

Energy Drinks

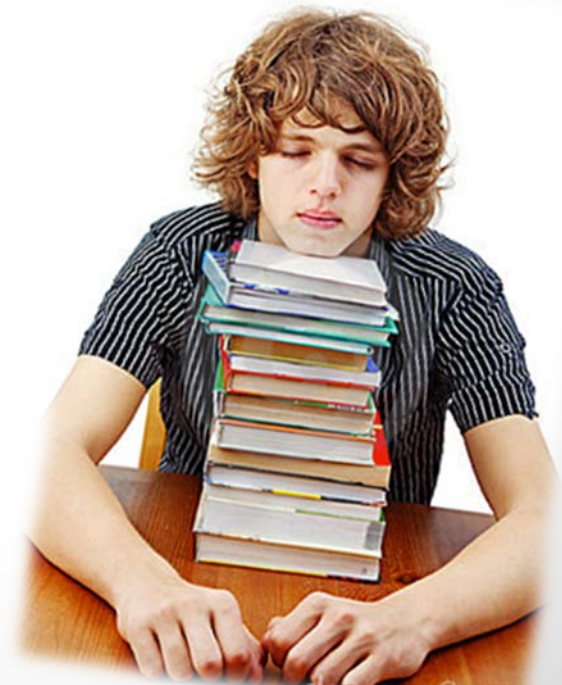
What Every Pediatrician Should Know

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Objectives

- Differentiate energy drinks (EDs) from other well-known beverages
- Know patterns of ED use in adolescents and young adults
- Recognize safety concerns and common adverse effects of EDs
- Understand the rising concern of mixing EDs with alcohol
- Review office screening tools and counseling tips for adolescent ED use

Teens don't know the difference. Do you?

- Energy Drinks:
 - “beverages that contain caffeine, taurine, vitamins, herbal supplements, and sugar or sweeteners and are marketed to improve energy, weight loss, stamina, athletic performance and concentration.”
- Sports Drinks:
 - “beverages that may contain carbohydrates, minerals, electrolytes, and flavoring and are intended to replenish water and electrolytes lost through sweating during exercise.”



Why are Adolescents attracted to Energy Drinks?



Adolescents are high consumers of EDs

- Energy Drinks introduced to US in 1997 (Red Bull)
- 30-50% of adolescents and young adults self-report consuming energy drinks
 - 65% of ED consumers are 13-35yo
 - Half of the ED market consists of children, adolescents, and young adults.
- One self survey reported
 - 28% of 12-14 year olds
 - 31% of 12-17 year olds
 - 34% of 18-24 year olds regularly consume EDs
- Tend to be associated with increased risk taking behaviors



Is anyone concerned?

- Many EDs have been banned across the world, none in the US.
- A few quotes:
 - *Any drinks containing caffeine should not be sold to children at school. Institute of Medicine 2007*
 - *"[EDs]...are not appropriate for children and adolescents and should never be consumed." AAP Committee on Nutrition and The Council on Sports Medicine and Fitness 2011*
 - *Pediatric Professionals state..."[t]here is evidence in the published scientific literature that the caffeine levels in EDs pose serious potential health risks, including increased risk for serious injury or even death. " Health Letter to FDA 2013*
 - *"EDs have no therapeutic benefit, and both the known and unknown pharmacology of various ingredients, combined with reports of toxicity, suggest that these drinks may put some children at risk for serious adverse health effects." Seifert, SM, Et. Al 2011*

Ingredients

- Taurine
- Ginseng
- Guarana
- B Vitamins
- Sugars
- Ginkgo Biloba
- L-Carnitine
- **CAFFEINE**





wiseGEE!

~75-150 mg per 12oz



~35-50 mg per 12oz



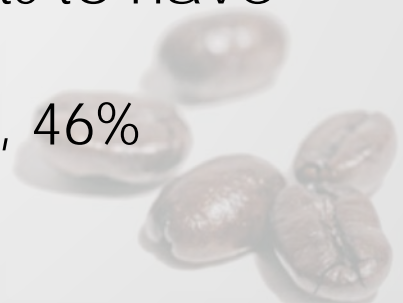
~120-200 mg per 12oz



~207 mg per 12oz



Caffeine

- Pros: Enhance physical performance, increasing aerobic endurance and strength, auditory vigilance, improving reaction time, and delaying fatigue.[Dose Dependent(32-200mg), Variable, Adult Studies]
 - Average Adolescent Caffeine intake 60-70mg/day to 800mg/day. Mostly from soda, EDs becoming popular
 - Assumed that adverse effects begin to occur when consume $>3\text{mg/kg/day}$
 - For adults this usually occurs $>200\text{mg}$ of caffeine and include insomnia, nervousness, HA, tachycardia, arrhythmia, and nausea.
 - However doses $<400\text{mg/day}$ considered safe in adults.
 - Recommendation for Children & Adolescents to have no more than 2.5mg/kg or 100mg daily.
 - 5448 US caffeine overdoses reported in 2007, 46% occurred in those $<19\text{yo}$
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CAFFEINE CONTENT OF BEVERAGES AND OTHER PRODUCTS

Energy drinks	Caffeine content, mg	Sodas	Caffeine content, mg
5-Hour Energy.....	207	Coca-Cola, 12-oz can.....	35
Amp, 8 oz.....	72	Coca-Cola, 20-oz bottle.....	58
Amp, 16 oz.....	143	Coca-Cola Zero, 12-oz can.....	34
BAWLS Guarana, 8 oz.....	50	Coca-Cola Zero, 20-oz bottle.....	57
BAWLS Guarana, 16 oz.....	100	Diet Coke, 12-oz can.....	47
Full Throttle, 16 oz.....	197	Diet Coke, 20-oz bottle.....	78
Monster, 16 oz.....	160	Diet Pepsi, 12-oz can.....	36
Monster, 24 oz.....	240	Diet Pepsi, 20-oz bottle.....	60
No Fear, 8 oz.....	87	Dr Pepper, 12-oz can.....	42
No Fear, 16 oz.....	174	Dr Pepper, 20-oz bottle.....	70
NOS, 16 oz.....	260	Mountain Dew, 12-oz can.....	54
Red Bull, 8.4 oz.....	80	Mountain Dew, 20-oz bottle.....	90
Red Bull, 12 oz.....	114	Pepsi, 12-oz can.....	38
Red Bull, 16 oz.....	152	Pepsi, 20-oz bottle.....	63
Red Bull, 20 oz.....	190	Pepsi MAX, 12-oz can.....	69
Red Bull Energy Shot.....	80	Pepsi MAX, 20-oz bottle.....	115
Rip It, 16 oz.....	200	Vault, 12-oz can.....	71
Rip It Shots.....	100	Vault, 20-oz bottle.....	118
Rockstar, 8 oz.....	80		
Rockstar, 16 oz.....	160	Other	
Rockstar, 24 oz.....	240	Arizona Iced Tea, black, 16 oz.....	32
Rockstar 2X, 12 oz.....	250	Arizona Iced Tea, green, 16 oz.....	15
SPIKE Shooter.....	286	Black tea (brewed), ^a 8 oz.....	55
		Coffee-flavored ice cream, ^a 8 oz.....	58
		Coffee (brewed), ^a 8 oz.....	85
		Coffee (brewed), ^a 16 oz.....	170
		Espresso shot, ^a 1 oz.....	64
		Excedrin Extra Strength, 2 pills.....	130
		Hershey's Kiss, 1.....	1
		Hershey's milk chocolate bar.....	12
		Hot chocolate, ^a 8 oz.....	9
		NoDoz Maximum Strength, 1 pill.....	200
		StayAlert gum, 1 piece.....	100
		Vivarin, 1 pill.....	200

^aAverage values; individual brands may vary.

Source: Center for Military Psychiatry and Neuroscience at the Walter Reed Army Institute of Research, 2012.

Adverse Effects

- Morbidity in athletes- Palpitations, Hypertension, Dehydration
- Reports: Seizures, Mania, Stroke, Sudden death
- High risk patients- Cardiac complications
- Arrhythmias
- Eating Disorder-Cardiac Morbidity/Mortality
- Excessive Caloric Intake- Obesity, Dental problems
- Bone Demineralization
- Children/Adolescents with ADHD
- Withdrawal symptoms
- Obesity
- Dental health problems



Energy drinks mask perceived effect of alcohol

- 15% of adolescents mixed EDs with alcohol “to drink more and not feel as drunk.”
- Creates a phenomenon described as “a wide-awake drunk.”



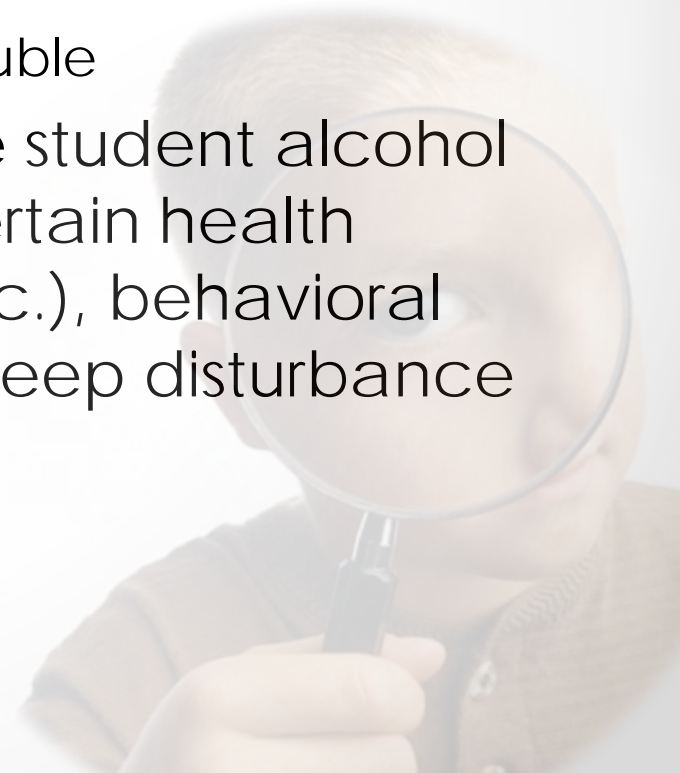
Regulations



- FDA imposes a limit of 71mg of caffeine per 12oz soda because soft drinks are classified as *food/beverage*.
- FDA also requires dedicated caffeine stimulants(No Doz) to list:
 - Minimum purchase age(12yo), adverse effects, cautionary notes, recommended dose, and total daily recommended dose of caffeine.
- Energy Drinks considered “natural dietary supplements.”
 - NO requirements for testing, warning labels, or restriction against sales or consumption by minors.
 - **Safety determinations of EDs are made solely by manufacturers**
 - *2009 FDA asked manufactures of alcoholic EDs to provide their safety

How are you asking about energy drink usage?

- HEADDSSS Interview
 - Home, Education/Eating/Exercise, Activities, Drugs, Depression, Sexual Activity, Safety, Suicide
- CRAFFT screen
 - Car, Relax, Alone, Forget, Friends, Trouble
- High Risk Groups: athletes, college student alcohol drinkers, high-risk behavior kids, certain health conditions (cardiac conditions, etc.), behavioral changes, anxiety, poor nutrition, sleep disturbance



Counseling Tips

- Stimulant-containing energy drinks have no place in the diets of children or adolescents
- Adolescent and child caffeine consumption not to exceed 100mg/day and 2.5mg/kg per day.
- Be aware of energy-drink consumption and potentially dangerous consequences
- Diet and Substance-use hx should include screening for episodic/chronic energy-drink consumption, both alone and with alcohol.
- Educate families and children at risk for potential adverse effects of energy drinks
- Children with cardiac conditions should be counseled regarding the risks of caffeine-containing products:
 - Including irregular heart rhythms, syncope, dysrhythmias, and sudden death

Questions



*Don't forget to report ED Toxicities to Poison
Control #1800-222-1222*

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