

**The Texas Criminal Justice Integrity Unit**  
**Mental Health and Substance Abuse**  
**Seminar**

March 22-23, 2012

**Drug Abuse and Addiction:**  
*Current Drug Trends & Cultures*

10:00 a.m. – noon

3:15 p.m. – 4:45 p.m.

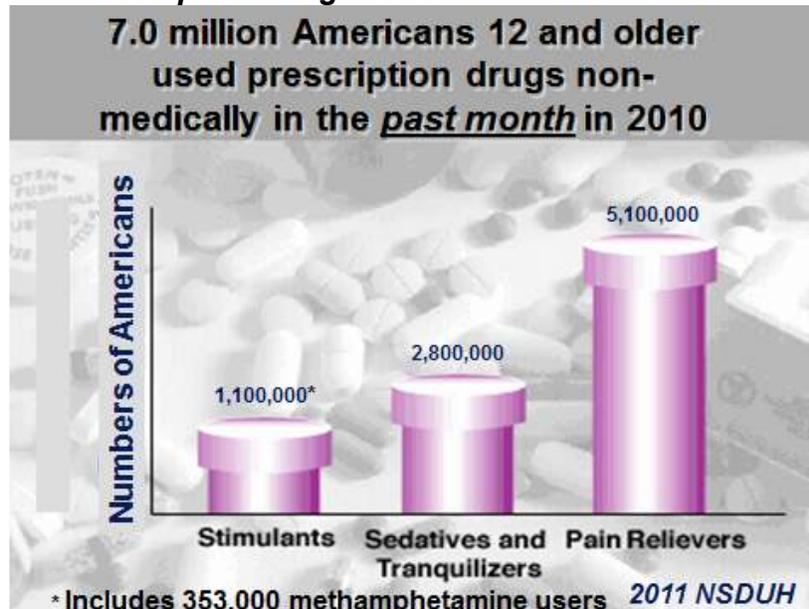
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## **Impact of Alcohol and Other Drug Misuse and Abuse in America Prescription Abuse and Diversion**

Illegal use of these drugs is responsible for multiple overdoses and fatalities  
Opiate addiction is blamed for causing a surge in crime:

- Robberies and break-ins at pharmacies
- Drug shoppers scamming doctors
- Harassments, assaults, and robberies of patients leaving drugstores
- Shoplifting and burglaries to support addiction
- Domestic violence and abuse

### **Sharp Increase in Prescription Drug Abuse:**



### **Cost of Alcohol and Drug Abuse**

- \$500 billion annually
- Lost productivity
  - Illness and premature death
- Health care expenditures
  - Medical consequences and treatment
- Motor vehicle accidents
- Crime, law enforcement, property destruction, correction services

### **National Center on Addiction and Substance Abuse (CASA)**

#### **Study and findings:**

- Hundreds of Web sites advertising or selling controlled prescription drugs
- Many Sites did not require a prescription; others offered an “*online consultation*”
- Internet provides a wide-open channel of prescription drug distribution
- Ease of availability has enormous implications for **public health**

#### **“Online Pharmacy Consumers Protection Act”**

- Prohibit sale or purchase of controlled prescription drugs on the Internet without an original copy of a prescription*
- Require certification of online pharmacies to assure that they meet rigorous standards of professional practice*

#### **Particular concern of prescription drug abuse for:**

- Adolescents** - Sharp increase in 12 to 17 yr. olds and the 18 to 25 yr. olds
- Women** - Increase rate of use in younger women
- Older adults** - 17% of 60+ yr. olds may be affected by prescription drug abuse

## Why are Prescription Drugs so Popular?

*Legal, Easy to Obtain, Cheap and Safe & Non-addictive*

Legal: Perception that there is less legal risk than illicit drugs

- Federal law does not distinguish between CI & CII drugs

Easily obtainable:

- From users, diverters, clinics, hospitals, Emergency Departments and practitioners and easy to steal

Cheap: Low or no co-pay cost; may motivate people to use or sell PD's

Safer and Non-addictive:

- Easily identify and less stigma than street drugs
- Higher purity and less risky
- Less HIV or hepatitis risk
- Easier to use, no IV injecting but what about tolerance...and addiction!

## Why do People Become Prescription Drug Abusers?

1. Some people who abuse PD's do so intentionally from the outset

2. For others, what began as prescribed use escalates over time

"Started using on their own, self-medicate, take care of their own anxiety, depression, pain ..."

This misuse may escalate over time to abuse and addiction

## The Science of Addiction: Drugs, Brains and Behavior:

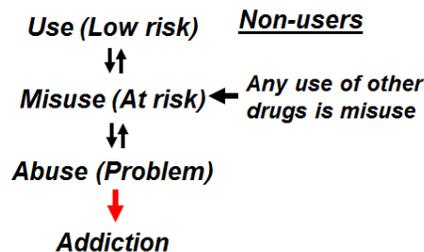
*Neurobiology of Addiction – From Use to Misuse to Abuse to Addiction:*

**The Continuum Model** - Institute of Medicine: *Broadening the Base of Treatment for Alcohol Problems*

**Substance misuse** is use of a drug that varies from a socially or medically accepted use.

**Substance abuse** - any use of drugs that cause physical, psychological, economic, legal or social harm to the individual user or to others affected by the drug use's behavior.

### Identify Patients as:

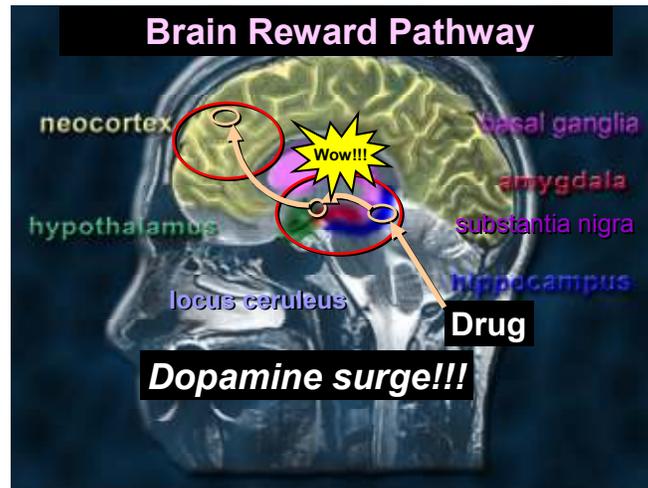


## Brain Reward Pathway - Mesolimbic Reward System

**Limbic system** contains the brains reward circuit, regulates our ability to feel pleasure; also regulates emotions and motivations, particularly those related to survival, such as fear, anger, and is involved in early learning and memory processing,...

**Nucleus Accumbens (NAc)** is the "Pleasure Center" and is activated by pleasurable behavior

**Prefrontal Cortex** seat of judgment, reasoning, problem solving; enables us to assess situations, make decisions, plan for the future and keeps our emotions and desires under control (governs impulsivity, aggression)



*The “Wow!!!” is a big reason people take drugs but other things happen...*

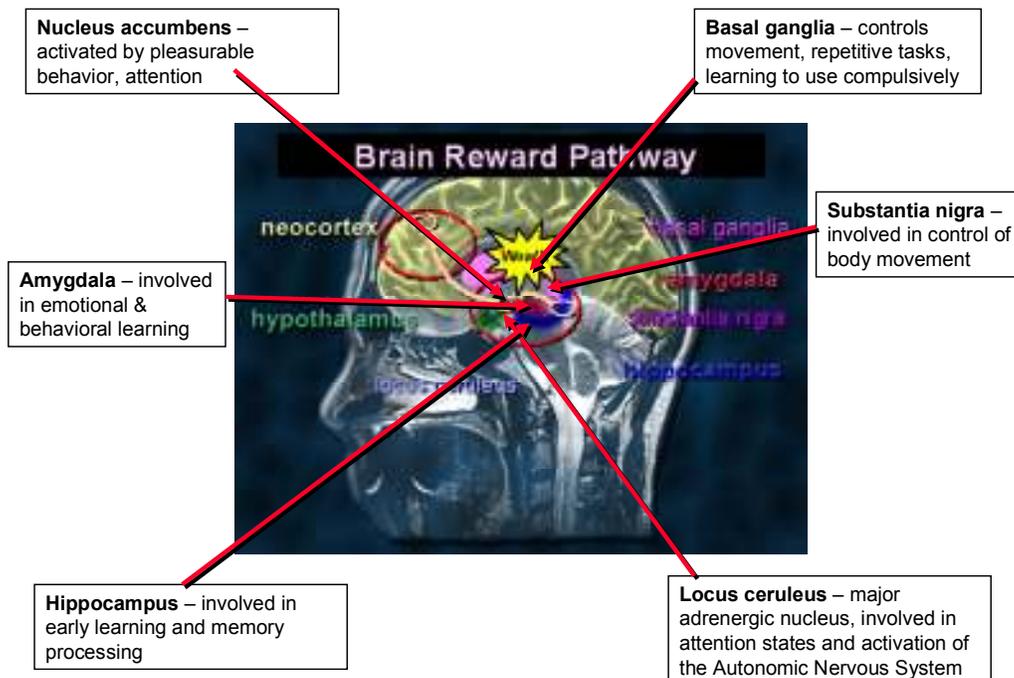
**Neurotransmitter**

- Dopamine (pleasure, learning)
- Serotonin (emotional stability)
- Norepinephrine/ epinephrine (behavioral & physical activity)
- Glutamate
- GABA

**Normal Functions**

- Pleasure (hunger/thirst/sexual), attention, organization of thought, muscle control and motor function
- Mood stability, thought processes, sleep control, appetite, self-esteem
- Energy, motivation, attention span, alertness, pleasure, assertiveness, confidence, heart rate, blood pressure, etc.
- Excitatory neurotransmitter
- Inhibitory neurotransmitter

**Psychoactive addictive drugs act directly or indirectly on the Reward Pathway increasing the release of dopamine, and other neurotransmitters**



## Tolerance and withdrawal\*

A physiological state of adaptation to a drug or alcohol usually characterized by the development of tolerance to drug effects and the emergence of a withdrawal syndrome during prolonged abstinence.

**Tolerance:** Physiological adaptation to the effect of drugs, so as to diminish effects with constant dosages or to maintain the intensity and duration of effects through increased dosage.

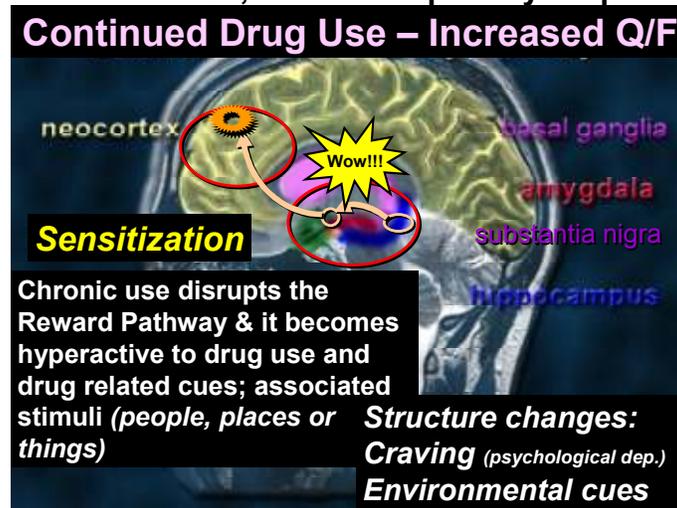
**Withdrawal:** Cessation of drug or alcohol use by an individual in whom dependence is established.

**Withdrawal symptoms** is a constellation of signs and symptoms that follows the abrupt discontinuation or reduction in the use of a substance or after blockage of the actions of a substance with antagonists (e.g., naloxone in heroin addiction). The syndrome can also be produced by cues associated with substance use (conditioned withdrawal). Withdrawal is one of the causes of compulsive drug-taking behavior and short-term relapse.

**“Science has generated a lot of evidence showing that: Prolonged drug use changes the brain in fundamental and long-lasting ways and evidence shows that these changes can be both functional and structural”**

*Alan Leshner, PhD & Glen Hansen PhD, DMD*

**What happens with continued use; increased quantity/frequency of use?**



**Sensitization** refers to persistent hypersensitivity to the effect of a drug in a person with a history of exposure to that drug. Sensitization is one of the neurobiologic mechanisms involved in craving and relapse.

**Craving** (formally called psychological dependency) is an intense desire to re-experience the effects of a psychoactive substance. The emotional state of craving a drug either for its positive effect or to avoid negative effects associated with its absence; can range in severity from mild desire to compulsive drug seeking behavior. Craving is the cause of relapse after periods of abstinence.

**Relapse** is a resumption of drug-seeking or drug-taking behavior after a period of abstinence. Priming, environmental cues (people, places, or things associated with past drug use), and stress can trigger intense craving and cause relapse.

\* **Definitions from:** *Drug Addiction, Mechanism of Disease*, A review; New England Journal of Medicine 349:975-986 #10, Sept. 4, 2003

## Addiction is a brain disease

A “molecular switch” is thrown in the brain

- Compulsive drug seeking behavior



## Addiction

A disease characterized by continued use and abuse of a drug despite recurring negative consequences in a person's life

**Loss of control over taking a substance or doing a process**

A behavioral pattern of drug use, characterized by overwhelming involvement with the use of a drug (compulsive use), the securing of its supply, and a high tendency to relapse after withdrawal

**Drug Addiction** is a cluster of cognitive, behavioral, and physiological symptoms indicating that a person is continuing to use a substance despite having clinically significant substance-related problems. DSM IV diagnosis of substance dependence requires the presence of at least three of the following seven criteria:

## DSM V: Diagnosis of Addictive Diseases

1. Tolerance
2. Withdrawal

Moderate: 2-3 criteria positive  
Severe: 4 or more criteria positive

### Loss of Control:

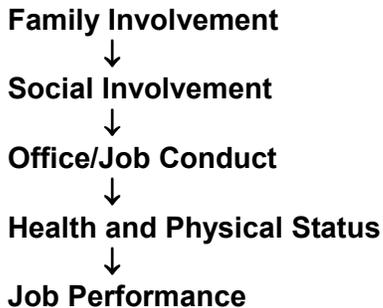
3. Recurrent use resulting in failure to fulfill obligations
4. Recurrent use in physically hazardous situations
5. Continued use despite social or interpersonal problems
6. Used more and longer than planned
7. Unsuccessful attempts to quit or control use
8. Excessive time spent obtaining, using, or recovering from use
9. Important social, occupational, ...activities given up
10. Continued use despite having physical or psychological problems
11. Craving or a strong desire or urge to use a specific substance

## American Society of Addiction Medicine – 2011 definition

Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.

Addiction is characterized by inability to consistently abstain, impairment in behavioral control, craving, diminished recognition of significant problems with one's behaviors and interpersonal relationships, and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death.

**Progression of the Disease of Addiction (Warning signs):**



**Commonly Abused Prescription & OTC Drugs**

**Opioids/Opiates examples:** *Vicodin, Tylox, Percocet, OxyContin*

**How they work...**

Attach to certain brain and spinal cord receptors  
Block the transmission of pain messages to the brain  
Increase the level of *dopamine* in the Reward Pathway of the brain

**What's the Opiate High?**

Euphoria - *Rush of pleasure, sense of relaxation and well being*  
*Floating sensation & freedom from anxiety and distress, decreased sensitivity to pain*  
*"Feeling of tranquility"* - fall into a dreamy state  
*"Go on the nod"* - drowsiness

**Codeine** – used for mild pain:

Tylenol IV (with codeine) for dental pain  
Cough suppressants e.g. Robitussin A-C; Cheracol, terpin hydrate w codeine  
4 oz bottle contains enough for a pleasurable experience  
Initially available OTC, now restricted in Schedule V because of abuse  
*Popular to mix with soft drink or sports drink*

**Dextromethorphan (DXM)**

An effective antitussive agent; therapeutic dose is 15-30mg 3-4x/day  
Abused on the street; a.k.a. DXM or Robo  
Abusers use 300-900 mg (3-9 oz.) all at once  
Produces hallucinations or dissociative "out-of-body" effects similar to PCP or Ketamine:  
- Stimulation, loss of coordination, visual and auditory hallucinations

**Ingredients in OTC Cold preps:**

Dextromethorphan, guaifenesin, acetaminophen, phenylephrine, benadryl (diphenhydramine), chlorpheniramine

**DXM Effects/Signs & Symptoms**

Pupil dilation, skin sensitivity, alters tactile (touch) sensations  
Confusion, disorientation, lack of coordination, reduced agility  
Robotic, zombie-like walking, "robo-walk"  
Dizziness, nausea, vomiting, fever, tachycardia  
Dissociative effects may last 6 hours; Hangover/depression lasting 1-2 days

### Examples of Abused Opiates

- Hydrocodone (Vicodin, Lorcet) CIII
- Oxycodone (Percocet, Tylox, OxyContin) CII
- Oxymorphone (Opana ER) CII
- Meperidine (Demerol) CII
- Hydromorphone (Dilaudid) CII
- Fentanyl (Duragesic, Actiq, Sublimaze) CII
- Heroin (Big H, Smack) CI

### Classification of Controlled Substances:

Schedules	Potential for Abuse	Medical Use and Prescription Order
Schedule I	High abuse potential.	No accepted medical use; lack of accepted safety as drug.
Schedule II	High abuse potential. Severe psychological and/or physical dependency.	Current accepted medical use. Written prescription only. No refill.
Schedule III	Less abuse potential than Schedule I or II. Moderate or low psychological and/or physical dependency.	Current accepted medical use. Written or oral prescription. 6-month supply. 5 refills.
Schedule IV	Less abuse potential than Schedule III drugs.	Current accepted medical use. Written or oral prescription. 6-month supply. 5 refills.
Schedule V	Low abuse potential.	Current accepted medical use. Limited dependence possible. OTC.

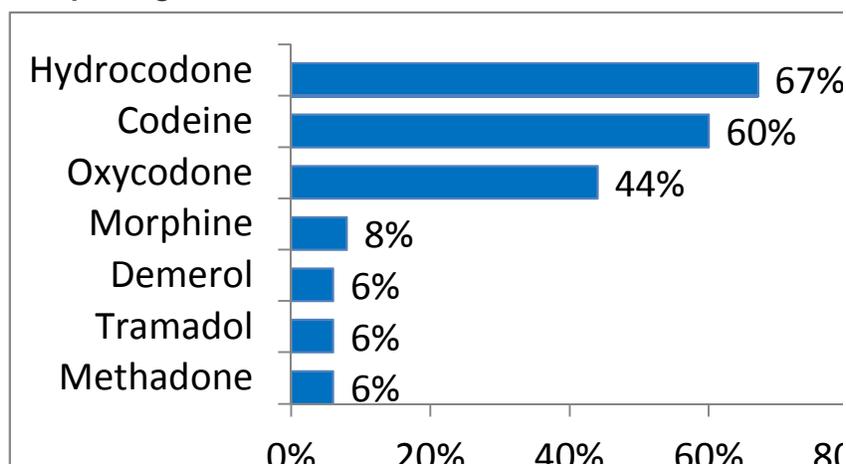
### Hydrocodone - derived from morphine

(Lorcet, Vicodin)

moderately strong opiate, CIII drugs, very widely abused

Combination drugs 5/500, 10/650 w/acetaminophen

#### % Reporting Lifetime Nonmedical Use:



Center for Substance Abuse Research, Univ. of Maryland, Cesar Fax: Nov 2010 www.cesar.umd.edu

### Oxycodone - a strong CII analgesic; synthesized from thebaine

#### Combination drugs:

Percodan - w/aspirin; Percocet, Tylox - w/acetaminophen

Pharmacy price: \$0.60each; Street value: \$10each

**OxyContin** - a highly potent oxycodone CII analgesic - a time release preparation  
 Used for severe pain expected to last for extended periods  
 Boon for patients suffering from cancer, crippling arthritis and other severe chronic pain problems  
 Time release prep gives extended pain relief

**When Abused Oxy Gives a Powerful High**

High concentration of Oxycodone in time release pills  
 Abusers grind pills up and snort or inject them all at once  
 "Oxy or OC's" gives a "heroin-like" high

**New Formulations:** Tamper Resistant Coating (i.e. polymer coated or gelatinized)

Coating makes pills sticky so they can't be ground up for snorting or dissolved for injected; A.k.a. "OP's"; larger pills are and more difficult to swallow

**Oxycodone IR's (immediate release) CII**

Abuse of the 30 mg tabs has increased, *i.e. Roxycodone 30mg, A.k.a. "Rocy's"*

**Opana ER Abuse**

Oxymorphone back on market in 2006/2008

30 mg is very popular, crush and snort

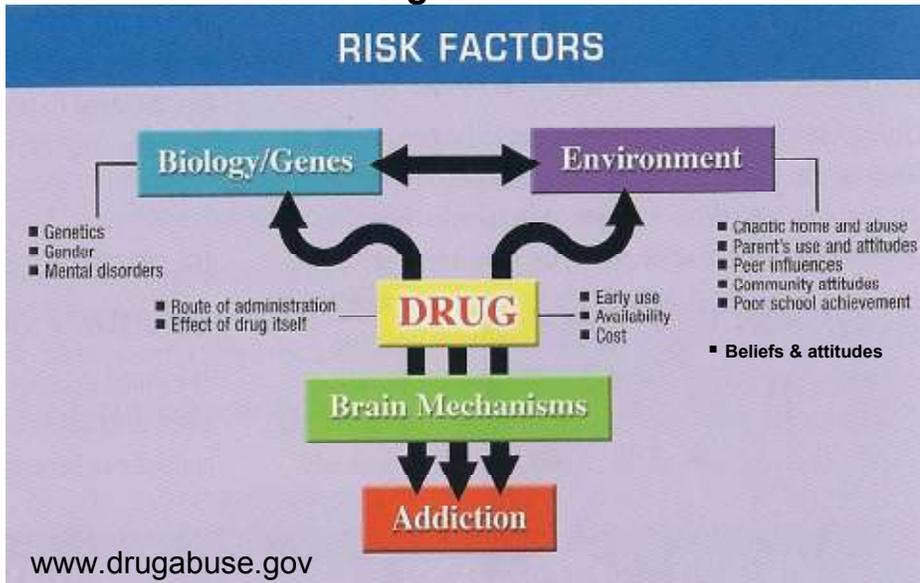
A.k.a. "O Bomb", Pink Ladies, Stop sign

**Zohydro**

Zogenix Pharmaceuticals is seeking final stage FDA approval of a high strength pure hydrocodone extended-release pain medication

Non-combination drug; scheduled in CII

**Risk Factors for Alcohol/Drug Use**



Drugs, Brains, and Behavior: The Science of Addiction; NIDA, March 2007

**Risk Factors - Individual/Family/School/Community/Environmental**

Favorable attitude toward alcohol and other drugs

Family history of drug abuse

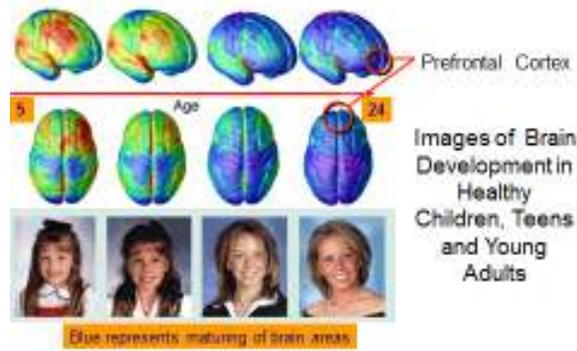
Availability and cost of alcohol and other drugs

Early onset of use

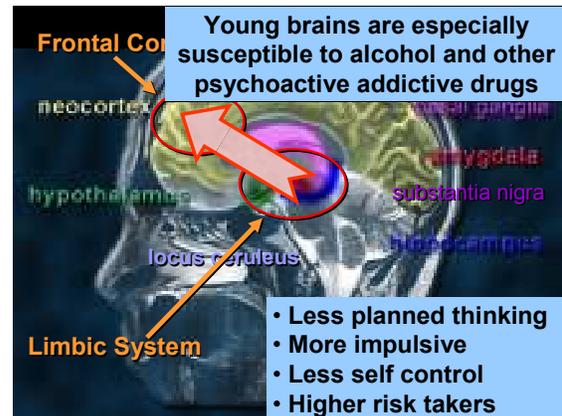
- *Teens who begin drinking before age 13 years are 5X more likely to develop alcoholism*

## Brain Maturation in Adolescents and Young Adults

Recent brain imaging research shows that brain development is ongoing during adolescence and continues into the early twenties



PNAC:191 (12), 6174-9, 2004  
Brain Cogn 72 (6), 6-19, 2010



### Research Conclusions:

1. Young brains are more susceptible to drug use than adults
2. Drug use may impact normal brain development and maturation:
  - Learning ability and emotional development
3. Implications of these studies are **enormous** for parents

**Young adults may be less likely to develop serious alcohol and other drug problems if the age of first use is delayed beyond childhood or adolescence**

**Family conflict or stress, chaotic home and abuse**

**Poor parent-child relationship:**

- Lack of caring and support
- Lack of monitoring and supervision
- Inconsistent or excessive discipline

**Parental attitudes about drug use and/or parental misuse or abuse**

**Association with drug-using peers**

**Lack of involvement in school/community; school and community attitudes**

**Little commitment to academic achievement**

**Portrayal of ATOD on T.V. and in the movies**

**Advertising impact on norms and behavior**

Web sites popularize and glamorize drug use and promote various drug cultures

**One Major Web Site: Vaults of Erowid**

An encyclopedic type site, an overwhelming amount of information on hundreds of chemicals, plants, herbs, pharmaceuticals, and other drugs

*Opioids/Opiates continued:*

**Fentanyl (Sublimaze, Duragesic)**

A very fast acting, CII, IV analgesic

Fentanyl patches provide long-lasting pain relief

IV use by addicts commonly causes OD

**Methadone (Dolophine) – long lasting opiate, can be taken orally for chronic pain**

Also offers treatment for opiate addiction

Addict may avoid IV use and withdrawal

Gradual and mild onset of action keeps addict from getting high and reduces craving

Recently slipped into the drug abuse scene

Problems with OD's; popular to use mixed with Xanax

**Suboxone** - Sublingual tabs approved to treat opioid dependency *in the office*

Suboxone: Buprenorphine/Naloxone combos

Used for detox and to treat newly addicted opioids patients

Suboxone is a powerful opioid, alleviates anxiety and depression, and at high doses produces a “feeling good, numbing effect”

Concern raised about patients not wanting to deal with their emotional recovery

Diversion and abuse are becoming a concern

**Heroin** - *most infamous product of opium poppy*

Current resurgence in use: white powder & black tar heroin

High purity and skyrocketing profits

*Cheaper than “Oxy” and other pain meds*

Heroin gets to brain faster

### **Methods of Opiate Use:**

**Snorting or Smoking Heroin/Opiates:** Since IV injection is more difficult and dangerous many users start by snorting but as tolerance develops progression to IV use becomes necessary!

#### **Intravenous (IV)**

Reaches brain in 15-30 sec, “rush”; effects last 3-5 hours

Addict needs several doses a day to avoid withdrawal, “on the hustle” to find a “connection”

IV drugs are not designed for “Slamming”

Grinding up pills and injecting suspension is extremely risky

Pill components do not dissolve well:

*Particles may clog blood vessels and block blood flow*

Particles irritate blood vessels and may cause vascular inflammation and permanent damage; watch for track marks

#### **Serious Complications of IV use**

Danger of bolus injection (injecting drugs all at once)

Damage to blood vessels, viral infections, hepatitis B and HIV, bacterial infections, meningitis, osteomyelitis, endocarditis, abscesses, gangrene

### **Signs & Symptoms of Opioid Abuse**

Pupils constrict - miosis

Breathing slows, lowered respiratory rate

Flushing of the skin, sweating, itching

Lowered blood pressure and pulse

Dry Mouth – Xerostomia

Sedation, drooping eyelids, head nodding

Diminished sensitivity to pain

Dizziness, confusion, memory problems

Lowered sensation of pain

Nausea, vomiting, constipation

Nasal redness and/or small particles in nostrils

Shortened straw or rolled up bill for snorting

Track marks from IV injections

Finding plastic bags, balloons or foil an/or burnt bottoms on spoons

***The effects on breathing can be extremely dangerous***

### **Opioid/Opiate Overdose**

Overdose can be lethal

Breathing slows to the point that it ceases

***It can happen with first time use, not an accumulative effect***

**Medical intervention is critical**

## **Opiate Withdrawal Syndrome**

Begins in 8-10 hours

Earliest signs are watery eyes, running nose, yawning

Restlessness, irritability, loss of appetite

### ***Flu like symptoms appear:***

Watery eyes, running nose, yawning

Shivering and sweating, “cold turkey”

Abdominal cramps and muscle aches

Involuntary leg movements, “kicking the habit”

Diarrhea; an increased sensitivity to pain

Difficulty in sleeping

*These intensify over the next several days and then start to diminish*

**Dysphoria** – the “**just-feeling-lousy feeling**” lasts for a long time

Opiate addicts just feel bad and bad in a way that they know opiates will solve

The craving for a fix can last for months, long after the physical symptoms

## **Diversion of Prescription Drugs & Drug-Seeking Behavior**

### **How do people get these drugs?**

Thefts and break-ins from pharmacies and warehouses

Accosting customers in drugstore parking lots

Breaking into homes of patients who use pain medications

Employees stealing from hospitals

Inappropriate prescribing by health professionals

Unscrupulous providers selling drugs

Patients with legitimate prescriptions selling the pills

Drug shoppers

**Drug Seeking Behaviors** – *Drug seeker can play any part they need to play to get drugs: Many are clever professionals determined to feed their own addiction; others collect drugs and divert them on the street for profit. Recognizing clumsy or point blank demands for drugs is obvious but experienced drug seekers are surprisingly difficult to detect. **Some of their ploys:***

1. Patient Becomes Doctor
2. Emotional Tactics
3. Out of Town Patient
4. Telephone Scams
5. Addiction Confessions

### **HCP can protect themselves by:**

1. **Maintain Control** - *you are in charge; you are the dentist providing the best care you can provide for the patient, you make the decisions. Don't let anyone pressure you into doing something you shouldn't do.*

2. **Do Your Job** - *get a medical history, do a drug screen questionnaire on every patient and performing a thorough exam to arrive at a diagnosis.*

3. **Prescribe Cautiously** - *prescribe minimum dosages.*

4. **Confront the Patient** - *consider confronting a patient if you have a suspicion that he or she is a drug addict, you can do this in a respectful and caring way and recommend they see someone for an assessment and/or treatment.*

## **Prescription Reporting or Monitoring Systems**

National initiative being implemented by many states

48+ states now have reporting programs for at least one class of controlled substance

### **Goals:**

- A source of information for practitioners and pharmacists
- An investigative tool for law enforcement
- *Decrease doctor shopping*

## **Electronic Reporting or Monitoring Systems**

### **PATS: Prescription Access Texas**

Information:

Patrick Knue.

Pharmacy Specialist

Health Regulatory Division

512-424-2459

*Secure WEB application*

*ID Management - must apply for account with supporting documents; delegate*

*Doctors and Pharmacists can receive a report within 15-20 seconds (as long as the report does not require further review by the staff); Info available 24 / 7*

*In KY: Dispensers have 8 days to report; RelayHealth processes & provides data once per day*

## **Intervention, Referral, Assessment and Treatment**

Once the problem is identified refer the patient for assessment and/or treatment

Therapist must have demonstrated skills and expertise in helping dependent patients recover

### **Effective Addiction Therapist**

- Abstinence oriented
- Use Alcoholics Anonymous, Narcotics Anonymous and/or group therapy
- Avoid use of addictive psychoactive drugs
- Refer spouse to Al-Anon or family therapy
- Provide regular continuing care

### **Treatment Options:**

Detoxification

Inpatient programs (28 days) - Residential or hospital based

Outpatient programs (8-12 weeks or longer)

Half-way houses (protective environment)

Continuing care:

Alcoholics Anonymous (AA or NA)

Group Therapy

Individual psychotherapy

Family treatment (Al-Anon/family therapy)



### **Recovery and Relapse Prevention**

Dependent is fragile in early recovery and needs support and direction

"Honeymoon period" or "Pink cloud"

Five years of continuing care are necessary before recovery can be secure

### **Progress in Recovery**

Regular AA/NA, group therapy attendance

Dissolution of denial

Coping with crisis

Growth in self-esteem

Social ease

Improved family relationships

Two or five years of abstinence

### **High-risk Relapse Times**

Special occasions, holidays, vacations...

Times of crisis: illness, deaths, and even having a bad day

Unchecked anger, resentments and fears

"Dry drunks" – flare ups of negative emotions and drug behavior

Craving drugs

### **Alcohol Containing OTC Medications and the Recovering Patient**

Caution in recommending products containing alcohol for recovering patients

## **The New Face of Drug Abuse:**

***Designer Drugs, Party Drugs: Amphetamines, Meth, Crank, MDMA, BZP, Nitrous, Spice, Bath Salts, Cloud 9, DMT, GHB, Foxy, Special K ...***

### **Ritalin (methylphenidate) or Adderall – CII drugs**

Well known drugs to treat ADHD:

- increases attention, alertness (helps focusing)
- doesn't have all the amphetamine effects on blood pressure and heart rate

### **Ritalin Abuse**

Vitamin R, "the cramming drug"

Powerful stimulant abused by students:

Used to help them cram for exams

Others use it to keep awake at all night parties

Also abused for its high

Users obtain drug from valid prescription users, steal from school nurses offices...

Some sell or trade it for other drugs

### **Adverse Effects of Ritalin Abuse**

Abuse comes with serious side effects: Seizure potential, serious cardiac problems, pulmonary granulomas from snorting crushed pills

### **Methamphetamine – A powerful CNS stimulant**

Easy to make it

Increased purity - from 12% to 90+% in the last several years

Cheap and long-lasting effects

A.k.a.: "meth, crank, crystal, ice, glass"

### **Meth: Illicit manufacturing**

*Precursor materials and chemicals:*

OTC diet pills or decongestants - pseudoephedrine

Lithium batteries, solvents (acetone, ether, etc.), ammonia, battery acid (sulfuric acid), hydrochloric acid gas

All these materials can cause serious health risks and the solvents are extremely flammable; cost of clean ups is enormous

### **Progression of Effects:**

#### ***Short Term Effects:***

Euphoria, enhanced sense of self-esteem & self-confidence, increased alertness, performance, energy, talkativeness, enhanced libido, decreased appetite

Light/sound sensitivity, shakes/tremors, elevated pulse and blood pressure, increased respiratory rate, elevated body temperature, sweating, jaw clenching, teeth grinding, insomnia, and hyperactive behavior

#### ***Long Term Effects:***

Nervousness/Irritability, anxiety, depression, mood swings, weight loss, hallucinations, paranoia, hyperthermia, body burnout, "Meth Psychosis"

#### ***Behavior Warning Signs:***

Erratic behavior, constantly misplacing things, lying, absenteeism, isolation, paranoia, weird eating & sleeping patterns

### **Danger signs, things to look for:**

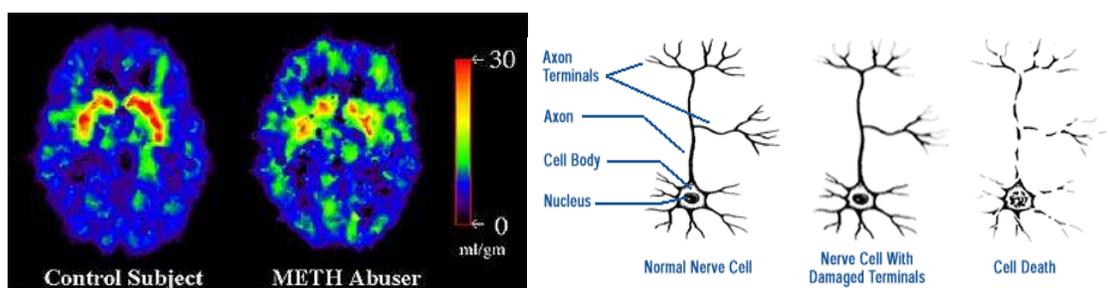
Burns on thumb, red or irritated nostrils, butane lighters, cards for crushing, hollowed out pens, straws, gum wrappers

## Signs and Symptoms of Methamphetamine Abuse

Headache, dizziness, confusion, muscle aches and pain, nervousness, agitation  
"Meth mouth": exposure of caustic ingredients causes cavities, periodontal disease, fractures in teeth: Distinctive pattern of decay  
Increased blood pressure, irregular heart rate (palpitations)  
- Increased potential for cardiovascular problems; crisis, seizure, failure  
Hyperactivity, weight loss, insomnia - sweating, pallor, body odor  
Pupil dilation, eyelid twitches, blurred vision  
Hyperthermia, sweating, tremors, convulsions  
Track marks  
Psychological disturbances - irritability, agitation, anxiety  
Progression of social and occupational problems

### With long term chronic abuse:

Violence, belligerence, aggressive behavior  
Hallucinations, withdrawal from reality  
Body "burn out"- severe damage to heart, lungs, liver, brain, kidneys...  
"Methamphetamine psychosis": paranoia, compulsive repetitive behaviors, (tics, "crank bugs", "speed bumps")



## MDMA "Ecstasy" is the most popular Party Drug

A stimulant - enhances energy, endurance, sociability, sexual arousal, and postpones fatigue and sleepiness  
It also has hallucinogenic effects altering perceptions and feelings

### Use has spread to a wide variety to age groups and settings:

We are now seeing party drugs at Sports Bars, singles bars, college parties, private parties, in the dorm rooms and around campus  
High school students are also using them at social gatherings ...

### MDMA "Ecstasy"

A.k.a.: Ecstasy, X, E, XTC, Adam, Smurfs, Clarity, the Love pill, "The Hug Drug", Rolls, and other nicknames based on pill imprints; "The pills look so innocent"  
Cartoon characters: Flintstones vitamins, Snoopy...  
Wide range of logos, colors, shapes

### "Extreme Ecstasy" - Ecstasy laced with Meth

Increased availability, more lucrative for dealers, but also much more dangerous  
Adulterants - no quality control, impurities, substitute drugs, dose unknown  
**Severe health and neurological dangers**

## BZP or A2, 1-Benzylpiperazine

Recently emerged as a new class of designer drugs  
Serotonergic compounds studied for psychiatric use  
Being sold as a safer alternative to ecstasy  
Amphetamine effects, mimics ecstasy: *include rapid heart rate, increased blood pressure, high temperature and seizures*  
Poisoning cases reported as well as serotonin syndromes in clinical studies  
Not detected by routine drug screening procedures; require GCMS

### **Foxy or Foxy Methoxy, Nexus or 2C-B, Blue Mystic or 2-CT-7**

Hallucinogenic tryptamines and phenethylamines in Schedule C1  
Generally used at clubs, parties, rave type venues  
Taken orally, smoked or snorted  
Effects last 2-6 hours  
Problematic physical & psychological effects

### **Bath Salts**

Synthetic coke/meth analog  
Sold as bath salts, fertilizer, insect repellent ...on Internet and in Gas Stations & Convenient Stores  
Mephedrone and MDPV (methylenedioxypropylvalerone)  
"White Lightning", "Red Dove" - \$20-50  
Psychological effects: psychotic episodes, paranoia, hallucinations, suicidal thoughts  
Physical effects: hypertension and rapid heart rate

### **Dimethyltryptamine (DMT)**

Another designer/hallucinogen drug originally from South American plant, tribes called it *yopo*  
Popularity has grown recently with use at "*Spiritual Retreat Weekends*"  
Rapid onset of action, resembling LSD in action, lasts about an hour:  
Produces mystical experiences in some individuals/others terrifying experiences  
Users have reported anxiety attacks after these weekends  
At high doses individuals may become catatonic and lose consciousness

### **Party Drugs are not "Fun Drugs"**

Many are hallucinogenic tryptamines and phenethylamines in Schedule C1  
Generally used at clubs, parties, rave type venues  
Taken orally, smoked or snorted  
Effects last 2-6 hours  
Problematic physical & psychological effects  
Releases neurotransmitters producing feelings of well-being and euphoria, along with stimulation: Dopamine, adrenalin, serotonin...

*Users claim:*

- *heightened awareness and desire to dance*
- *sustains them through long sessions of dancing or gyrating*
- "*Rolling*" – spaced out on Ecstasy

Many users also claim sensory enhancement:

- Fascinated by light shows, strobe lights, glow sticks
- Touch and smell sensations enhanced

### **Physical Signs and Symptoms**

Increased heart rate and blood pressure  
Faintness, sweating, chills, dehydration, exhaustion  
Hyperthermia  
Pupil dilation, eyelid twitches, blurred vision  
Headache, nausea, loss of appetite  
Generalized muscle tension and spasms:

- Neck and lower-back aches and pains
- Bruxism - teeth grinding, clenching
- Trismus - jaw muscle spasm/locking; use pacifiers to alleviate the clenching

### **Ecstasy as the “Hug Drug”**

Many users also claim increased feelings of emotional closeness to one another

- An “*increased empathy for others*”

Ecstasy has been dubbed the “*Hug Drug*”

It’s more about a *loving feeling* than increased sexual activity

It may not be about sex, but the drug scene certainly opens the door to problems, other drugs, and to exploitation by sexual predators

### **Neurotoxicity of Ecstasy**

Alter brain cells that produce serotonin:

- Serotonin plays an important role in regulating mood, emotion, learning, memory, sleep, appetite and pain
- Brain imaging studies in monkeys show depletion of serotonin and histological sections showed degeneration of serotonin axon and nerve endings

### **Psychological Signs and Symptoms**

Disorientation and confusion

Agitation, anxiety, irritability, and mood swings

Insomnia

Depression – may last several days

Mild hallucinations, depersonalization

Panic attacks and delirium, even psychotic episodes have occurred

### **Chronic human users do poorly on memory tests:**

- visual and memory scores
- ability to reason verbally
- decision-making
- ability to sustain attention

### **Warning Signs of Stimulant Abuse – What to look for:**

Possession of hollowed out pens, pacifiers, lollipops, glow sticks

Red irritated nostrils, increased heart rate and blood pressure

Dilated pupils, blurred vision, rapid eye movement, headaches, dizziness

Dry mouth, muscle aches, clenching of the jaw, grinding teeth

Nausea, vomiting, weight loss

Change in sleep pattern; awake for extended periods of time

Chills or sweating, high body temperature, dehydrated

Faintness, confusion, trance-like state

Depression, anxiety, panic attacks and paranoia

### **Adulterants**

No quality control, impurities, substitute drugs, dose unknown

Severe health and neurological dangers

### **Designer Cannabinoids - incense and herbal smoking blends**

New products, incense and herbal smoking blends, popped up on the internet and in head shops in 2002 under a variety of trade names: Spice Silver<sup>®</sup>, K2<sup>®</sup>, Buddha Melt...

By 2008 synthetic cannabinoid were discovered in these products

Poison Control Centers reporting problems with patients smoking these substances

DEA used emergency scheduling authority to temporarily control five of these chemicals as Schedule I: JWH-018, JWH-073, JWH-200, CP-47,497, and cannabicyclohexanol

Spice manufacturers change recipe to skirt the laws

**GHB - Gamma Hydroxybutyrate and its precursor drugs: GBL - Gamma Butyrolactone & 1,4-BD - 1,4 Butanediol**

All are rapidly acting, strong CNS depressant type drugs  
Abused for their intoxicating, euphoric, and sedative effects  
GHB was banned by FDA in 1990 after concern for its safety  
HB was put in Schedule 1 in 2000 after reports of overdoses, deaths, and use in sexual assaults

When ingested GBL and 1,4-DB are rapidly metabolize to GHB  
Same physical and behavioral effects and serious health hazards as GHB  
Commercially available as industrial cleaning solvents  
Also sold over the internet as nutritional supplements

*Advertised as:* Sports and nutrition supplements, anti-aging drugs, sleep aids, mood enhancers, for anxiety & depression, weight loss aids, and sexual stimulants

**GHB, GBL, & 1,4-BD as Date-rape Drugs**

Sexual predators use these drugs to lower the inhibitions & defenses of women:  
Clear, odorless, nearly tasteless liquid, easily slipped into a drink w/o detection  
*These drugs have been used for date-rape, facilitated sexual assault...*

Victims become sleepy and lethargic, disorientated, confused, experiences extensive muscle relaxation and amnesic

***Less able to resist or ward off unwanted sexual advances or assaults***

**Ketamine (Ketalar, Ketaset)**

Short acting analgesic

Used in critical care settings and veterinary medicine

Chemically similar to PCP

Abused at nightclubs and at various party settings

Ketamine - Dissociative anesthetic

Produces feeling of dissociation, "*Out-of-Body*" experience, hallucinations

Users develop impaired memory & executive function; schizophrenic-like symptoms\*

Overdose can lead to respiratory depression; cardiovascular and central nervous systems problems

**Nitrous Oxide**

Dissociative anesthetic -fast-acting, rapid recovery

Physical & Neurological Consequence of Nitrous Oxide Abuse:

Produces a "*rush*"

- Intoxicated/euphoric state
- Uninhibited and impulsive behavior

Powerful hallucinogen

- Distorted perception
- Spiritual and demoniac experiences

Dizziness, confusion, slurred speech, staggered gait, impaired motor skills, paresthesia and neuropathy

Death - asphyxiation

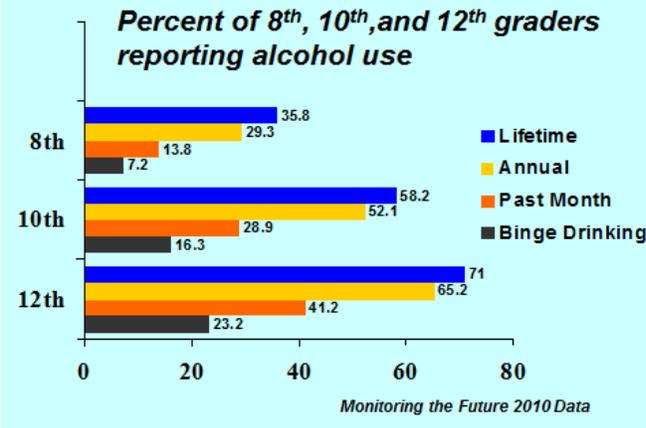
## Alcohol – Most widely abused OTC drug

### 2010 National Survey on Drug Use and Health – Alcohol Use

59 million Americans (23.3%) ages 12 and older binge drank in the last 30 days

17 million Americans (7%) are heavy drinkers (binge drinking on at least 5 days in past month)

### Underage Drinking:



**By 12th grade, almost two-thirds of students have used alcohol in the past year  
41% are current drinkers and 23% are binge drinkers**

**College Drinking**  
*"The Rite of Passage"*

1700 die each year (MVA)  
 599,000 injuries  
 696,000 assaults  
 97,000 sexual assaults/date rapes

*"Deeply entrenched threat to the health and well-being of our young people",  
 Dr. Hingson*

*J of Studies on Alcohol, 63(2):136, 2006*

**Over 82% of college students have used alcohol in the past year  
69% are current drinkers and 40% binge drank in the last two weeks**

### **Impairment Consequences of Alcohol Misuse and Abuse**

**Impairment** - any slowing of thought or physical reaction beyond the initial relaxation effect of alcohol

#### **BAC .08 - .40%**

- 0.08 ataxia, decreased mentation, poor judgment, labile mood
- 0.15 major physical and mental impairments: ataxia, slurred speech, combativeness
- 0.20 marked alteration of mental state, marked ataxia, unrestrained behavior, nausea, vomiting
- 0.30 memory lapse, anesthesia
- 0.40 respiratory failure, coma, death

#### **0.03% Blood Alcohol Level**

- impairment begins
- divided attention problems
- impaired eye/balance coordination
- slower eye tracking ability

#### **0.05% Blood Alcohol Level**

- impaired cognitive functions and coordination
- information-processing problems
- impaired visual perception
- increased reaction time

## ALCOHOL IMPAIRMENT CHART

NEVER DRINK AND DRIVE

APPROXIMATE BLOOD ALCOHOL PERCENTAGE										
Drinks	Body Weight in Pounds									
	90	100	120	140	160	180	200	220	240	
0	.00	.00	.00	.00	.00	.00	.00	.00	.00	ONLY SAFE DRIVING LIMIT
1	.05	.05	.04	.03	.03	.03	.02	.02	.02	Impairment Begins
2	.10	.09	.08	.07	.06	.05	.05	.04	.04	Driving Skills Affected
3	.15	.14	.11	.10	.09	.08	.07	.06	.06	Possible Criminal Penalties
4	.20	.18	.15	.13	.11	.10	.09	.08	.08	
5	.25	.23	.19	.16	.14	.13	.11	.10	.09	
6	.30	.27	.23	.19	.17	.15	.14	.12	.11	Legally Intoxicated
7	.35	.32	.27	.23	.20	.18	.16	.14	.13	Criminal Penalties
8	.40	.36	.30	.26	.23	.20	.18	.17	.15	
9	.45	.41	.34	.29	.26	.23	.20	.19	.17	
10	.51	.45	.38	.32	.28	.25	.23	.21	.19	

Your body can get rid of one drink per hour.  
Each 1½ oz. of 80 proof liquor, 12 oz. of beer or 5 oz. of table wine = 1 drink.

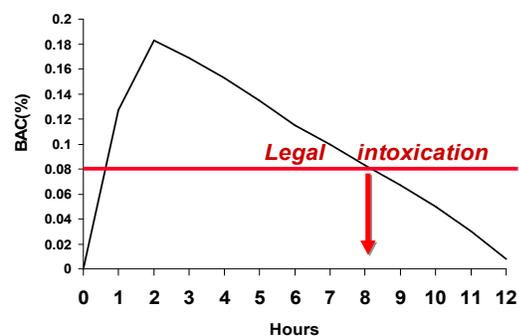
## ALCOHOL IMPAIRMENT CHART

NEVER DRINK AND DRIVE

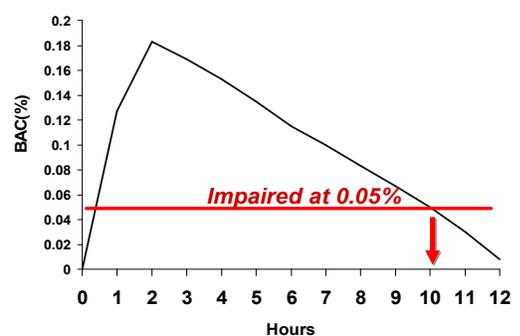
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3	.11	.09	.08	.07	.06	.06	.05	.05	.05	Possible Criminal Penalties
4	.15	.12	.11	.09	.08	.08	.07	.06	.06	
5	.19	.16	.13	.12	.11	.09	.09	.08	.08	
6	.23	.19	.16	.14	.13	.11	.10	.09	.09	Legally Intoxicated
7	.26	.22	.19	.16	.15	.13	.12	.11	.11	Criminal Penalties
8	.30	.25	.21	.19	.17	.15	.14	.13	.13	
9	.34	.28	.24	.21	.19	.17	.15	.14	.14	
10	.38	.31	.27	.23	.21	.19	.17	.16	.16	

Your body can get rid of one drink per hour.  
Each 1½ oz. of 80 proof liquor, 12 oz. of beer or 5 oz. of table wine = 1 drink.

**Blood Alcohol Concentration vs Time After Consumption**



**Blood Alcohol Concentration vs Time After Consumption**



## 2010 U.S. DIETARY GUIDELINES ON ALCOHOL BEVERAGES

Alcohol consumption may have beneficial effects when consumed in moderation. Strong evidence has shown that moderate alcohol consumption is associated with a lower risk of cardiovascular disease; also reduced risk of all-cause mortality among middle-aged and older adults and may help to keep cognitive function intact with age. However, it is not recommended that anyone begin drinking or drink more frequently on the basis of potential health benefits because moderate alcohol intake also is associated with increased risk of breast cancer, violence, drowning, and injuries from falls and motor vehicle crashes.

The consumption of alcohol can have beneficial or harmful effects, depending on the amount consumed, age, and other characteristics of the person consuming the alcohol. Alcohol consumption may have beneficial effects when consumed in moderation.

**Moderate alcohol consumption** is defined as up to 1 drink per day for women and up to 2 drinks per day for men. Not more than 7 per week for women and 14 per week for men. **However**, it is not recommended that anyone begin drinking or drink more frequently on the basis of potential health benefits because moderate alcohol intake also is associated with increased risk of breast cancer, violence, drowning, and injuries from falls and motor vehicle crashes.

**Heavy or high-risk drinking** is the consumption of more than 3 drinks on any day or more than 7 per week for women and more than 4 drinks on any day or more than 14 per week for men.

**Binge drinking** is the consumption within 2 hours of 4 or more drinks for women and 5 or more drinks for men.

**No drug produces such a variety of physiological disturbances and tissue damage as alcohol when it is abused:**

### Chronic alcohol use may result in:

Memory loss, impaired judgment, headaches, depression, anxiety, blackouts, insomnia

Cancers of the mouth, throat, esophagus

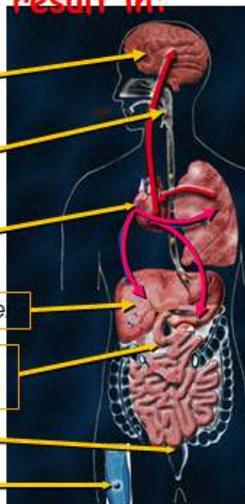
Heart disease, high blood pressure, stroke, breast cancer

Liver disease, liver & pancreatic cancer

Chronic stomach problems, GI bleeding, diarrhea, ulcers, malnutrition

Impotency, reproductive disorders

Muscle damage, osteoporosis



**Alcohol abusers are at high risk:**  
Have slower rates of healing  
Have increased bleeding times  
Higher rates of infection  
More adverse drug reactions

## U.S. 2010 Dietary Guidelines on Alcohol Consumption

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**Binge drinking** is the consumption within 2 hours of 4 or more drinks for women and 5 or more drinks for men.

**One drink is defined as:**

12 fl. oz. of regular beer (150 calories)

5 fl. oz. of wine (100 calories)

1.5 fl. oz. of distilled spirits (100 calories)



**Women**  
Up to 1 drink  
per day; no  
more than 7  
drinks/week

There are many circumstances in which people should not drink alcohol:

- **Individuals who cannot restrict their drinking to moderate levels.**
- **Anyone younger than the legal drinking age. Besides being illegal, alcohol consumption increases the risk of drowning, car accidents, and traumatic injury, which are common causes of death in children and adolescents.**
- **Women who are pregnant or who may be pregnant. No safe level of alcohol consumption during pregnancy has been established.**
- **Individuals taking prescription or over-the-counter medications that can interact with alcohol.**
- **Individuals with specific medical conditions (e.g., liver disease, hypertriglyceridemia, pancreatitis).**
- **Individuals who plan to drive, operate machinery, or take part in other activities that require attention, skill, or coordination or in situations where impaired judgment could cause injury or death (e.g., swimming).**

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*If you drink alcoholic beverages, do so in moderation, with meals, and when consumption does not put you or others at risk.*



**Men**  
Up to 2 drinks  
per day; no  
more than 14  
drinks/week

## Low Risk Drinking Limits

**MEN:** Not over 2 drinks/day or 14/week  
Not over 4 on any single occasion  
(Not to exceed 1 drink an hour)

**WOMEN\*:** Not over 1 drink/day or 7/week  
Not over 3 on any single occasion  
(Not to exceed 1 drink an hour)

\* Healthy men >65

U.S. Dietary Guidelines 2010  
NIH & NIAAA recommendations

## Heavy or at-Risk Drinking by Gender

Gender	Per day	Per week
Men	> 4 drinks	> 14 drinks
Women	> 3 drinks	> 7 drinks <i>(exceeding one drink/hour)</i>

U.S. Dietary Guidelines 2010  
NIH & NIAAA recommendations

### Progression of Warning Signs of Opiate Abuse and Addiction:

**Tolerance** – Patients may increase dosage, over time, because the original dosage is no longer providing relief. Increased tolerance is also a warning sign for abuse.

**Continued Use** - Patients that complain frequently about "still feeling pain" or request to extend a prescription long after the medical condition has improved should be monitored closely. Patients who complain about physicians refusing to write a prescription show signs of abuse or addiction.

**Behavioral Changes** - Changes in a person's normal behavior can be a sign of abuse or addiction. Shifts in mood, energy, and concentration occur as the patient continues to misuse and abuse drugs.

**Increased Inactivity** - Hobbies and activities no longer provide the enjoyment they used to. Those suffering from addiction may feel lethargic and tend to stop engaging in athletic activities.

**Social Withdrawal** – Withdraw from family, friends, and/or isolation from social activities may indicate a person experiencing a drug problem. Everyday responsibilities and social interactions become secondary to the need for the relief the prescription drug provides.

**Desensitized Emotions** - An opiate abuser or addict may exhibit an attitude of indifference, a lack of emotion, and demonstrate disinterest in things that previously brought them pleasure.

**Going to Great Lengths to Obtain Prescriptions** - An addicted person may spend large amounts of time driving great distances and visiting multiple doctors to obtain drugs. Preoccupation with a quest for medication demonstrates that the drug has become a major priority in the patient's life. A hallmark sign of addiction is loss of control over drug seeking behavior.

**Defensiveness** - Abusers who attempt to hide a drug problem or addiction may lash out and become very defensive if they feel their secret is being discovered.

**Change in Physical Appearance and Health** – Decreased attention to personal hygiene may occur as a result of a drug abuse and addiction.

**Deterioration of health:** physical complaints and symptoms, i.e. gastritis, hypertension, gout, impaired nutritional status and frequent visits to physician and/or hospital may occur as the disease progresses. Accidents, trauma injuries, withdrawal symptoms, and emotional crises (anxiety, depression, insomnia...) are also common.

**Blackouts and Forgetfulness** - Another clear indication of addiction is when the person regularly forgets events that have taken place and appears to be suffering frequent memory lapses.

## References and Additional Reading

Prevention of Alcohol and Other Drug Problems *What We Can Do!* A Program for Parents: <http://www.uky.edu/~pjsamm1/PtPrevProg.ppt>

### Drug Information Web Sites:

[www.drugfree.org](http://www.drugfree.org) – Partnership for a Drug Free America: Support & Resources for Parents Dealing with Teen Drug and Alcohol Abuse; Prevention tips, intervention tools, treatment referrals, and recovery resources

[www.theantidrug.com](http://www.theantidrug.com) – Parents, the Anti-Drug; drug information, parenting advice, signs and symptoms for teen use/abuse, and resources for parents and other caring adults

[www.whitehousedrugpolicy.gov](http://www.whitehousedrugpolicy.gov) – Office of National Drug Control Policy; portal to information on our federal government's – and the current presidential administration's – official policies, priorities and objectives related to substance abuse – enforcement, prevention, treatment and trends

[www.teens.drugabuse.gov](http://www.teens.drugabuse.gov) – NIDA for Teens: the Science behind Drug Abuse; Geared for teens, another interactive site that will engage youth in learning activities

[www.AbovethetheInfluence.com](http://www.AbovethetheInfluence.com) – National Youth Anti Drug Media Campaign; Interactive site for youth to explore the truth about drugs; Games, videos, podcasts, teen blogs, quizzes; Tips on dealing with: Stress, peer pressure, and intervention for friends or family members who are struggling with addiction

[www.ProjectAlert.com](http://www.ProjectAlert.com) – Substance abuse prevention tools for Grades 7-8; nationally recognized, 7th & 8th grade, evidence-based program that gives students insight, understanding, and actual skills for resisting substance use. Project ALERT successfully addresses tobacco, alcohol, marijuana and inhalants, the substances teens are most likely to use

[www.casacolumbia.org](http://www.casacolumbia.org) The National Center on Addiction and Substance Abuse at Columbia University has a lot of excellent information. This report may be of interest: “*Family Matters: Substance Abuse and The American Family*”

The CASA report: “*Under the Counter: The Diversion and Abuse of Controlled Prescription Drugs in the United States*” 2005 publication can be obtained off the National Center on Addiction and Substance Abuse at Columbia University Web Site: <http://www.casacolumbia.org/>

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Colfax, G.N. Methamphetamine: Important Clinical Guidance for Healthcare Providers, Medscape WebMD 2005 [www.medscape.com/viewarticle/514193](http://www.medscape.com/viewarticle/514193).

National Institute of Drug Abuse Web site: <http://www.drugabuse.gov/drugs-abuse/club-drugs>. Excellent information on Club Drugs including: Alcohol, LSD (Acid), MDMA (Ecstasy), GHB, GBL, Ketamine (Special-K), Fentanyl, Rohypnol, amphetamines and methamphetamine.

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