Tobacco Cessation in the Pediatric Practice

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Objectives

- Describe tobacco harms, especially as it affects the pediatric population.
- Identify effective prevention strategies to lessen the impact of second and third hand smoke on the pediatric population.
- Explain role and responsibilities of pediatric providers in addressing tobacco harms, prevention and treatment with their patients and their families.
- Describe effective interventions and resources available to pediatric providers to help them address smoking by parents and caregivers of their patients.

Disclosures

No financial disclosures

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The figures quoted have been checked and certified to by LYBRAND, ROSS BROS AND MONTGOMERY, Accountants and Auditors.

20,679* Physicians say "LUCKIES are *less irritating*"

"It's toasted"

Your Throat Protection against irritation against cough

tific Evidence
of Smoking!

Tobacco smoke contains a deadly mix of **more than 7,000 chemicals**. Hundreds are toxic. About 70 can cause cancer. Here are some of the chemicals.

What's in tobacco smoke?

-ammonia, formaldehyde, benzene, N-nitrosamines, aniline, acrolein, carbon monoxide, hydrogen cyanide, lead, chromium, heterocyclic amines

-NICOTINE

-Tobacco smoke is a Group A Carcinogen

CDC 2017, US Dept HHS 2006

First, Second and Thirdhand smoke

- Second hand or “side stream smoke” (the smoke released from the burning end of a cigarette) and “exhaled mainstream smoke” (the smoke exhaled by the smoker)
- Second hand smoke is actually MORE dangerous!
- lower temperatures, contains smaller particles and higher concentrations of many dangerous chemicals

U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006

Groner JA, Huang H, Nagaraja H, Kuck J, Bauer JA. Secondhand smoke exposure and endothelial stress in children and adolescents. Acad Pediatr. 2015;15(1):54–60

First, Second and Thirdhand smoke

- Thirdhand Smoke "consists of residual tobacco smoke pollutants that remain on surfaces and in dust after tobacco has been smoked" and react with other substances in the environment to release other toxic pollutants.

- The concentrations of third hand smoke chemicals on fabrics like cotton and polyester were present for over 1.5 years after the last exposure to smoke

National Toxicology Program. Report on Carcinogens, Thirteenth Edition. Research Triangle Park (NC): U.S. Department of Health and Human Services, Public Health Service, 2014 [accessed 2015 Aug 20].

Bahl V, Jacob P, Havel C, Schick SF, Talbot P. Thirdhand Cigarette Smoke: Factors Affecting Exposure and Remediation. Anto RJ, ed. PLoS ONE. 2014;9(10).

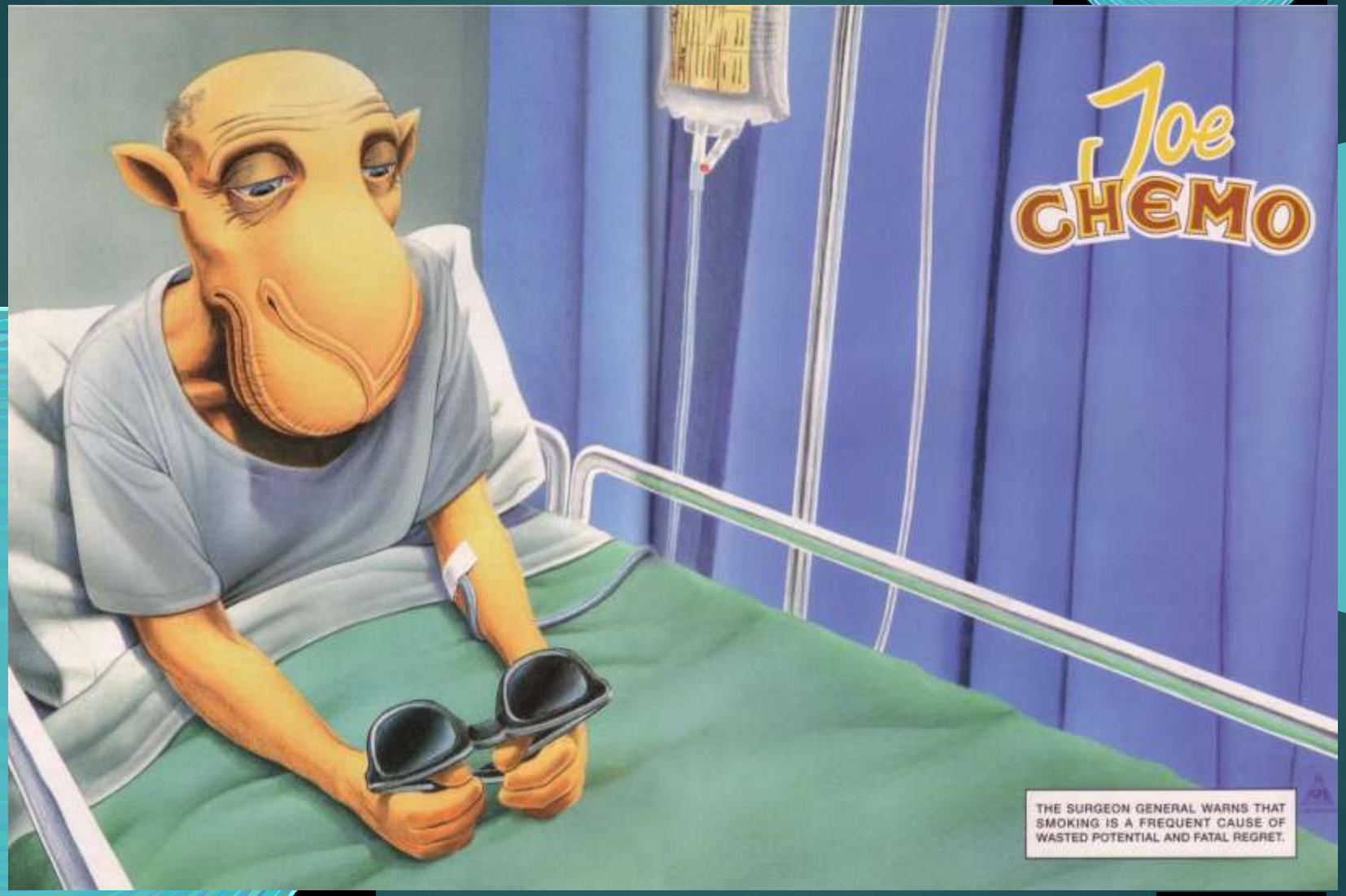
First, Second and Thirdhand smoke

- Nicotine and its derivatives, including 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) "NNK ," a known carcinogen, were rapidly extracted from cotton fabric in an aqueous medium that is similar in composition to saliva and sweat
- Research has shown that thirdhand smoke mediated DNA strand breaks are highly persistent after 24 hour exposure, which may lead to increased mutations in cells upon exposure to thirdhand smoke and ultimately higher cancer risk.

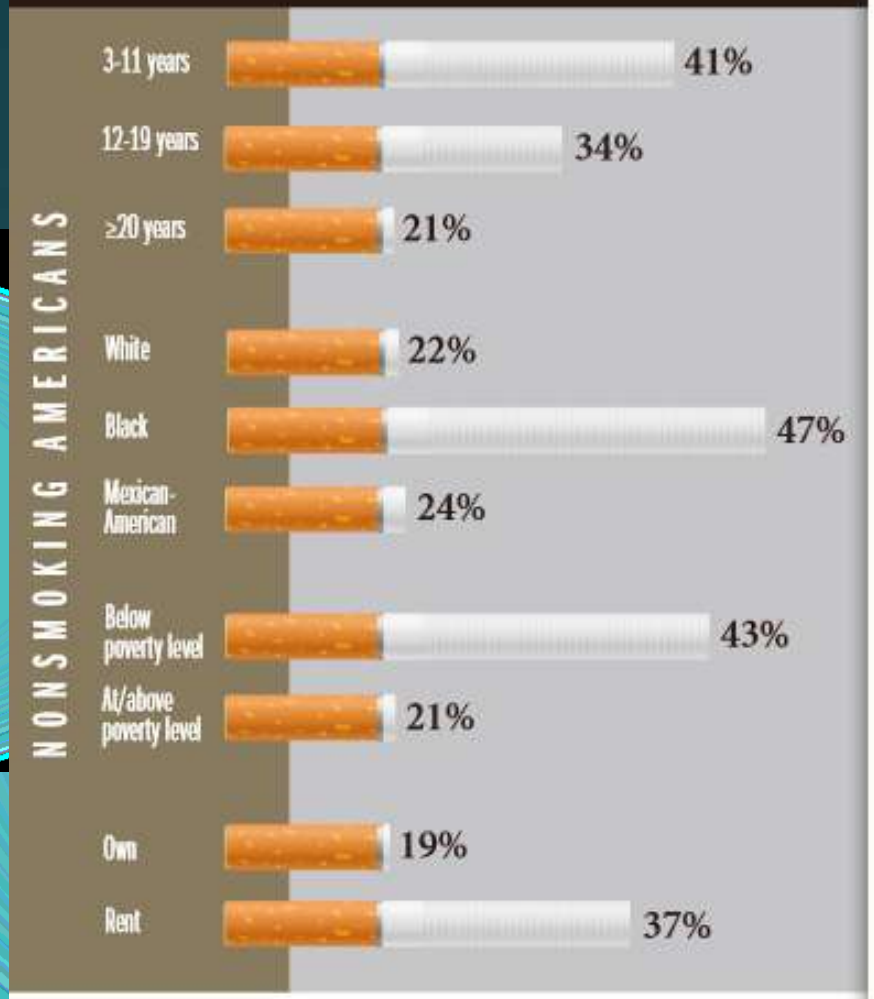
Bahl V, Jacob P, Havel C, Schick SF, Talbot P. Thirdhand Cigarette Smoke: Factors Affecting Exposure and Remediation. Anto RJ, ed. PLoS ONE. 2014;9(10).

Bo Hang, et al. Thirdhand smoke causes DNA damage in human cells- Mutagenesis vol. 28 no. 4 pp. 381–391


CAMEL
CAMEL
SURGEON GENERAL'S WARNING: Smoking Causes Lung Cancer, Heart Disease, Emphysema, And May Complicate Pregnancy.

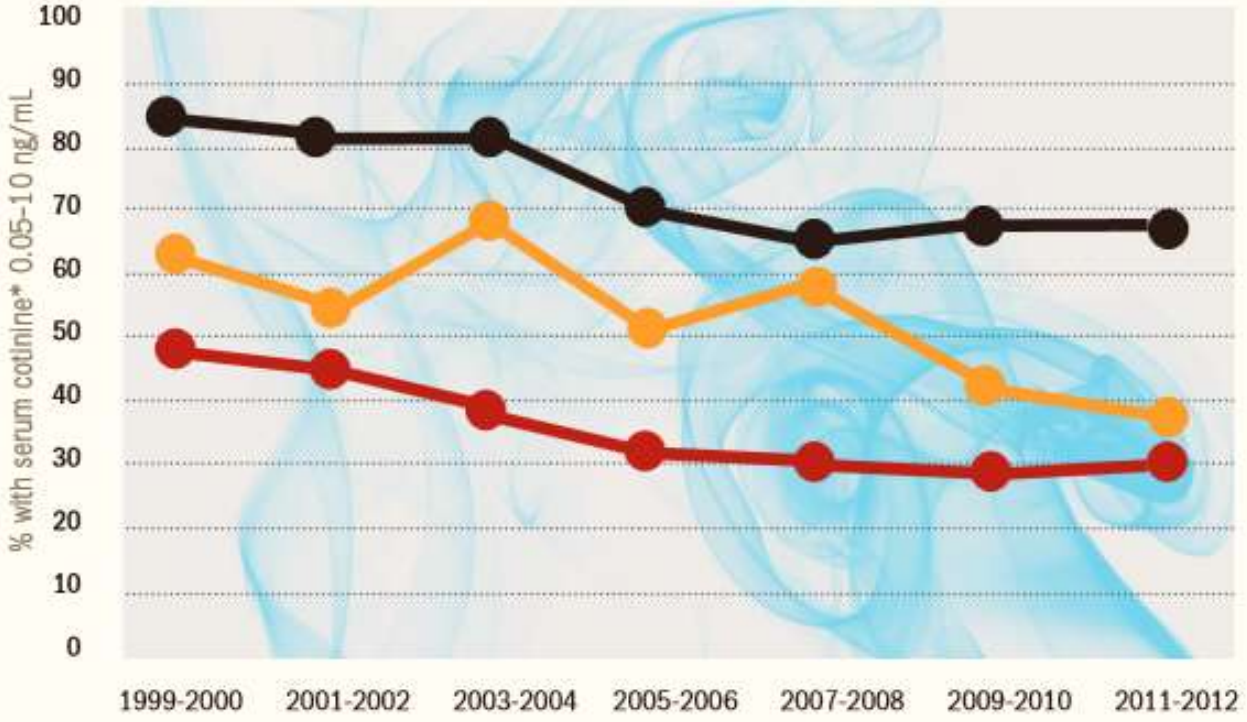

Joe
CHEMO
THE SURGEON GENERAL WARNS THAT SMOKING IS A FREQUENT CAUSE OF WASTED POTENTIAL AND FATAL REGRET.

Some groups have higher exposure to secondhand smoke and its harmful effects



SOURCE: National Health and Nutrition Examination Survey Data 1999-2012.

Exposure to secondhand smoke differs among children ages 3-11 by race/ethnicity



Non-Hispanic black children

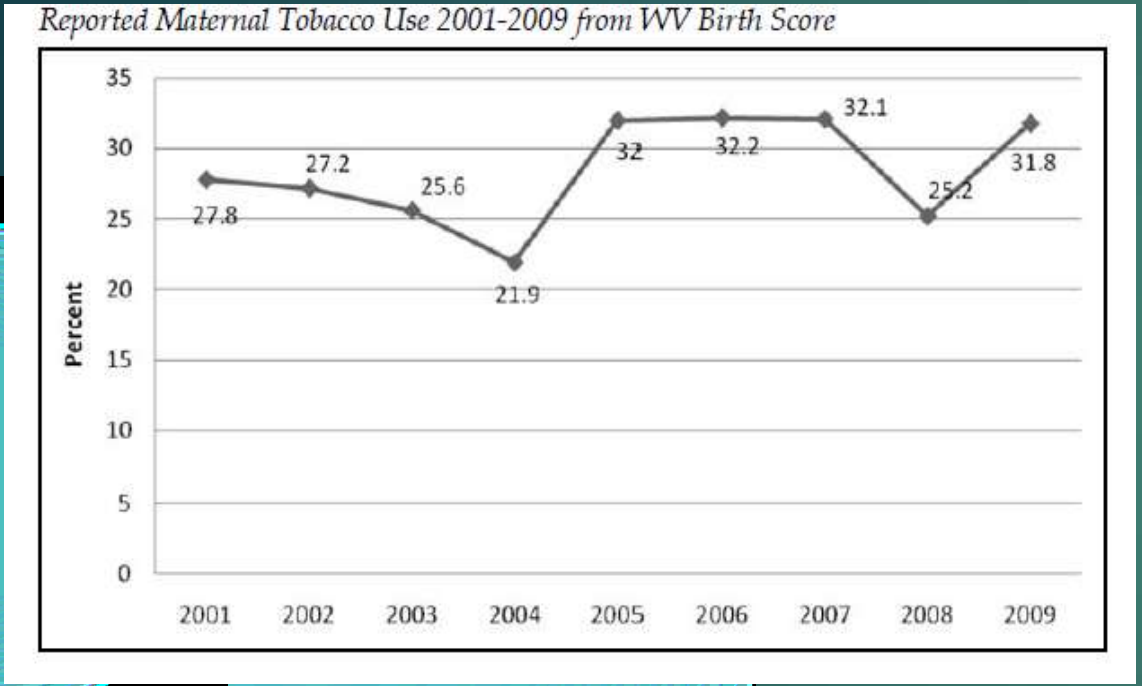
Non-Hispanic white children

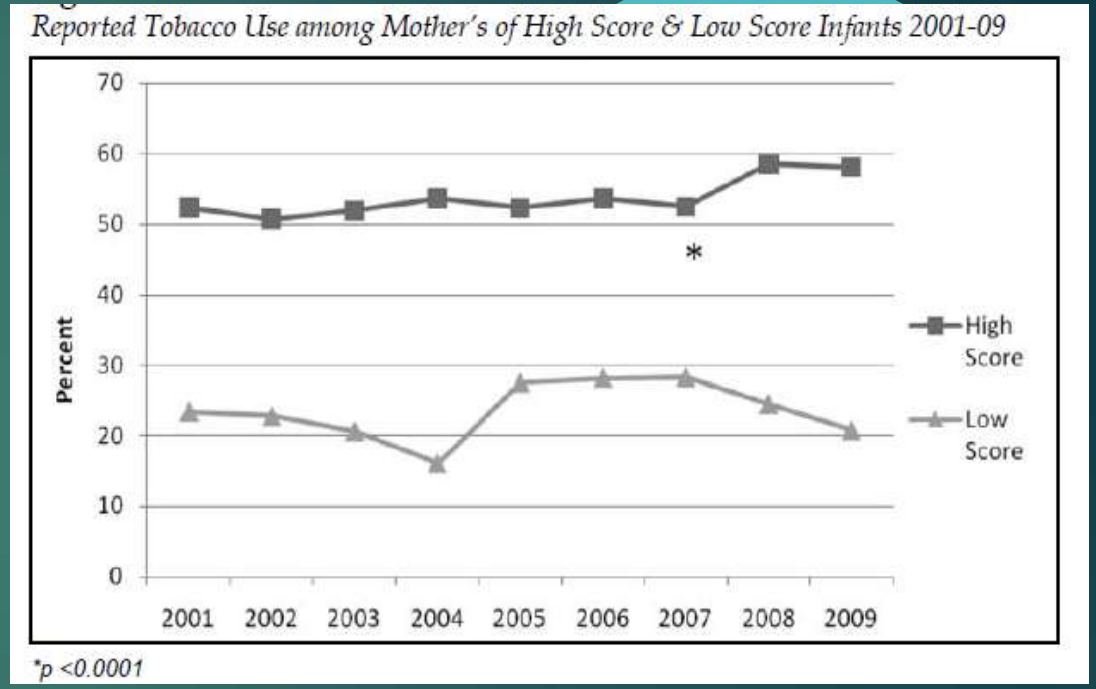
Mexican-American children

*Data come from measuring cotinine, which is a marker of secondhand smoke exposure found in the blood.

SOURCE: National Health and Nutrition Examination Survey Data 1999-2012.

Tobacco in pregnancy and Birth Score





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Updates in WV Birth Score Data

2014- 26.4%

2015- 24%

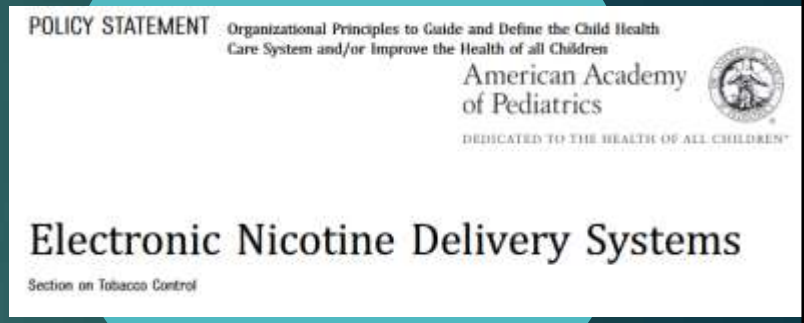
2016- 25.1%


OLD LOCO
SALSA GRAPE
OLD LOCO
60ML
TANGO POMELO
OLD LOCO
MAMBO MANGO


Cartridge
Atomizer
Battery
Battery
Clearomizer
Drip Tip
Tank System

Well then, maybe I'll just vape…

- numerous toxicants including nicotine, metal and silicate particles, and carcinogens and carcinogens harmful to human health.
- Adolescents are more likely to become addicted even with sporadic use of tobacco.
- Use of nicotine-containing ENDS solution may lead adolescents to start smoking conventional cigarettes and other tobacco products.
- Solution contains varying levels of concentrated nicotine, which can be lethal when ingested even in small quantities.


POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

Electronic Nicotine Delivery Systems

Section on Tobacco Control

PREVENTION

2007 National Survey on Children's Health with data from 55,358 children

- 8.2% with learning disabilities
- 5.9% with ADHD
- 3.6% with behavioral and conduct disorders
- *Children with SHS exposure had 50% increased odds of having at least 2 neurobehavioral disorders*
- *Children exposed to TS are 3 times more likely to have a learning disability and 1.6 times more likely to fail a grade in school*
- Risks to future success are preventable

Kubir *Pediatrics* 2011; Anderko JOGNN 2010; Byrd *Pediatrics* 1994

PREVENTION

Why?

- Poor Growth
- Otitis Media (2-4x ↑ Risk)
- Hearing Loss
- Colic (2x ↑ Risk)
- SIDS (2.5-3x ↑ Risk)
- ↓ Lung function
- Wheeze and asthma exacerbation
- Atopy

Xu Amer J Preventive Medicine, 2015; Hofhuis Archives Dis Childhood 2003; Oberg Lancet, 2011; Salihu Early Human Devel, 2007

PREVENTION AND INTERVENTION

Clinical Practice Policy to Protect Children from Tobacco, Nicotine and Tobacco Smoke

- Evidence based recommendations to prevent exposure of children to 2nd and 3rd hand smoke

PREVENTION and INTERVENTION

- Inquire about tobacco use and tobacco smoke exposure as part of health supervision visits and visits for diseases that maybe caused or exacerbated by tobacco smoke exposure.
- Include tobacco use prevention as part of anticipatory guidance.
- Address parent/caregiver tobacco dependence as part of pediatric health care.

Clinical Practice Policy to ProtectChildren From Tobacco, Nicotine, and Tobacco Smoke- AAP Policy Statement, Section on Tobacco Control 2016

Ask the right questions

- Does your child live with anyone who uses tobacco?
- Does anyone who provides care for your child smoke?
- Does your child visit places where people smoke?
- Does anyone ever smoke in your home?
- Does anyone ever smoke in your car?
- Do you ever smell smoke from your neighbors in or near your home or apartment?

True or False…

Nicotine replacement therapy is just as effective as bupropion or varenicline.

PREVENTION AND INTERVENTION

- Recommend tobacco dependence treatment of tobacco-dependent parents and caregivers.
- Implement systems to identify and offer counseling, treatment, treatment recommendations, and/or referral for tobacco-dependent parents

Combination therapy with the nicotine patch (daily) and nicotine gum or lozenge (ad libitum) has similar effectiveness to the prescription agent varenicline

Clinical Practice Policy to ProtectChildren From Tobacco, Nicotine, and Tobacco Smoke- AAP Policy Statement, Section on Tobacco Control 2016

PREVENTION AND INTERVENTION

- Offer tobacco dependence treatment and/or referral to adolescents who want to stop smoking.
- Tobacco dependence pharmacotherapy can be considered for moderate to severely tobacco-dependent adolescents who want to stop smoking.
- Offer tobacco-dependent individuals quitline referral.

Clinical Practice Policy to Protect Children From Tobacco, Nicotine, and Tobacco Smoke, Policy Statement, AAP 2015

True or False…
Nicotine replacement therapy OR varenicline/bupropion can increase risk of suicide or self harm

PREVENTION AND INTERVENTION

- Consider potential for neuro-psychiatric symptoms with tobacco dependence treatment.
- ***Nictotine withdrawal can increase chance of self harm and suicide. Both varenicline and buprobion have Black box warnings.***
- If the source of a child's smoke exposure cannot be eliminated, provide counseling about strategies to reduce the child's tobacco smoke exposure.

Clinical Practice Policy to Protect Children From Tobacco, Nicotine, and Tobacco Smoke, Policy Statement, AAP 2015

True or False…

Electronic cigarettes and vaping devices are less harmful than combustible tobacco and should be considered as a better alternative

Do not recommend electronic nicotine delivery systems for tobacco dependence treatment.

Cessation

- Although nearly half of adult smokers attempt to stop each year, <5% succeed because of nicotine's highly addictive nature.
- Youth also attempt to quit, and those with greater evidence of dependence are more likely to have difficulty stopping.
- Approximately 4% of adolescent smokers 12 to 19 years of age successfully quit smoking each year.
- Starting smoking at a younger age is associated with more severe addiction and decreased rates of stopping smoking

Smoke Free Policies

- Survey of 952 parents who smoke
- 54% had strict smoke-free policies
- *20% reported being asked about policies by pediatrician*
- Homes with stricter policies more likely had:
  - Children under 5y
  - Less than 10 cigarettes/day
  - Only 1 smoker in home
  - Non Medicaid or self pay
  - Non Black
- Strict home policy was strongly associated with a strict car policy

Ossip *Academic Pediatrics*, 2013

CEASE Program
(Clinical Effort Against Second hand Smoke Exposure)

Jonathan Winickoff, MD

- Pediatric outpatient office based system
- Theoretically grounded intervention using 5 steps:
  - Identification and self-assessment of readiness to quit
  - Counseling
  - Referral
  - Medication
  - Follow-up
- Did not produce more confirmed quitters BUT advice had positive effects on parents regarding smoking

Winickoff *Pediatrics* 2003; Winickoff *Journal of Clinical Outcomes Management* 2012

CEASE Program
(Clinical Effort Against Second hand Smoke Exposure)

- "IF all participants in intervention and control groups are combined (disregarding whether they received CEASE intervention or not), smokers who reported any assistance had confirmed quit *rates almost twice as high as those of smokers who did not receive assistance*. This finding emphasizes the importance of pediatricians advice. Greater amounts of help resulted in higher chances of quitting.

YOU NEED TO ASK!

- Survey of 337 parents
- 99% said that asking about parent smoking is a very important part of the pediatricians role – no difference by smoking status

Cluss *Ambulatory Pediatrics*, 2002

5 A's of Intervention

- ASK- use every opportunity to talk about smoking and get a sense of what type of exposures children may have (Home, Car, other caregivers)
- ADVISE- to stop smoking, protect and establish a smoke free environment
- ASSESS-(sometimes not included) readiness to quit
- ASSIST- QUITLINE, Nicotine replacement
- ARRANGE- Referrals, Rx's, follow up

Virginia P. Quinn, et. al Effectiveness of the 5-As Tobacco Cessation Treatments in Nine HMOs, J Gen Intern Med. 2009 Feb; 24(2): 149–154. Published online 2008 Dec 13

WV Opportunities

THE ROANOKE TIMES
Monday, September 20, 2004

STEPHANIE KLEIN-DAVIS | The Roanoke Times

Mellisa Williamson, 35, a Bullitt Avenue resident, worries about the effect on her unborn child from the sound of jackhammers.

TRAFFIC: Official says wait for end result

Smoking Relapse After Pregnancy

What % of smoking women quit smoking for at least 1 week during pregnancy???

56%

40-70% of women who quit during pregnancy were smoking regularly again by how many months postpartum?

12 months. 75% by 17 months

Kahn *American Journal of Public Health*, 2002

SHS Exposure & Child Behavior at 6-12y

- 220 6-12yo children with asthma and live with smokers
- Measured exposure with serum cotinine
- Measured child behavior with parent completed BASC
- Full sample shows associations between exposure and behavior problems

	Full Sample		
Behavior Subscale	β	SE β	p
Externalizing	1.16	.69	.09
Hyperactivity	1.54	.63	.02
Aggression	1.18	.68	.09
Conduct	0.60	.64	.35
Internalizing	1.31	.61	.03
Somatization	1.13	.61	.07
Anxiety	0.73	.53	.17
Depression	1.21	.61	.05
Behavior Sx	1.39	.66	.04
Adaptive Skills	-0.40	.47	.40

Yolton *Journal Developmental Behavioral Pediatrics* 2008

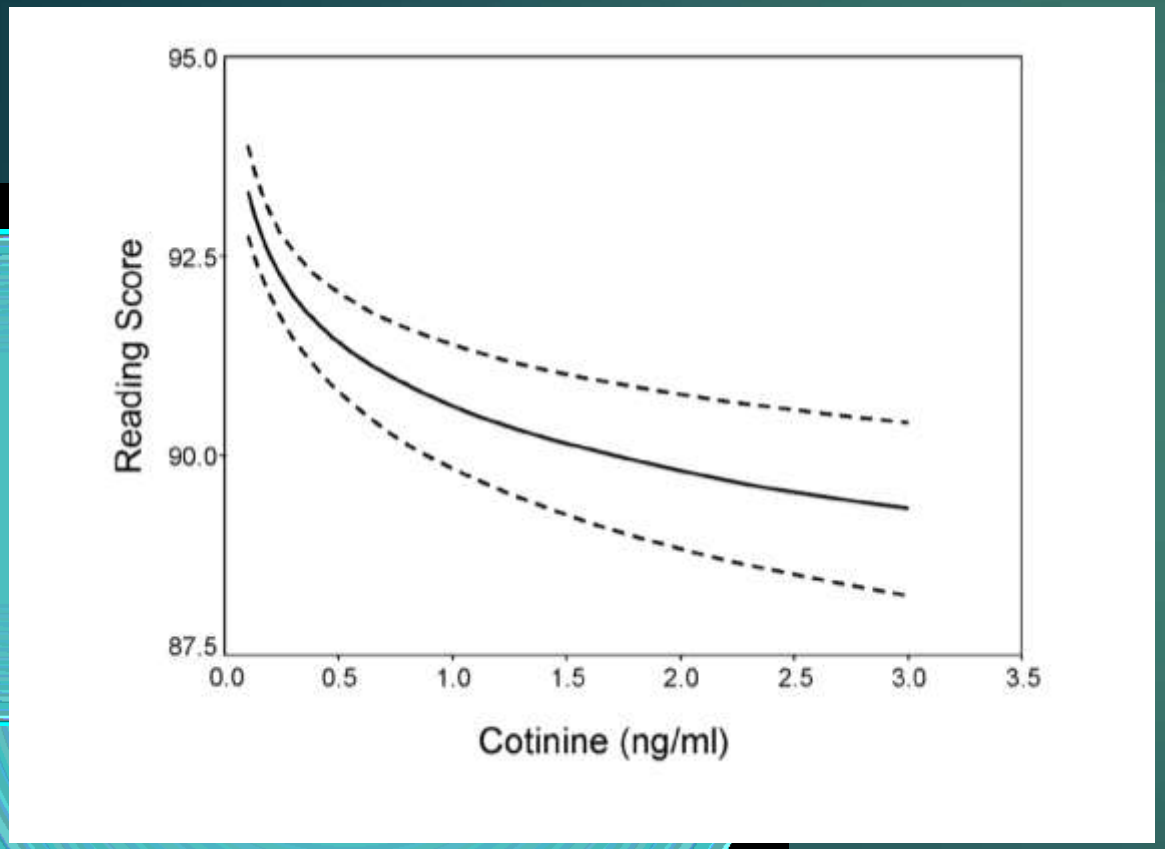
TS Exposure and Executive Function at 8y

- 239 children
- Exposure to TS similar to U.S. reports
  - 13% smoked during pregnancy; 29% any prenatal exposure; 70% detectable cotinine
  - 24% SHS in childhood; 90% detectable cotinine
- Exposure assessed with serum cotinine
- BRIEF – parent survey of child exec function

	Prenatal Exposure		Childhood Exposure	
	Adjusted Estimate	p-value	Adjusted Estimate	p-value
Inhibit	0.19	0.38	0.22	0.52
Shift	0.11	0.62	0.29	0.38
Emotional Control	-0.09	0.70	0.04	0.91
Initiate	0.44	0.04	0.76	0.02
Working Memory	0.35	0.17	0.87	0.03
Plan/Organize	0.36	0.12	0.45	0.21
Organization of Materials	0.43	0.06	0.59	0.09
Monitor	-0.09	0.72	0.11	0.75
Behavioral Regulation Index	0.07	0.75	0.17	0.60
Metacognition Index	0.34	0.15	0.66	0.07
Global Executive Composite	0.26	0.26	0.51	0.14

Oh and Yolton; Manuscript Pending

SHS and Reading Ability in NHANES (6-16y, N=4399)



Adjusted Estimates of Cognitive Score Change for 1 ng/mL Increases in Cotinine

	Adjusted Estimate	(SE)	p value
Reading	-1.07	(.33)	**.002**
Math	-.76	(.30)	**.01**
Block Design	-.23	(.05)	**<.001**
Digit Span	-.05	(.06)	.36

Models adjusted for: sex, race/ethnicity, poverty index, parent education, region, marital status, lead, ferritin

Yolton *Environmental Health Perspectives* 2005

Thanks

- Perinatal Partnership
- Candice Hamilton, Janine Breyel
- West Virginia Chapter, American Academy of Pediatrics
- Kim Yolton, PhD, Cincinnati Children's

Resources for Parents

- http://www.no-smoke.org/index.php
  http://www.tobaccofreekids.org/
- http://www.tobaccofreemaine.org/channels/parents/
- http://kidshealth.org/classroom/
- https://www.healthychildren.org/
- https://ukhealthcare.uky.edu/
- https://smokefree.gov/

Resources for Physicians

https://www.cdc.gov

http://kidshealth.org/classroom/

http://www.tobaccofreemaine.org/channels/providers/

https://www.tobaccofreekids.org/

http://www.gasforair.org/

http://www.no-smoke.org/goingsmokefree.php

https://www.healthychildren.org/English/health-issues/conditions/tobacco/Pages/Importance-of-Smoke-Free-Homes-and-Cars.aspx

https://tobaccofreemaine.org/en http://www.massgeneral.org/ceasetobacco/ -