infants of smoking mothers have urinary cotinine levels 10x higher than bottle fed infants
- \* Infants slept less when fed after mothers fed
- \* Shorter duration of lactation

I tapped his tiny  
foot...and **noticed**  
how cold he felt.



# Barbara

- \* 25 year old Gravida 3 Para 2 at 10 weeks gestation, arrives for new OB appointment
- \* Smokes 1 ppd since age 12, partner also smokes
- \* Other two pregnancies “normal “ per patient
- \* Both delivered 34 to 35 weeks “bleeding” and stayed in NICU for 10 to 14 days
- \* Both have had asthma and chronic otitis
- \* Would like to quit but never successful long term

# The 5 “A”s of smoking cessation

- \* Ask the patient about her smoking history
- \* Advise her to quit smoking
- \* Assess her willingness to quit
- \* Assist her in her plans to quit
- \* Arrange follow-up

# Ask about smoking history

- \* 1. I have NEVER smoked or smoked less than 100 cigarettes in my life.
- \* 2. I stopped smoking BEFORE I found out I was pregnant and am not smoking now.
- \* 3. I stopped smoking AFTER I became pregnant and am not smoking now.
- \* 4. I smoke some now but have CUT DOWN since I became pregnant.
- \* 5. I smoke regularly now the SAME as before I became pregnant.

# Advise her to quit

- \* Provide strong clear evidence of the health benefits to her and her infant if she quits smoking.
- \* Emphasize positive results if quits but explain negative effects of smoking.

# Assist her to quit

- \* Have her pick a stop smoking date and remove all smoking products by that date
- \* Review previous quit attempts
- \* Cut down with scheduled smoking
- \* Encourage family members to support her in her efforts

# WV QUITLINE

- \* Since 2000, enrolled over 57,000 people or 17% of the state's smokers
- \* Average quit rate 33%
- \* Free for all WV residents
- \* Free nicotine replacement products
- \* If pregnant, all smoking adults in household can be enrolled

WHY DO I USE TOBACCO?  
WHY DO I USE TOBACCO?

**WHY DO I USE TOBACCO?**  
PLEASE LIST AT LEAST 2 REASONS FOR EACH

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Good things about using tobacco:

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Bad things about using tobacco:

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Good things about quitting tobacco:

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Bad things about quitting tobacco:

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# Motivational Interviewing Technique #1

Decision  
analysis  
“Pros and  
Cons”

# Assess

- \* Ready to quit?
- \* Scale of 1-10
- \* If 7 or less, why? What would it take to make you an 8?

# Ready, Willing, and Able?

On a scale of 1-10 (10 = very much and 1 = not at all) ask yourself these questions:

How ready are you to quit smoking? \_\_\_\_\_

How important is it for you to quit smoking at this time? \_\_\_\_\_

How successful do you think you would be if you quit smoking tomorrow? \_\_\_\_\_



If you are not at an 8 or above for any of these questions, what would it take to make it an 8?

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# Arrange follow-up

- \* Assess her smoking status at next appointment
- \* If relapses, attempt to determine triggers and encourage her to continue to attempt to quit
- \* Positive reinforcement of benefits to her and her infant

# Debbie

- \* 35 year old Gravida 5 Para 2 at 13 weeks gestation
- \* Smokes 1 to 2ppd since age 16
- \* One stillbirth at 28 weeks, two miscarriages in first trimester, both surviving infants delivered early due to “low fluid”
- \* Chronic cough
- \* Likes smoking and not willing to quit
- \* Mother died age 50 from heart disease

# What if she declines to quit?

## 5 “R”s

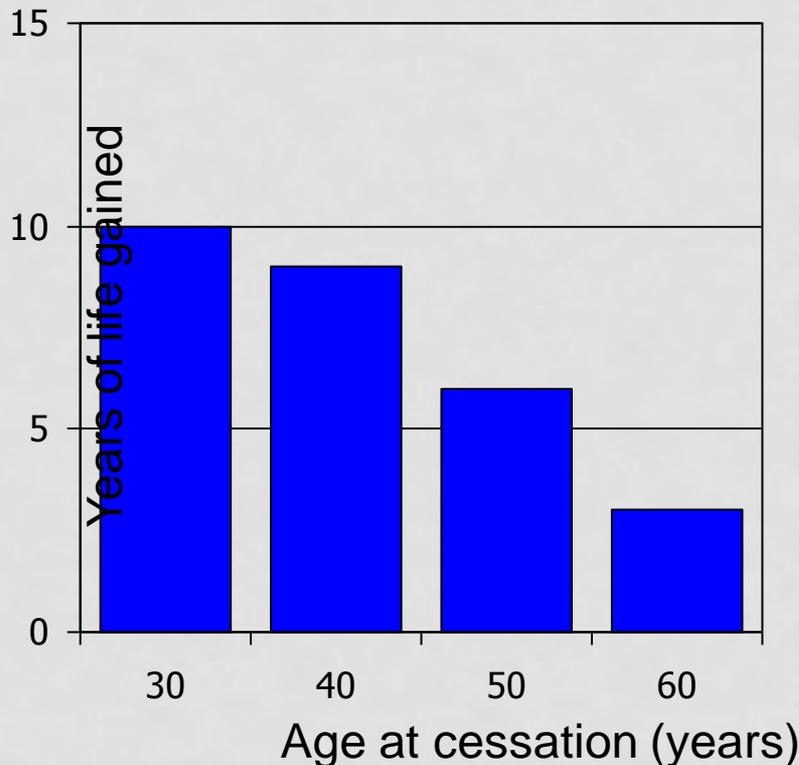
- \* **Relevance**
- \* **Risks**
- \* **Rewards**
- \* **Roadblocks**
- \* **Repetition**

# Relevance

- \* Discuss why quitting might be personally relevant
- \* Almost everyone has some regret associated with smoking
- \* Financial cost of cigarettes
- \* Health problems –patient, other children in home, partner
- \* Premature aging of skin, respiratory problems
- \* Early death

# SMOKING CESSATION: REDUCED RISK OF DEATH

- Prospective study of 34,439 male British doctors
- Mortality was monitored for 50 years (1951–2001)



**On average, cigarette smokers die approximately 10 years younger than do nonsmokers.**

**Among those who continue smoking, at least half will die due to a tobacco-related disease.**

# MAKING A PLAN TO STOP TOBACCO USE

## ALL MY REASONS

I will write down all my reasons not to use tobacco on the lines below. They will be something I can see change and something that I feel strongly about.

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## THINGS I CAN DO INSTEAD OF USING TOBACCO

Places it will be hard

What I can do instead

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## AVOIDS

Sometimes there are people, places, or things I need to avoid for a short period of time until I feel stronger as a non-smoker. I will write those on the lines below.

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# Risks

- \* Determine what knowledge she has about health effects on herself and her infant
- \* Correct misinformation
- \* Reiterate health benefits to infant if quits
- \* Explain that a prior normal pregnancy outcome does not mean this pregnancy is not at risk

# Roadblocks

- \* Identify triggers and cravings
- \* Identify social situations likely to trigger smoking
- \* Anticipate mood swings

# Overcoming Roadblocks

- \* Ask friend or relative to quit with you
- \* Ask others not to smoke around you
- \* Find other activities to do with smokers
- \* Keep hands and mouth busy
- \* Suck on sugar free hard candy
- \* Increase in physical exercise
- \* Relaxation techniques to reduce stress

# Rewards

- \* Food will taste better
- \* Baby's oxygen level will improve in 24hours
- \* More money
- \* Infant will grow better
- \* Less risk of learning disabilities, attention deficit disorders later
- \* Less long-term health risks to her
- \* Clothes and hair will smell better
- \* You'll set a good example for your children and their friends

# Pharmacologic assistance

- \* Behavioral intervention “cold turkey” is first-line treatment in pregnancy
- \* More likely to be required in heavy smokers > 1 pack/day
- \* Need to weigh risks of medication against benefit of patient not smoking
- \* No large randomized control trials to confirm safety

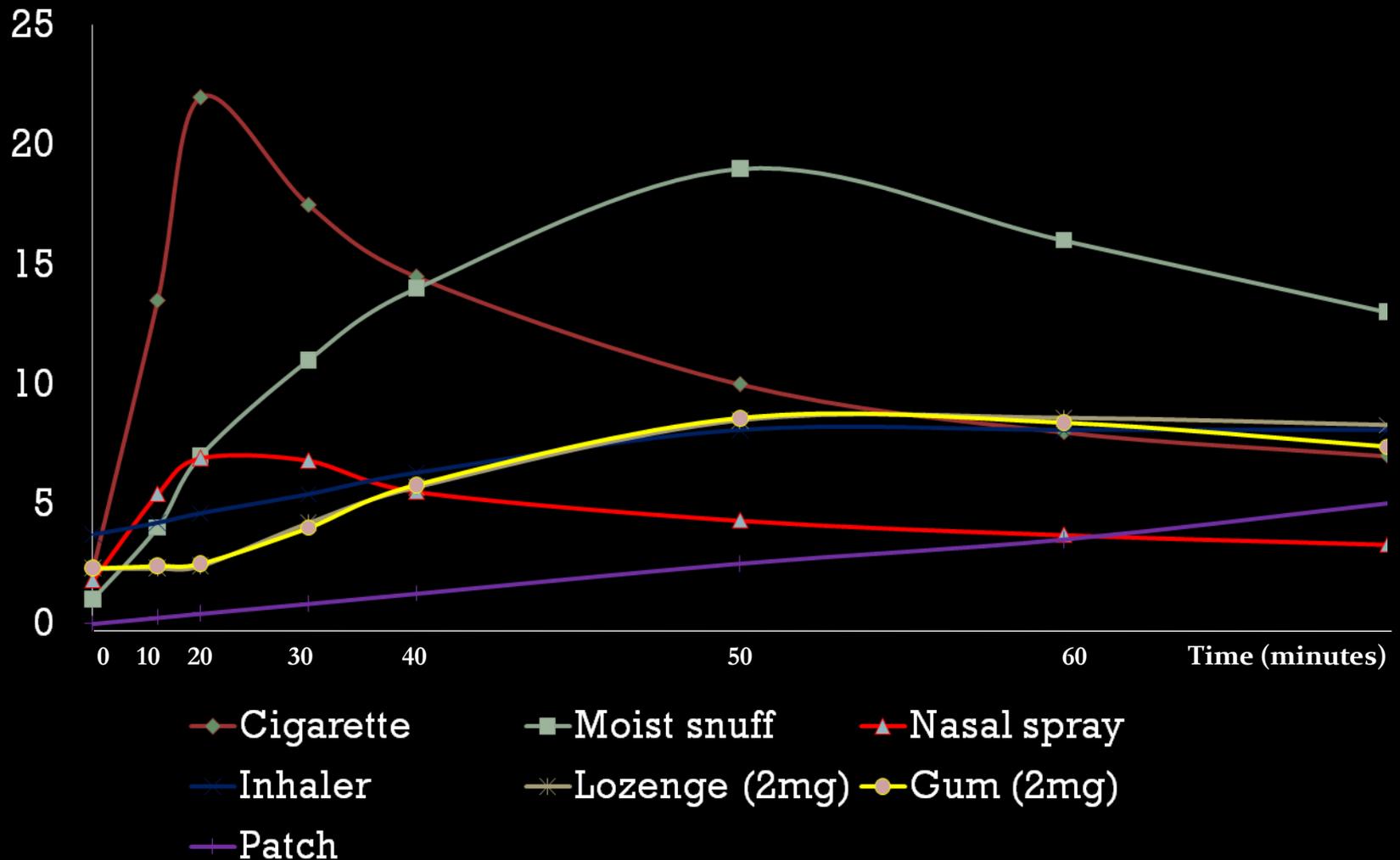
# ACOG 2010

- \* The use of nicotine replacement therapy in pregnancy should be undertaken with close supervision and after careful consideration and discussion with the patient of the known risks of continued smoking and the possible risks of nicotine replacement therapy.

# Nicotine Replacement Therapy

- \* Nicotine replacement therapy leads to lower blood nicotine levels than smoking
- \* No associated carcinogens or carbon monoxide
- \* May be utilized when non-pharmacologic treatments have failed (not FDA approved in pregnancy)
- \* Intermittent therapy such as inhaler, gum, or lozenge should be first step than continuous i.e. patch
- \* Adherence to nicotine replacement is low but predictor of ability to stop smoking. ( Fish etal 2009)

# PLASMA NICOTINE LEVELS



# Prenatal Smoking Cessation and risk delivering preterm/SGA

- \* Cohort study of U.S. resident, singleton births
- \* Self-reported maternal smoking history and if quit, which trimester quit in
- \* First trimester quitters decreased risk of delivering a preterm infant by 31% and preterm/SGA by 53%
- \* Decreased risk SGA term infant by 51%
- \* Risk similar to non-smokers
- \* Quitting in 2<sup>nd</sup> trimester had half the risk of smokers who smoked throughout pregnancy

- Bupropion
- Varenicline

- **Category C**

Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

# Bupropion in pregnancy and the prevalence of congenital malformations

- \* All women dispensed Bupropion and who had live born infant from Jan 1995 to Sept 2004
- \* Compared to women exposed to other antidepressants during pregnancy
- \* Outcome measurement: congenital malformations discovered in first 9 months of life

Cole J, et al. Bupropion in pregnancy and the prevalence of congenital malformations. *Pharmacoepidemiology and Drug Safety*; 2007;16:474-484.

# Key points of study

- \* Results of this study do not support a hypothesis of a teratogenic effect of Bupropion exposure in the first trimester
- \* The prevalence of malformations associated with Bupropion exposure in the first trimester(1213 women) was similar to that in the general population and was not increased relative to the two comparison groups

Cole J, et al. Bupropion in pregnancy and the prevalence of congenital malformations. *Pharmacoepidemiology and Drug Safety*; 2007;16:474-484.

# Summary

- \* Maternal smoking during pregnancy is risky to her infant- both before and after delivery
- \* Be careful in how you ask about a patient's smoking history in order to get the patient to be honest with you
- \* Use the 5 "A"s and 5 "R"s – have handouts readily available to assist
- \* Consider using nicotine replacement therapy or Bupropion in patients unable to quit on their own

# SMOKING....

HELPS YOU

RELAX!

