

AU InforMed

Volume 5 Number 11 (Issue 146)

Wednesday, April 4, 2007

Guest Editors: Jena Willis, Pharm.D. Candidate and Elaine Albright, Pharm.D. Candidate

A Focus on Alcohol...



April is Alcohol Awareness Month



Alcohol – Facts and Stats

There are approximately 75,000 deaths attributable to excessive alcohol use each year in the United States. Direct and indirect causes of death include drunken driving, cirrhosis of the liver, falls, cancer, and stroke. This makes excessive alcohol use the 3rd leading lifestyle-related cause of death for the nation. In 2003, there were over 2 million hospitalizations and over 4 million emergency room visits for alcohol-related conditions.

- Nearly 14 million Americans meet diagnostic criteria for alcohol use disorders¹
- Among current adult drinkers more than half say they have a blood relative who is or was an alcoholic or problem drinker¹
- Across all ages, males are four times as likely as females to be heavy drinkers¹
- More than 18% of Americans experience alcohol abuse or alcohol dependence at some time in their lives¹
- Traffic crashes are the greatest single cause of death for persons aged 6 to 33. About 45% of these fatalities are in alcohol-related crashes¹
- Underage drinking costs the US more than \$58 billion every year – enough to buy every public school student a state-of-the-art computer¹
- Alcohol is the most commonly used drug among young people¹
- Problem drinkers average four times as many days in the hospital as nondrinkers – mostly because of drinking-related injuries¹
- Alcohol kills 6 ½ times more youth than all other illicit drugs combined¹
- Youth who drink alcohol are 50 times more likely to use cocaine than those who never drink alcohol¹
- Approximately ½ of college students in the U.S. engage in binge drinking²
- Approximately 80% of college students drink alcohol, and of these, 15 to 25% can be classified as problem drinkers²
- At Auburn, approximately, 30% of males and 15% of females consume 16 or more standard drinks in a week, a level that increases risks for accidents, and academic, legal, & health problems²

1. Centers of Disease Control [homepage on the internet]. Atlanta: [updated 24 Jan 2007; cited 26 Mar 2006]. National Center for Health Statistics; Available from: <http://www.cdc.gov/nchs/fastats/alcohol.htm>

2. Auburn University Psychological Services Center. Health Behavior Assessment Center [pamphlet]. Auburn (AL); Auburn University Department of Psychology: 2007.

Who is drinking and how much are they drinking?

	Drinking Levels			
	Abstainer	Light drinker	Moderate drinker	Heavier drinker
Age	2005- % Estimate of Consumption (Male / Female)			
18-24	37 / 46	35 / 42	20 / 6	8 / 5
25-34	23 / 36	47 / 53	25 / 6	6 / 4
35-44	27 / 37	44 / 51	24 / 8	5 / 4
45-54	29 / 38	42 / 48	24 / 9	6 / 5
55-64	36 / 49	37 / 39	21 / 8	5 / 4
65+	48 / 64	29 / 28	20 / 6	3 / 3

•Abstainer: has never drank or drinks < once/yr

•Light drinker: drinks 1-3 times/month and may or may not drink 5 or more drinks at least once/yr

•Moderate: drinks at least once a week and may or may not drink 5 or more drinks at one sitting

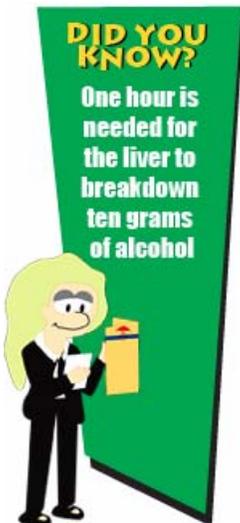
•Heavier drinker: drinks at least once a week and has 5 or more drinks at one sitting at least once per week

National Institute on Alcohol Abuse and Alcoholism [homepage on the Internet]. Bethesda: National Institute of Health; c2006 [updated January 2007; cited 2007 March 23]. Available from:

<http://www.niaaa.nih.gov/Resources/DatabaseResources/QuickFacts/AlcoholConsumption/default.htm>

Alcohol kinetics facts...

- Alcohol is quickly absorbed in the blood and is then transported to the tissues and throughout the water-containing portions of the body.
- Alcohol absorption:
 - stomach: about 20%
 - upper portion of the small intestine: about 80%
- Alcohol absorption and food.
 - Alcohol is absorbed faster when the stomach is empty because it allows rapid passage of the alcohol into the small intestine, where absorption is most efficient.
 - The apparent sobering effect of eating prior to alcohol consumption is due to a delay in stomach emptying.
 - A meal high in protein, fat, and carbohydrates, slows alcohol absorption 3 times that of alcohol consumed on an empty stomach.
 - Foods with a higher fat content require even more time to leave the stomach, allowing alcohol absorption to take place over a longer time.
 - However, food does not prevent alcohol's effects. Individuals may drink too much alcohol in a short time, believing that it has no effect. Only after the delay in the absorption is the impact of their drinking felt, perhaps with consequences.
- Body weight
 - A person with greater body weight will be less affected by a given amount of alcohol than a smaller person would be, because they have a greater volume in which alcohol can be distributed.
- Body build
 - Alcohol is more soluble in water than in fat.
 - Comparing two people of equal size but differing body fat, the person with low body fat will be affected less than the person with a higher level of body fat.
- Gender
 - Females have a smaller body mass, a higher proportion of body fat and a lower activity of the alcohol-metabolizing enzyme alcohol dehydrogenase
 - Females exhibit higher blood alcohol concentrations (BACs) than do males after consuming the same amount of alcohol.
 - Females are also more susceptible than males to alcoholic liver disease, heart muscle damage, and brain damage.



National Institute of Health Office of Science Education [homepage on the internet]. Bethesda: National Institute of Health; c2003 [cited 2007 March 23]. Understanding Alcohol: Investigations into Biology and Behavior; [about 20 screens]. Available from: <http://science.education.nih.gov/supplements/nih3/alcohol/guide/info-alcohol.htm>

Dangers of Alcohol....

Drug-EtOH interactions to warn your patients about...

Mixing alcohol with certain medications (prescription, OTC and herbals) can cause severe adverse drug reactions (ADRs) or can decrease or eliminate the effectiveness of the medication. Here are a few interactions and ADRs to keep in mind.



Symptoms/ Disorders	Common medications and selected brand names	Some possible reactions with alcohol
Angina (chest pain), coronary heart disease	Isordil® (isosorbide), nitroglycerine	Rapid heartbeat, sudden changes in blood pressure
Anxiety	Xanax® (alprazolam); Klonopin® (clonazepam); Valium® (diazepam); Ativan® (lorazepam)	Drowsiness, dizziness; increased risk for overdose
Blood clots	Coumadin® (warfarin)	Occasional drinking may lead to internal bleeding; heavier drinking may have the opposite effect, resulting in possible blood clots, strokes, or heart attacks
Colds, coughs, flu, allergies	Benadryl® (diphenhydramine); Tylenol® Cold and Flu (chlorpheniramine); Robitussin A-C® (codeine)	Drowsiness, dizziness; increased risk for overdose
Depression	Elavil® (amitriptyline); Anafranil® (clomipramine); Norpramin® (desipramine); Serzone® (nefazodone); Desyrel® (trazodone)	Drowsiness, dizziness; increased risk for overdose
Diabetes	Micronase® (glyburide); Glucophage® (metformin); Orinase® (tolbutamide)	Rapid heartbeat, sudden changes in blood pressure; convulsions, coma, death
Heartburn, indigestion, sour stomach	Tagamet® (cimetidine); Axid® (nizatidine); Zantac® (ranitidine); Reglan® (metoclopramide)	Rapid heartbeat, sudden changes in blood pressure (metoclopramide); increased alcohol effect
Infections	Grisactin® (griseofulvin); Flagyl® (metronidazole); Macrochantin® (nitrofurantoin); Septra® (sulfamethoxazole); Nydrazid® (isoniazid); Seromycin® (cycloserine)	Rapid heartbeat, sudden changes in blood pressure; liver damage (isoniazid)
Muscle pain	Soma® (carisoprodol); Flexeril® (cyclobenzaprine)	Drowsiness, dizziness; increased risk of seizures; increased risk for overdose
Nausea, motion sickness	Antivert® (meclizine); Atarax® (hydroxyzine); Phenergan® (promethazine)	Drowsiness, dizziness; increased risk for overdose
Pain such as that from headache, fever, muscle ache, arthritis; inflammation	Aspirin (salicylates); Advil®, Motrin® (ibuprofen); Tylenol®, Excedrin® (acetaminophen); Vioxx® (rofecoxib); Celebrex® (celecoxib); Naprosyn® (naproxen)	Stomach upset, bleeding, and ulcers; liver damage (acetaminophen); rapid heartbeat
Seizures	Klonopin® (clonazepam); phenobarbital; Dilantin® (phenytoin)	Drowsiness, dizziness; increased risk of seizures
Severe pain from injury; postsurgical care; oral surgery; migraines	Fiorinal® with codeine (butalbital and codeine); Darvocet-N® (propoxyphene); Vicodin® (hydrocodone); Percocet® (oxycodone)	Drowsiness, dizziness; increased risk for overdose
Sleep problems	Restoril® (temazepam); Prosom™ (estazolam); Sominex® (diphenhydramine) Herbal preparations (Chamomile, Valerian, Lavender)	Drowsiness, dizziness Increased drowsiness

National Institute of Alcohol Abuse and Alcoholism. Harmful Interactions: Mixing Alcohol with Medicines [pamphlet]. Rockville (MD): National Institute of Health; 2005.

Health consequences of excessive alcohol use...

- Cirrhosis of the liver
- Pancreatitis
- Various cancers (liver, mouth, pharynx, larynx, esophagus and breast)
- Hypertension
- Heart muscle damage (alcoholic cardiomyopathy) leading to heart failure
- Sudden death in people with cardiovascular disease
- Psychological disorders (depression, homicidal/suicidal ideations)

- Unintentional injuries such as motor-vehicle traffic crashes, falls, drowning, burns and firearm injuries
- Fetal alcohol syndrome in an unborn child, including impaired growth and nervous system development
- alcohol abuse or dependence
- Risky behaviors (unprotected sex, promiscuous sex, stupid stunts)

Centers for disease Control and Prevention [homepage on the Internet]. c.2006 [cited 2007 March 25]. Available from:

<http://www.cdc.gov/alcohol/faqs.htm>

Mayo Clinic [homepage on the Internet]. c.1998-2007 [updated 2006 August 25;cited 2007 March 25]. Available from:

<http://www.mayoclinic.com/health/alcohol/SC00024>

Alcohol and Pregnancy: If you drink alcohol while you are pregnant, your fetus has a drink as well.

This puts your baby at risk of a serious condition called **fetal alcohol syndrome (FAS)**, which is a group of birth defects. These defects are irreversible and can include physical, mental, and behavioral problems. When a pregnant woman drinks alcohol it enters the bloodstream and reaches the developing fetus by crossing the placenta. Because a fetus metabolizes alcohol more slowly than an adult, the developing baby's blood alcohol concentrations are higher than those in your body. The presence of alcohol can impair optimal nutrition for your baby's developing tissues and organs and can damage brain cells. **The more you drink while pregnant, the greater the risk to your unborn baby.**



The risk is present at any time during pregnancy. However, impairment of facial features, the heart and other organs, bones, and the CNS may occur as a result of drinking alcohol in the first trimester, when these parts of the body are in key stages of development. In the early weeks of the first trimester, many women may not be aware that they are pregnant. Alcohol may affect the brain of the fetus at any time during pregnancy. FAS affects about three out of every 1000 births, causing an estimated 12,000 children to be born with the condition each year in the US. Although doctors are not sure how much alcohol places your baby at risk, the more, and the more often you drink, the greater the chance of problems developing – possibly before you even realize you are pregnant. **Do not drink alcohol if you are pregnant or at risk of becoming pregnant.** If you suspect that your child has FAS, talk to your doctor as soon as possible. Early diagnosis reduces the risk of problems in life associated with FAS, including troubles at school, with substance abuse and with the law. If your child has FAS, your doctor can help you locate special school and community services designed to help your child succeed.

National Organization on Fetal Alcohol Syndrome [homepage on the internet]. Washington DC:

c2001-2004[cited 27 March 2007]. Available from: <http://www.nofas.org/educator/>.

FROM THE LAY LITERATURE...

Let us toast red wine...

Regular light-to-moderate alcohol consumption, a glass or two of red wine every day, is beneficial according to published studies. The benefits include lower myocardial infarction rates, reduced heart failure rates, reduced risk of ischemic stroke, increased HDL, lower risk for dementia, decreased risk of diabetes and reduced risk of osteoporosis.¹ The patient groups that appear to benefit most from light to moderate drinking, middle-aged men and women, are also those who are at increased risk for developing cardiovascular disease. Thus, the reduction in total mortality that is associated with moderate alcohol consumption, generally a 30% reduction in risk, is believed to be the result of a reduction in the risk of developing atherosclerotic disease.² The beneficial components of red wine include: resveratrol, procyanidins, and flavonoids.³ Procyanidins appeared to have the most potent beneficial effect on the cells that enable arteries to power the heart. Moreover, the researchers discovered that levels of procyanidins were highest in red wines produced in southwestern France, where French men tend to live the longest.⁴



1. Standridge JB, Zylstra RG, Adams SM. Alcohol consumption: an overview of benefits and risks. *South Med J* 97(7); 2004:664-672.

2. Szmilko PE, Verma S. Red wine and your heart. *Circulation* 2005;111;10-11

3. American Heart Association [homepage on the internet]. Dallas: c2007 [cited 27 March 2007]. Available from:

<http://www.americanheart.org/presenter.jhtml?identifier=10000023>.

4. Washington Post.com [homepage on the internet]. Arlington: c1996-2007 [update 2006 November 30, cited 27 March 2007]. Available from:

<http://www.washingtonpost.com/wp-dyn/content/article/2006/11/29/AR2006112901342.html>.

THE DEBATE...

The popularity of the topic of the health benefits of moderate alcohol consumption in medical journals and the lay press gives rise to increased discussion of the topic, but alcohol consumption offers risks and benefits, especially when it comes to the subject of the cardiovascular system.^{1,2} The benefits and risks of moderate drinking change over a lifetime^{1,2}. In general, risks exceed benefits until middle age, when cardiovascular disease begins to account for an increasingly larger share of the burden of disease and death.³ Risks and benefits are also highly associated with consumption amount. Risks are associated with excessive drinking and benefits are associated with very moderate drinking.^{1,2} An American Heart Association Position Statement cautions: If you drink alcohol, do so in moderation. This means an average of one to two drinks per day for men and one drink per day for women. They further caution people NOT to start drinking . . . if you do not already drink alcohol, and to consult your doctor on the benefits and risks of consuming alcohol in moderation.² In summary, because each of us has unique personal and family histories, alcohol offers each person a different spectrum of benefits and risks. Whether or not to drink alcohol, especially for "medicinal purposes," requires careful balancing of these benefits and risks³

1. Standridge JB, Zylstra RG, Adams SM. Alcohol consumption: an overview of benefits and risks. *South Med J* 97(7); 2004:664-672.

2. American Heart Association [homepage on the internet]. Dallas: c2007 [cited 27 March 2007]. Available from:

<http://www.americanheart.org/presenter.jhtml?identifier=10000023>.

3. Harvard University [homepage on the Internet]. Cambridge: The President and Fellows of Harvard College; c2007 [cited 2007 March 29]. Harvard School of Public Health; [about 3 screens]. Available from: <http://www.hsph.harvard.edu/nutritionsource/alcohol.html>.

FROM THE MEDICAL LITERATURE...

Diagnosing Alcoholism...

The DSM-IV-TR establishes whether alcohol abuse or dependence is present.

- Criteria for alcohol abuse include 1 of the following in a 12-month period of time:
 - failure to fulfill major role obligations
 - recurrent drinking in hazardous situations
 - recurrent legal problems due to alcohol
 - continued use despite recurrent associated interpersonal or social problems
- Criteria for alcohol dependence include 3 or more of the following in a 12-month period of time:
 - tolerance to alcohol effects
 - withdrawal symptoms
 - impaired control
 - drinking more or longer than intended
 - neglect of activities
 - increased time spent drinking or recovering from drinking
 - continued use despite recurrent psychological or physical problems
- Of the 113 million Americans classified as current drinkers, perhaps as many as 23.8% of men and 4.7% of women meet DSM-IV criteria for dependence.

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, DSM-IV-TR (Text Revision)*. Washington, DC: American Psychiatric Publishing; 2000.

Treatment for alcohol dependence...

- Psychosocial treatment options offer an indirect influence on the neurobiology of alcohol dependence
 - Cognitive-behavioral therapies
 - Individual behavioral therapies
 - Emphasizes positive reinforcement for targeted behaviors
 - Social skill training
 - Psychodynamic and interpersonal therapies
 - Self-help groups
 - Alcoholics Anonymous
 - 12-step-oriented treatments

- Brief interventions
 - Assessment and motivational feedback over 1-3 sessions
- Marital and family therapy
- Aftercare programs
- Pharmacotherapeutic options directly impact the underlying neuropathological circuitry. These will only be effective in conjunction with appropriate counseling.

Drug	Postulated MOA	Common/Significant ADRs	Contraindications	Administration/Dosing
Antabuse® (Disulfiram)	Aversion-based	Less common: Eye pain or any change in vision; mood or mental changes; numbness, tingling, pain, or weakness in hands or feet Rare: Darkening of urine; light gray-colored stools; severe stomach pain; yellow eyes or skin	Patients on or recently received metronidazole, paraldehyde, alcohol, or alcohol-containing preparations. Patients with severe myocardial disease or coronary occlusion. Patients with psychoses.	After abstaining from alcohol for at least 12 hours, daily oral self-administration. Dose is reduced after one or two weeks for maintenance.
Campral® (Acamprosate)	Glutamate and GABA normalization	Serious ADRs: Allergic reaction, irregular heartbeat, low blood pressure, chills or fever, unusual bruising or bleeding Less serious ADRs: Headache, anxiety, stomach pain, increased appetite, amnesia, abnormal thinking, decreased sex drive abnormal vision	Patients with severe renal impairment (creatinine clearance ≤ 30 mL/min)	Two tablets three times daily oral self-administration, as soon as possible after achieving abstinence
Revia® (Naltrexone hydrochloride Tablets)	Opioid-antagonist	Skin rash, abdominal pain, blurred vision, chest pain, confusion, fever, hallucinations, itching mental depression, ringing in ears, shortness of breath, weight gain, swelling of face, feet or lower legs	Patients receiving opioid, with physiologic opioid dependence, or acute opioid withdrawal Patients with acute hepatitis or liver failure	Daily oral self-administration
Vivitrol® (Extended-release injectable Naltrexone)	Opioid-antagonist	Injection site reaction, nausea, headache, fatigue, dizziness, vomiting decreased appetite,, painful joints, muscle cramps	Patients receiving opioid, with physiologic opioid dependence, or acute opioid withdrawal Patients with acute hepatitis or liver failure	Intramuscular administration by a health care professional once a month

Antiepileptic medications and mood-stabilizing medications have off-label indications for alcohol dependence. Swift, R. Emerging approaches to managing alcohol dependence. Am J Health-Syst Pharm. 2006;64(suppl 3):S12-S22.

Assess your alcohol dependence...

The CAGE and Alcohol Use Disorder Identification Test (Audit) are self-report screening tools to aid in assessing alcohol use and alcohol related problems. A positive response to any of the questions on the CAGE should lead a clinician to investigate problem drinking further. The AUDIT's minimum score is 0 and the maximum score is 40. A score of 8 or higher for men under age 60 years and 4 or higher for women, adolescents, or men age 60 or over are considered positive. The AUDIT consists of 10 items and takes only 5 minutes to complete.

They are both available at: <http://pubs.niaaa.nih.gov/publications/aa65/AA65.htm>

Hugh, M. Diagnosis of Alcohol Dependence. Medscape Psychiatry & Mental Health [serial on the Internet]. 2006 [cited 2007 March 25];11(2): [about 5 p.]. Available from: <http://www.medscape.com/viewarticle/543758>.



The last "dose" ...

"Drink moderately, for drunkenness neither keeps a secret, nor observes a promise."
— Miguel de Cervantes (1547-1616) Spanish novelist and poet

*An electronic bulletin of drug and health-related news highlights, a service of ...
Auburn University, Harrison School of Pharmacy, Drug Information Center*

• Phone 334-844-4400 • Fax 334-844-8366 • <http://www.pharmacy.auburn.edu/dilrc/dilrc.htm>
Bernie R. Olin, Pharm.D., Director