

Volume C: **Addiction Medications and Special Populations**



**Volume C:
Addiction Medications and Special Populations**

Module 1: Addiction Basics:
Alcohol and Benzodiazepines;
Psychostimulants, Volatile
Substances, and Cannabis

Module 2: Opioids:
Basics of Addiction; Opiate Agonist,
Partial Agonist, and
Antagonist Therapies

Module 3: Special Populations:
Individuals with Co-Occurring
Disorders, Women, and
Young People

Workshop 1

Workshop 2

Workshop 3

Workshop 1

Workshop 2

Workshop 3

Workshop 4

Workshop 1

Workshop 2

Workshop 3

Module 1:

Addiction Basics:

Alcohol and Benzodiazepines; Psychostimulants; Volatile Substances and Cannabis

Treat  **net**

International network of drug dependence
treatment and rehabilitation resource centres



UNITED NATIONS
Office on Drugs and Crime

Module 1: Training goals

- 1.** Increase knowledge of the medical and addiction-related problems associated with alcohol, benzodiazepines, psychostimulants, volatile substances and cannabis.
- 2.** Learn the appropriate medical detoxification and post detoxification pharmacotherapies appropriate to treat these substance use disorders.
- 3.** Promote the use of these techniques by practitioners and organizations



Module 1: Workshops

Workshop 1: Addiction Basics

**Workshop 2: Alcohol &
Benzodiazepines; Medical Issues,
Detoxification Approaches**

**Workshop 3: Psychostimulants, Volatile
Substances and Cannabis**

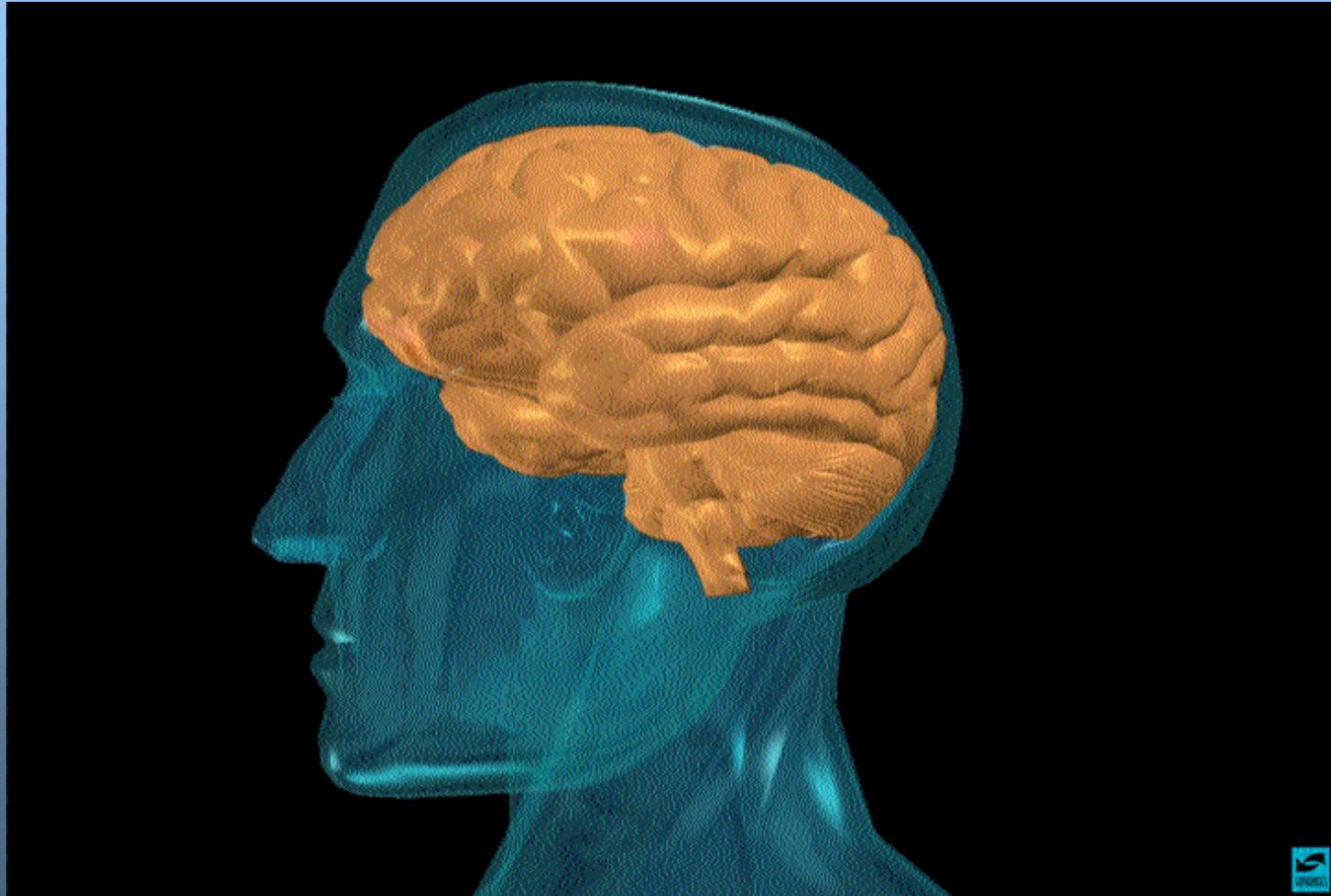
Icebreaker: Drugs in my country



- What is the main consumed drug in your country?
- What are the main problems that this drug is creating among people in your country?



Workshop 1: Drug Abuse and Addiction



Pre-assessment



Please respond to the pre-assessment questions in your workbook.

(Your responses are strictly confidential.)



Training Objectives



At the end of this training you will be able to:

- 1.** Understand basic principles and concepts of drug abuse and dependence.
- 2.** Understand the basic pharmacology of alcohol, benzodiazepines, psychostimulants, volatile substances and cannabis
- 3.** Understand the specific role of pharmacotherapy for overdose, withdrawal treatments, maintenance treatments and relapse prevention treatments.
- 4.** Understand clinical populations and treatment settings where pharmacotherapies can be used.

Why do people initiate drug use?

Key Motivators

- Fun (pleasure)
- Forget (pain amelioration)
- Functional (purposeful)

(NCETA, 2004)

Also initiation starts through:

- Experimental use
- Peer pressure



Understanding young people's motivation to use drugs



IF YOU CAN'T LEARN TO DO SOMETHING WELL,
LEARN TO ENJOY DOING IT POORLY.

©1999 DESPAIR, INC.

1. **Risk-takers / pleasure seekers**
2. **Socially disconnected**
3. **Self-medicators**

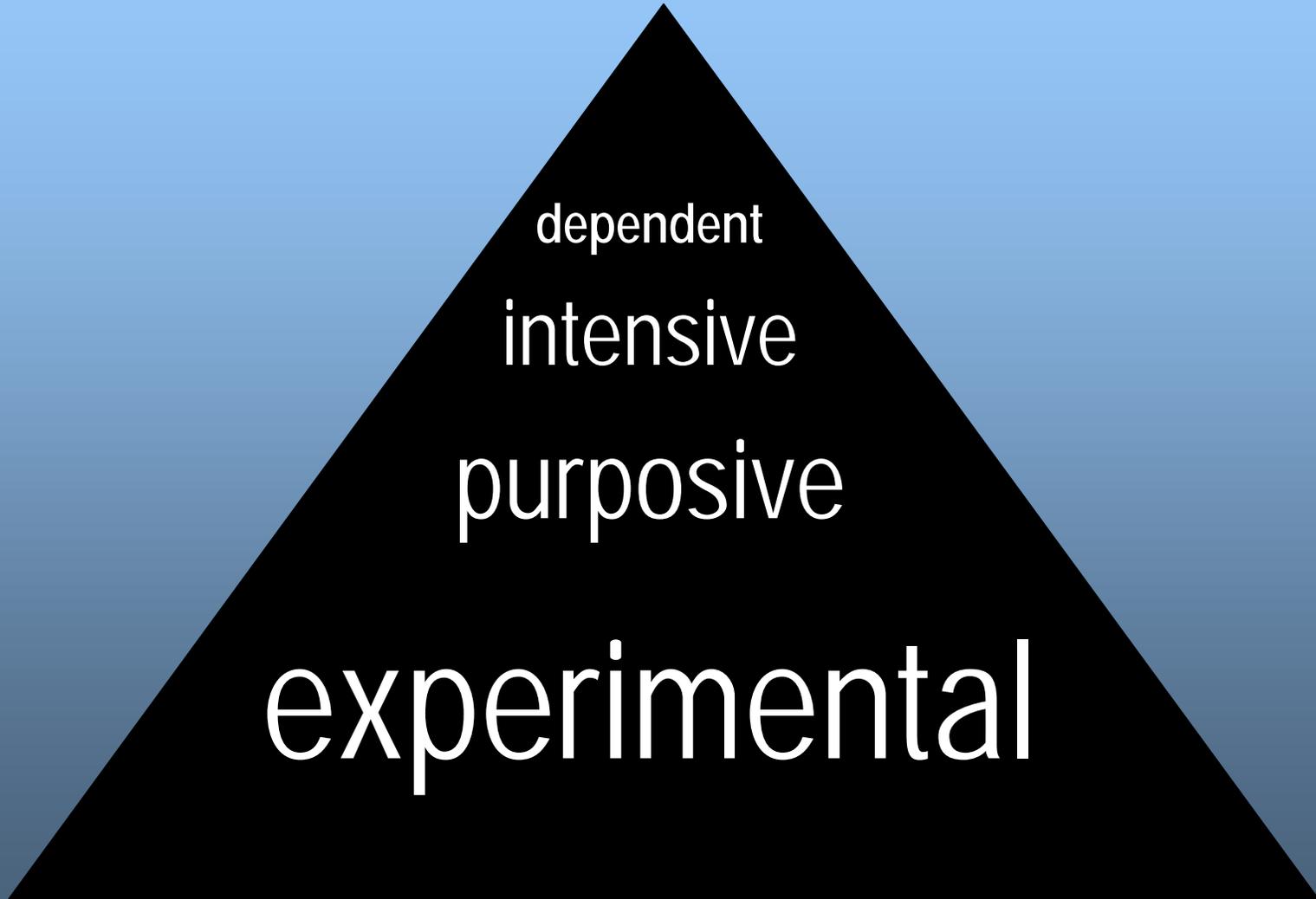
Types of drug users

Enormous variability and range include:

- **Experimenters**
- **Social users**
- **Regular heavy users**
- **Dependent users**



Patterns of drug use



Factors that influence drug use

There are at least three different categories of factors to consider:

- predisposing factors
 - precipitating (enabling) factors
 - perpetuating (reinforcing) or maintaining factors
-

Drugs and genes

- While psychological theories account for a large proportion of the behaviours related to drug use, other factors are also important
- It is increasingly recognised that genes play an important role in an individual's response to drugs and the propensity for the development of dependence



Environmental factors

- A range of environmental factors impact on drug use, including price and availability of both licit and illicit drugs
 - Other environmental factors include prenatal problems, early childhood experiences, family relationship and bonding, and early educational opportunities.
 - Cultural norms around drug use also act as powerful determinants of the use of both licit and illicit substances
-

Psychoactive drugs (1)

Psychoactive drugs are generally defined as substances that alter:

- mood
- cognition (thoughts)
- behaviour



Psychoactive drugs (2)

- **Affect mental processes and behaviour**
- **Affect thought processes and actions**
- **Alter perceptions of reality**
- **Change level of alertness, response time, and perception of the world**
- **Achieve effects by interacting with the central nervous system (CNS)**

Psychoactive drug use

- Is a common activity
 - Is part of a range of human behaviours
 - Can be classified in many ways, including legal status, drug effects
 - Alters mood or consciousness, although there are other ways to achieve this:
 - e.g., skydiving, meditation, extreme (and non-extreme) sports, sex. Children, for example, love to alter their consciousness by spinning around.
-

Views about AOD-related issues

Our thinking about alcohol and other drug (AOD) related issues is informed by factors such as:

- experience
 - culture
 - education
 - religion
 - family / environment
 - legislation
-

Drug classifications



Psychoactive drugs may be classified according to their:

1. Status

- legal
- chemical
- medical
- social

2. Action and properties

- depressant
 - stimulant
 - hallucinogenic
 - etc.
-

Classifying psychoactive drugs

Depressants	Stimulants	Hallucinogens
Alcohol	Amphetamines	LSD, DMT
Benzodiazepines	Methamphetamine	Mescaline
Opioids	Cocaine	PCP
Solvents	Nicotine	Ketamine
Barbiturates	Khat	Cannabis (high doses)
Cannabis (low doses)	Caffeine	Magic mushrooms
	MDMA	MDMA

Drug use and health



Patients with drug problems:

- often have multiple health and social problems
 - expect doctors to ask and provide information about alcohol and drug issues – failure to inquire may lead to medical malpractice in some situations
-

Types of problems (1)

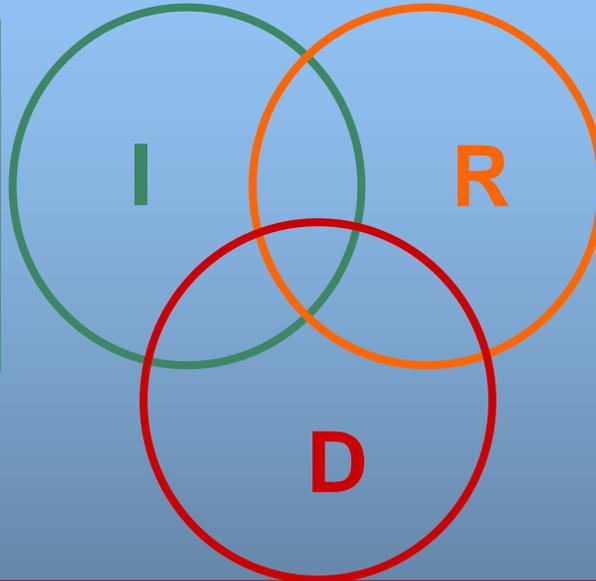


- Different patterns of drug use result in different types of problems
- Because individuals have different genetic make ups and early experiences, they may respond differently to drugs and have a different risk for drug abuse and dependence
- Drug use may affect all areas of a patient's life, and problems are not restricted to dependent drug use

Types of problems: Thorley's Model

Intoxication

- Accidents / injury
- Poisoning / hangovers
- Absenteeism
- High-risk behaviour



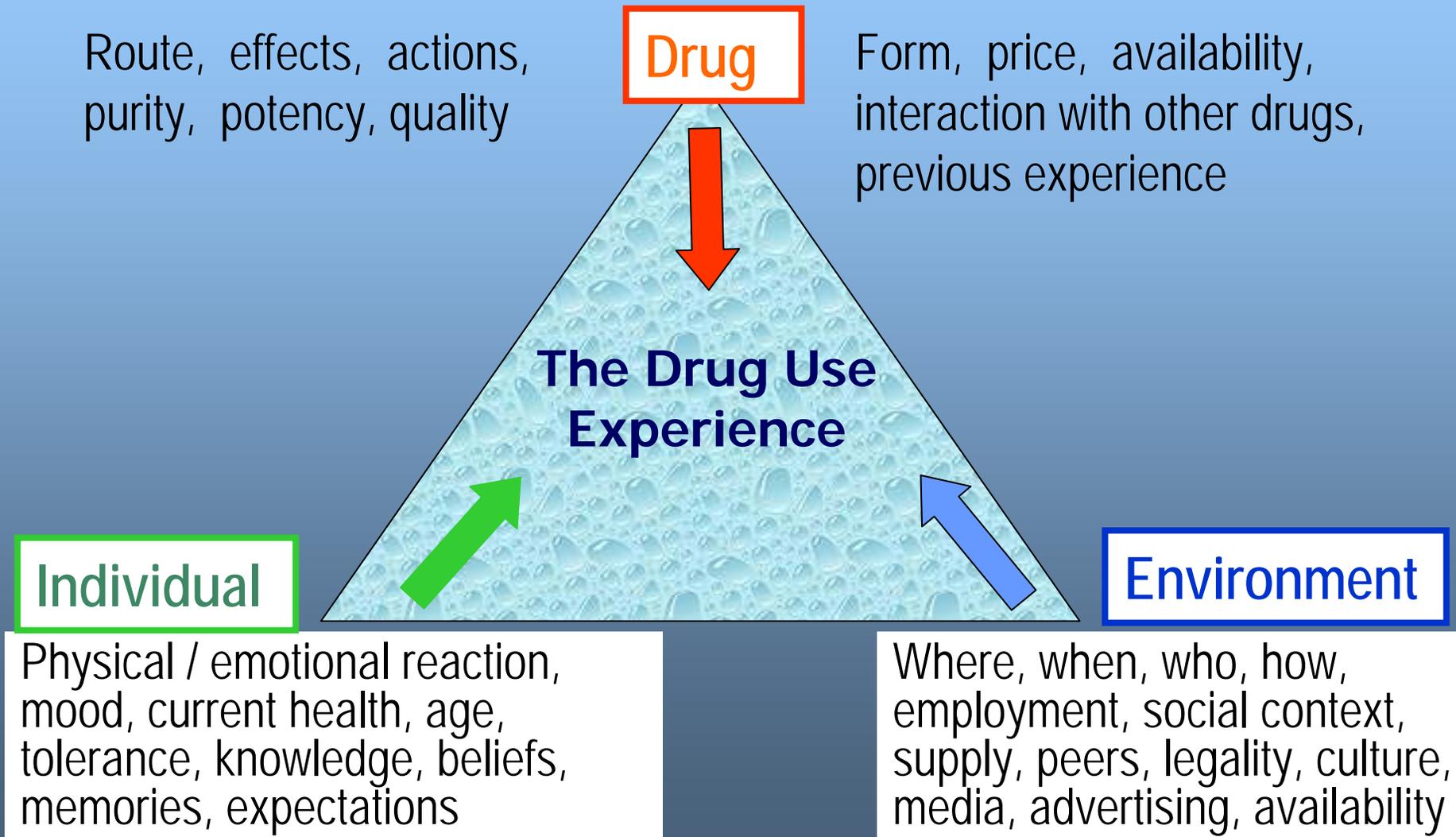
Regular / excessive Use

- Health
- Finances
- Relationships
- Child neglect

Dependence

- Impaired control
- Drug-centred behaviour
- Isolation / social problems
- Withdrawal symptoms and psychiatric problems
- Health Problems

Interactive Model of Drug Use



Important terminology



- 1. Harmful use**
 - 2. Physical dependence vs. addiction**
 - 3. Psychological craving**
 - 4. Tolerance**
 - 5. Withdrawal symptoms**
 - 6. Neurotransmitters and receptors**
-

What is harmful use? (ICD-10)

A pattern of psychoactive substance use that is damaging to physical and / or mental health.

What is drug addiction?

Drug addiction is a complex illness characterised by compulsive, and at times, uncontrollable drug craving, seeking, and use that persist even in the face of extremely negative consequences.



(NIDA, 1999)

Characteristics of addiction

- **Compulsive behaviour**
- **Behaviour is reinforcing (rewarding or pleasurable)**
- **Loss of control in limiting intake**



Psychological craving

Psychological craving is a strong desire or urge to use drugs. Cravings are most apparent during drug withdrawal.



Tolerance

A state in which a person no longer responds to a drug as they did before, and a higher dose is required to achieve the same effect.



Withdrawal (1)

A period during which somebody addicted to a drug or other addictive substance reduces their use or stops taking it, causing the person to experience painful or uncomfortable symptoms

OR

A person takes a similar substance in order to avoid experiencing the effects described above.

Withdrawal (2)

When a drug is removed, physical and / or mental disturbances may occur, including:

- Physical symptoms**
 - Emotional problems**
 - Cognitive and attention deficits**
 - Aggressive behavior**
 - Hallucinations**
 - Convulsions**
 - Death**
-

DSM IV criteria for substance dependence

Three or more of the following occurring at any time during the same 12 month period:

- Tolerance
- Withdrawal
- Substance taken in larger amounts over time
- Persistent desire and unsuccessful efforts to cut down or stop
- A lot of time and activities spent trying to get the drug
- Disturbance in social, occupational, or recreational functioning
- Continued use in spite of knowledge of the damage it is doing to the user or others

ICD-10 criteria for dependence

Dependence: 3 or more of the following:

- (a) strong desire or sense of compulsion to take the substance;**
 - (b) difficulties in controlling substance-taking behaviour in terms of its onset, termination, or levels of use;**
 - (c) a physiological withdrawal state;**
 - (d) evidence of tolerance;**
 - (e) progressive neglect of alternative pleasures or interests**
 - (f) persisting with substance use despite clear evidence of overtly harmful consequences**
-

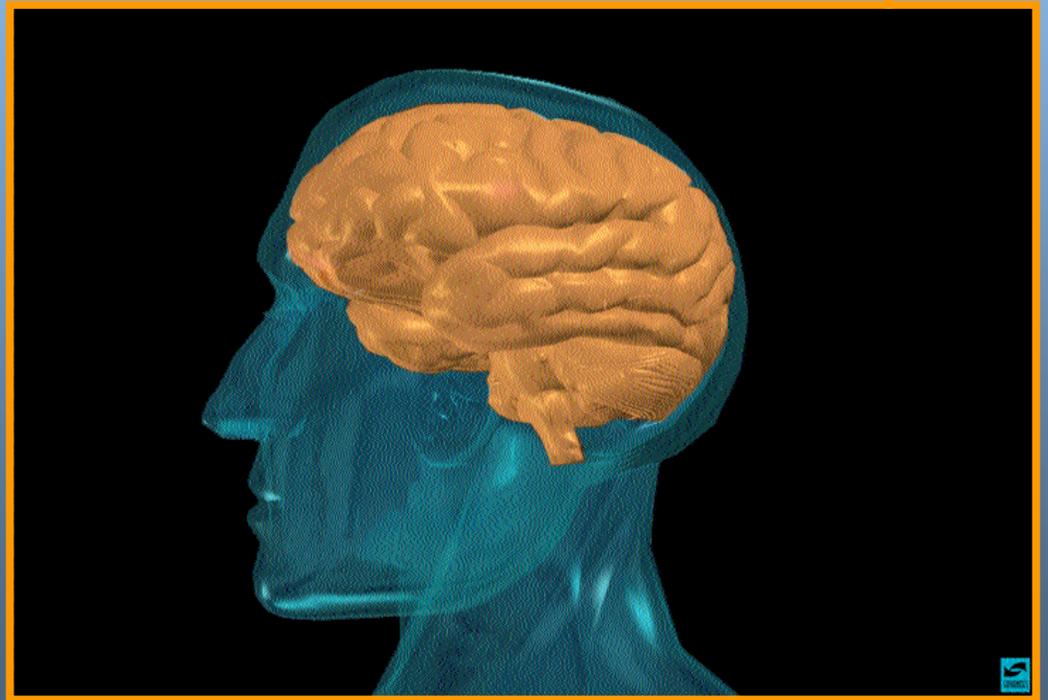
To avoid confusion

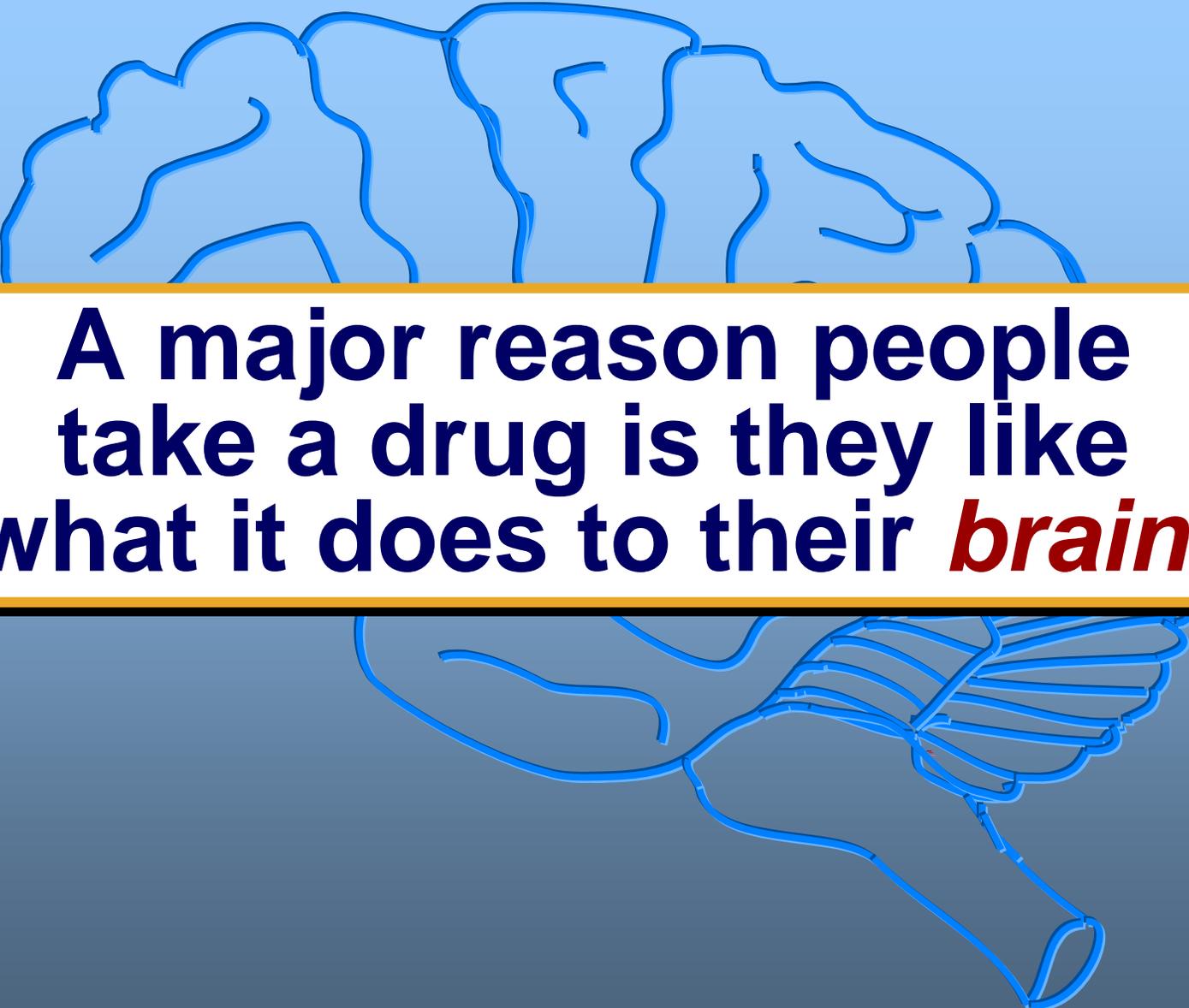


- In this training, **“addiction”** will be the term used to refer to the pattern of continued use of drugs despite pathological behaviours and other negative outcomes
 - **“Dependence”** will only be used to refer to physical dependence on the substance as indicated by tolerance and withdrawal as described above
-

Addiction = Brain Disease

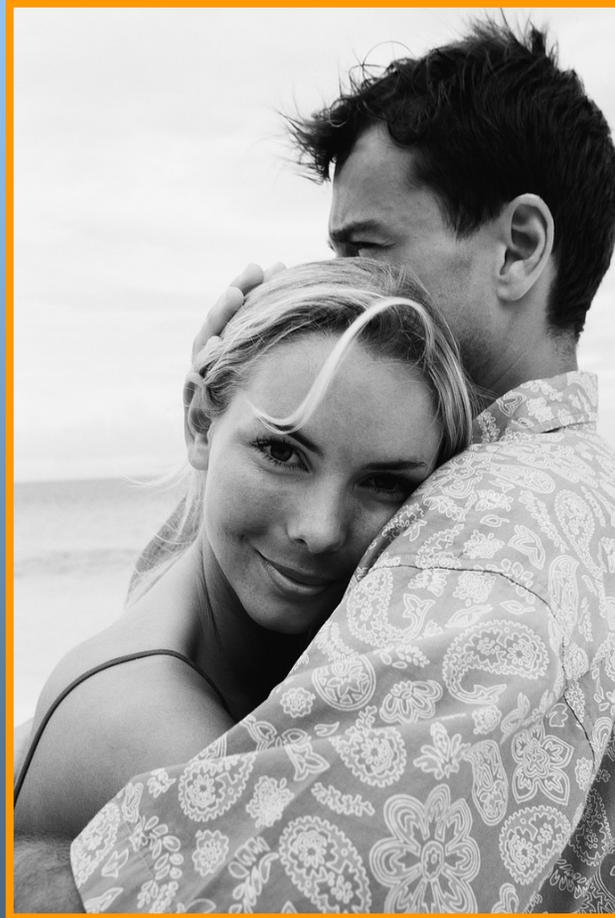
Addiction is a brain disease that is chronic and relapsing in nature.

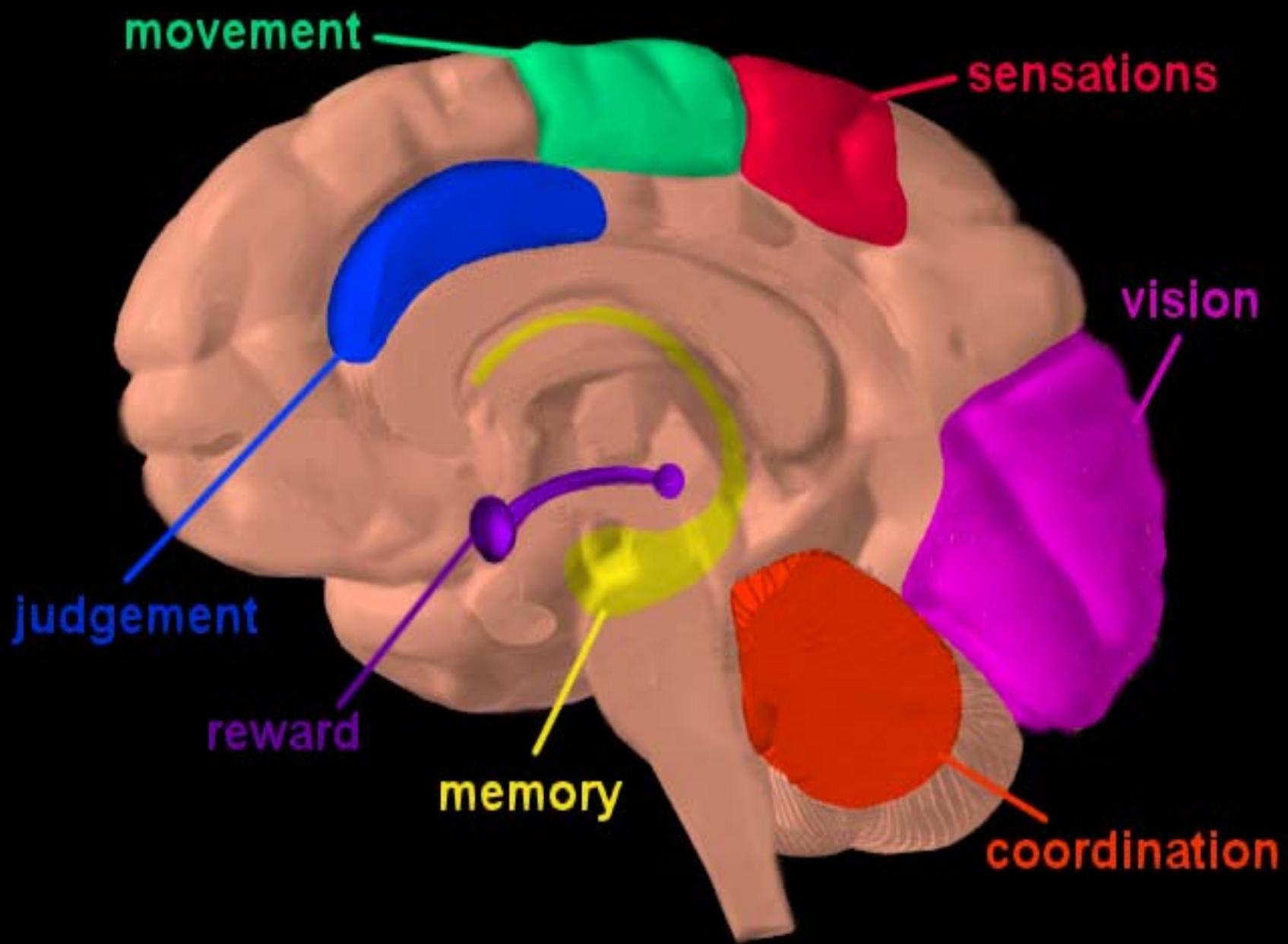




**A major reason people
take a drug is they like
what it does to their *brains***

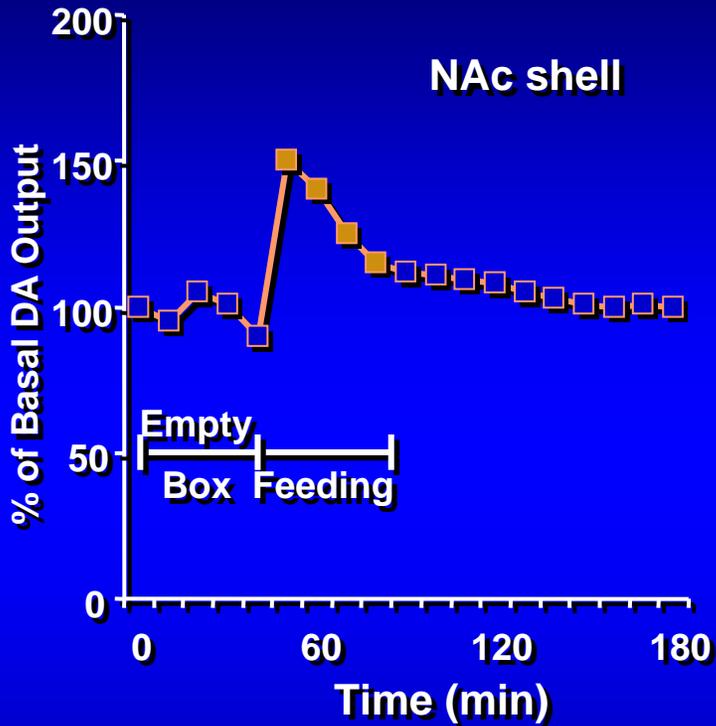
How the reward system works





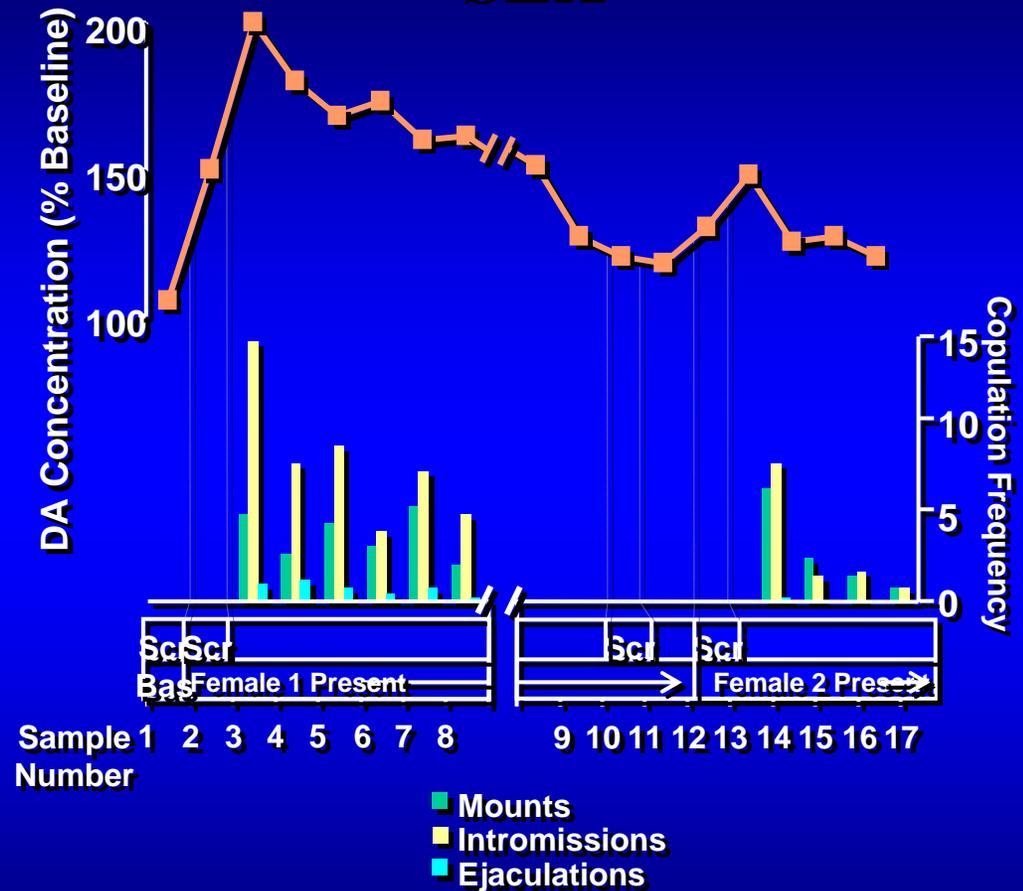
Natural rewards elevate dopamine levels

FOOD



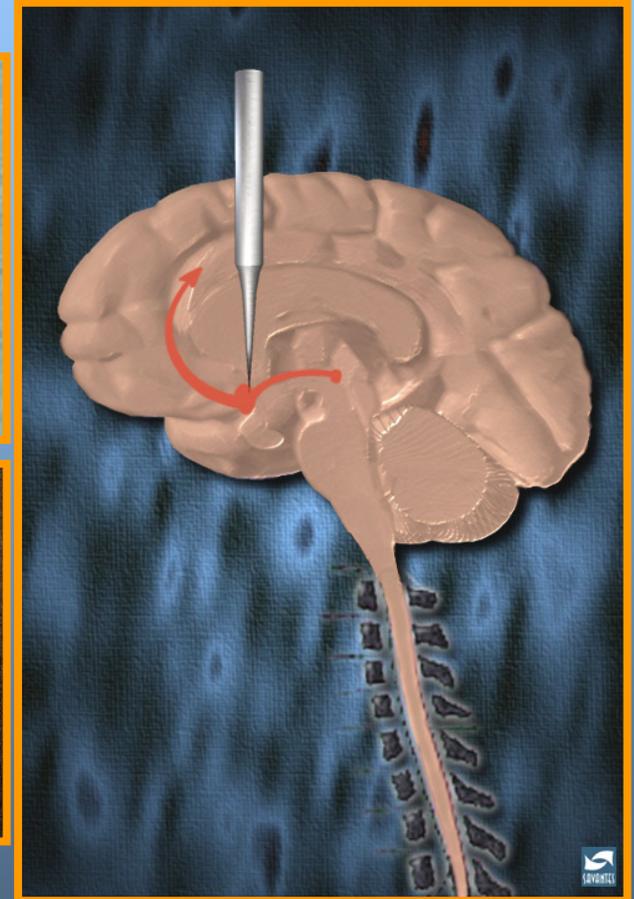
Source: Di Chiara et al.

SEX

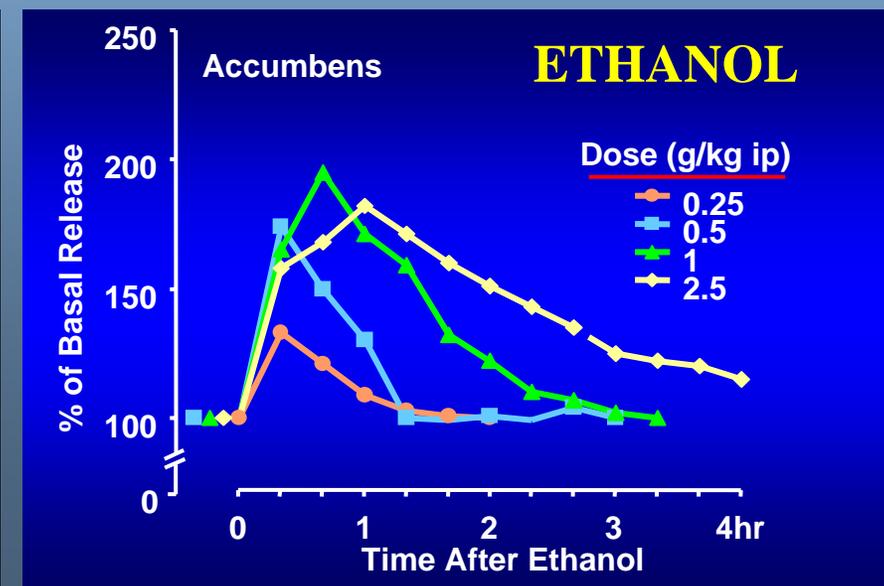
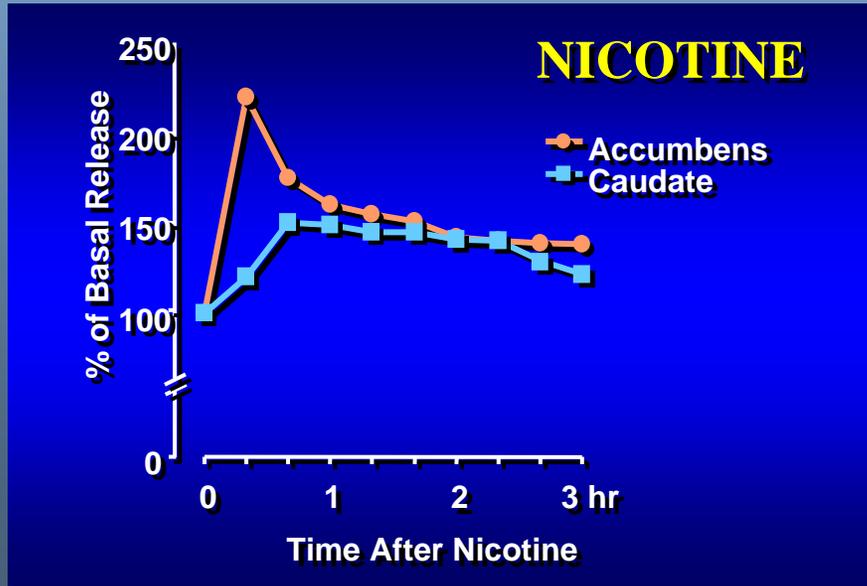
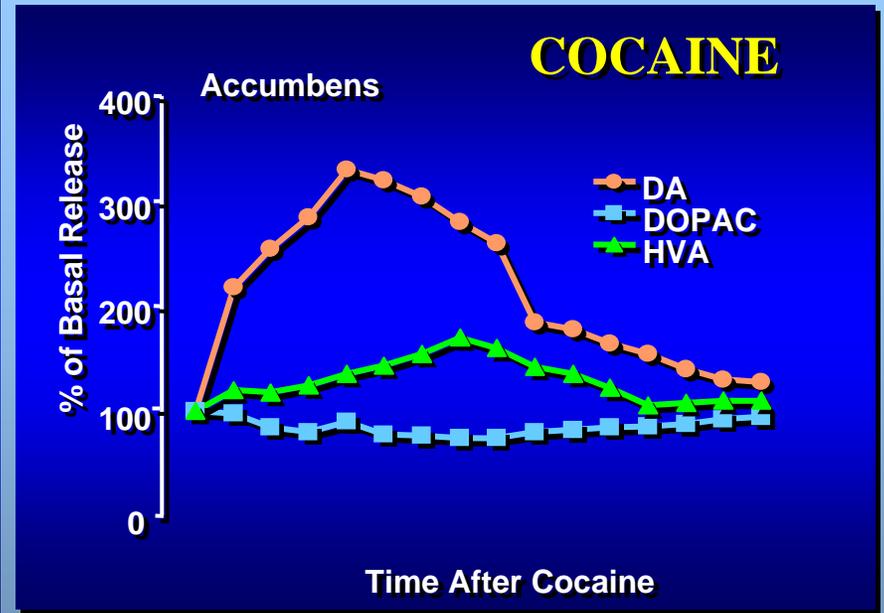
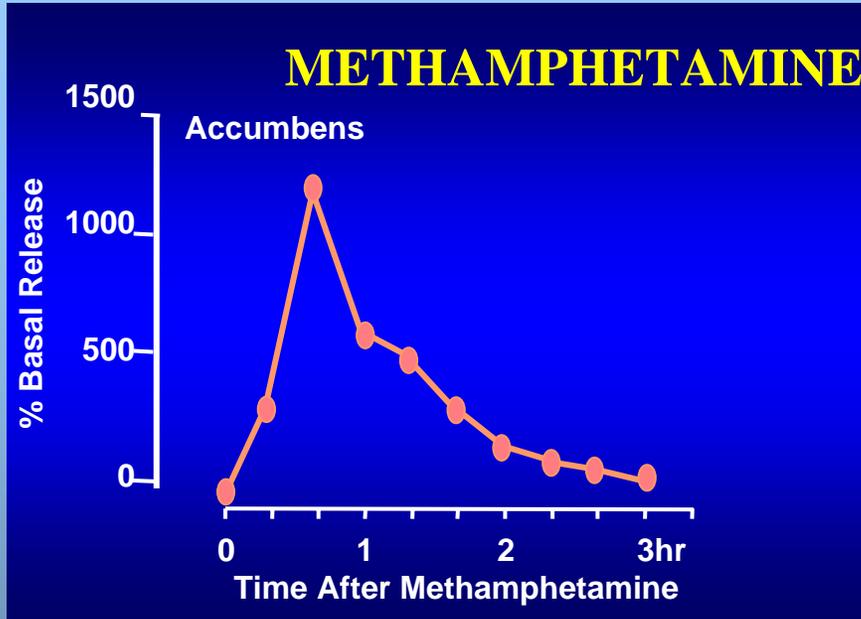


Source: Fiorino and Phillips

Activating the system with drugs



Effects of Drugs on Dopamine Release



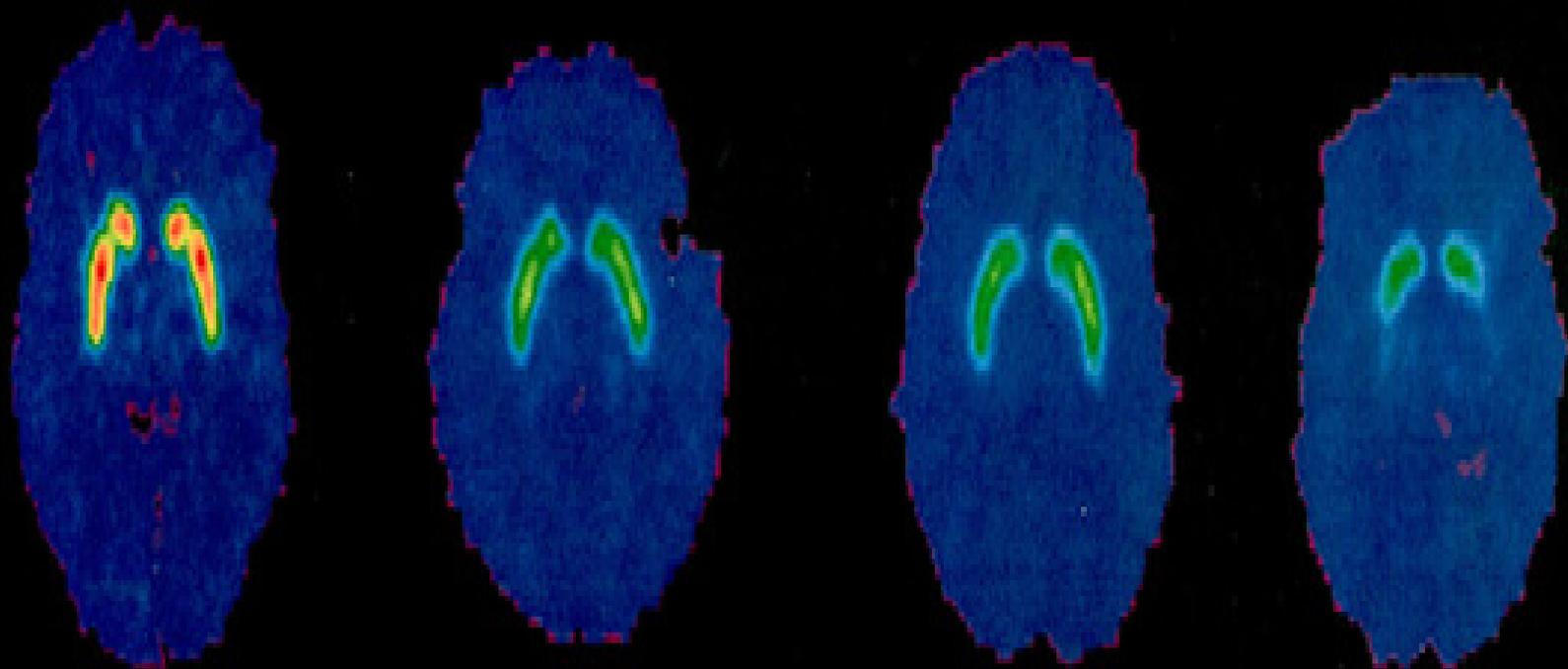
Why can't people just stop drug use?

When people first try drugs, it is usually a voluntary decision, but after using the drug for a while, it is no longer voluntary.

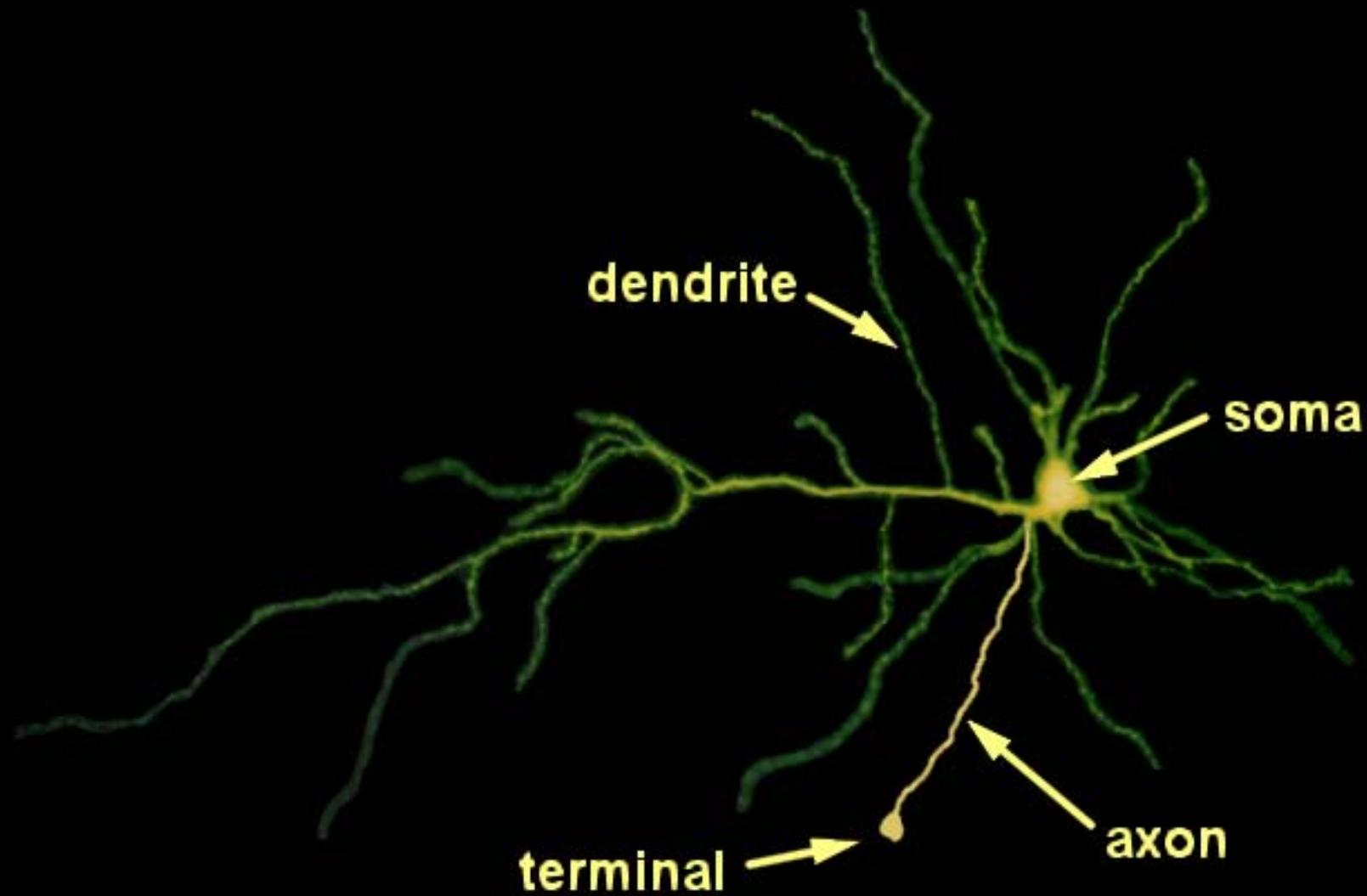
Why can't people stop?



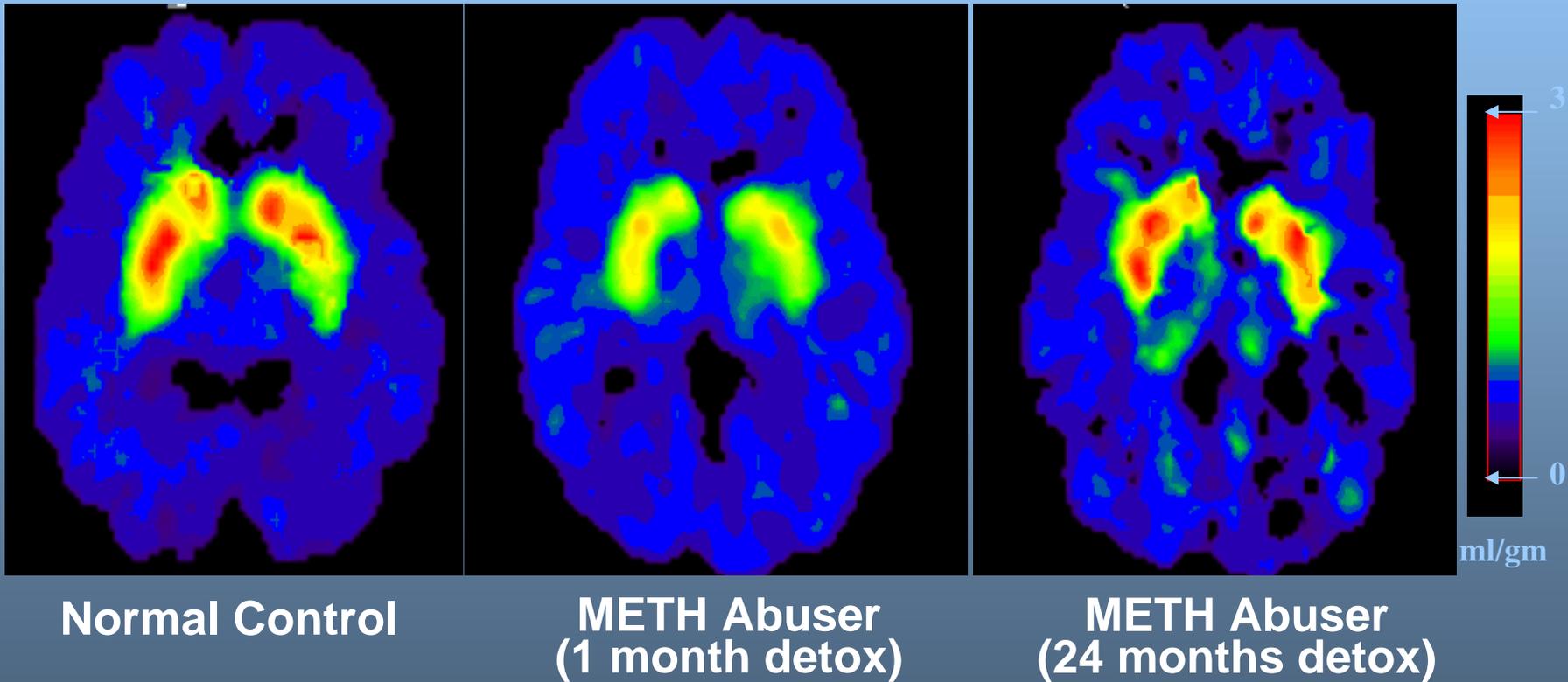
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Control Methamphetamine Methcathinone PD



Partial Recovery of Brain Dopamine Transporters in Methamphetamine (METH) Abuser After Protracted Abstinence



(Volkow, N.D., et al. 2001. Journal of Neuroscience 21, 9414-9418.)

Because...

Their Brains



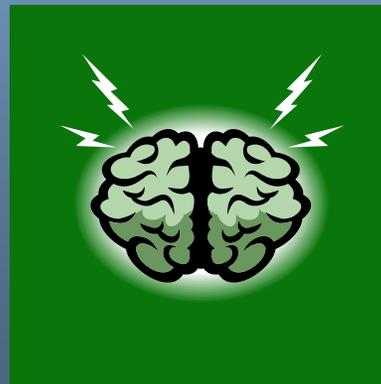
have been

Re-Wired

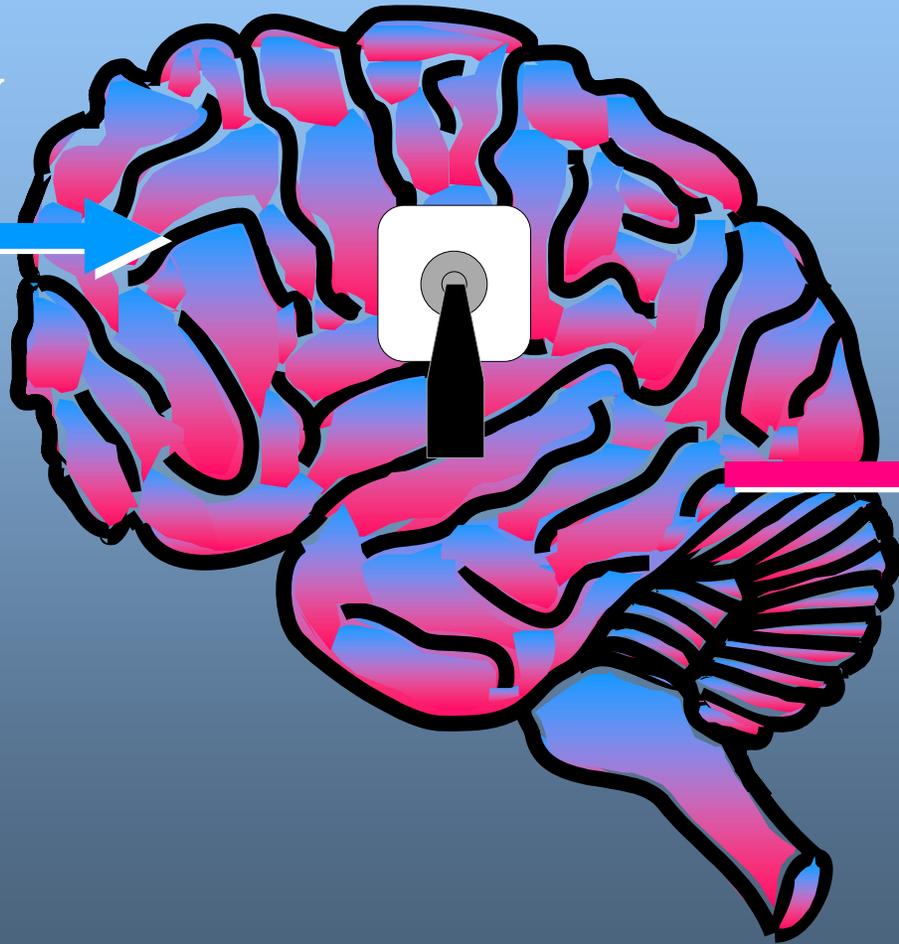
by *Drug Use*

Why can't people just stop drug use?

Prolonged drug use changes the brain in fundamental and long-lasting ways!



**Voluntary
Drug Use**



**Compulsive
Drug Use
(Addiction)**



**Addiction is, Fundamentally,
A Brain Disease**

...BUT

It's Not Just A Brain Disease

HISTORICAL

- previous history
- expectation
- learning

PHYSIOLOGICAL

- genetics
- circadian rhythms
- disease states
- gender

DRUGS

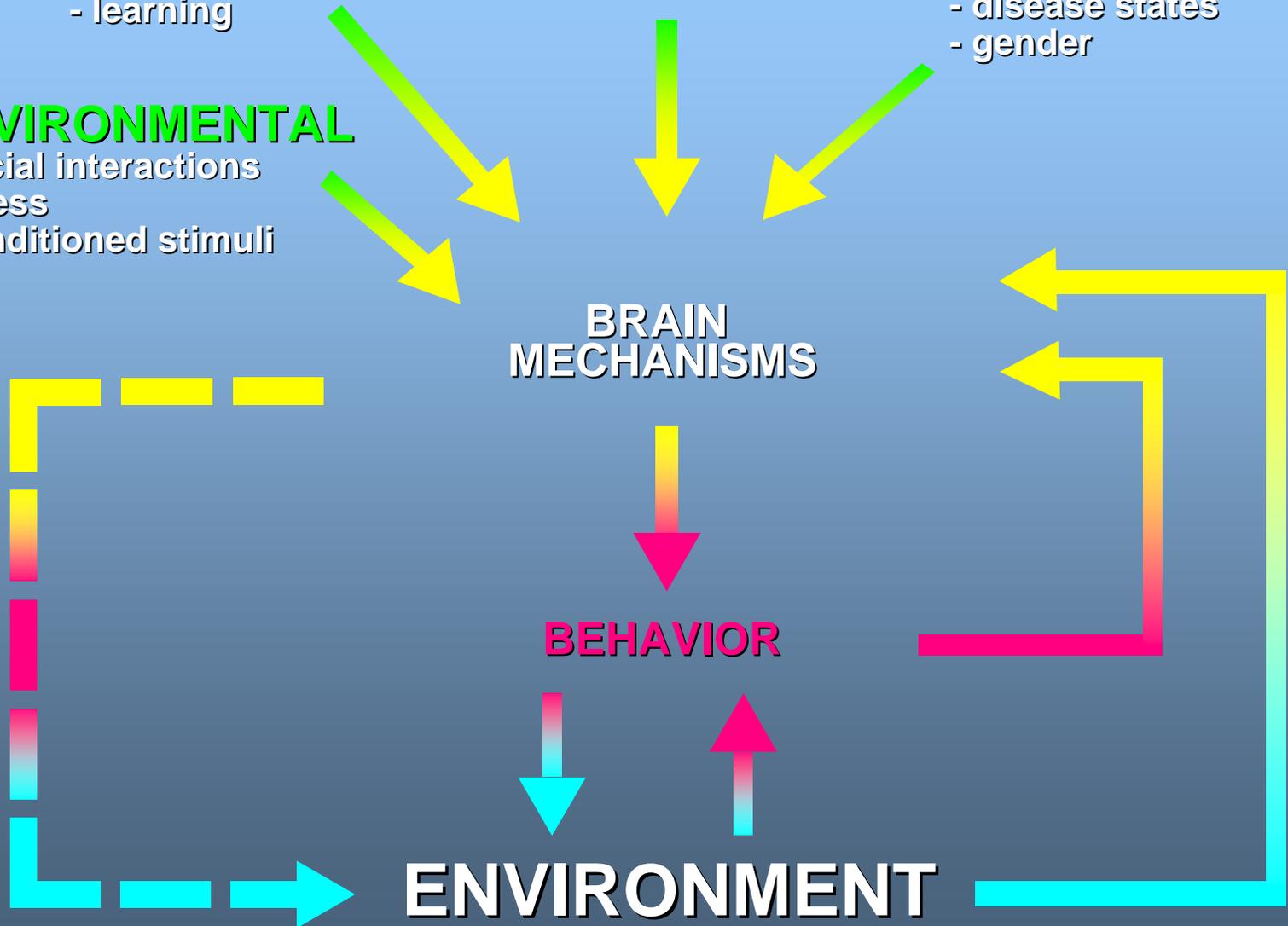
ENVIRONMENTAL

- social interactions
- stress
- conditioned stimuli

BRAIN MECHANISMS

BEHAVIOR

ENVIRONMENT





Questions?



Comments?

Post-assessment



Please respond to the post-assessment questions in your workbook.

(Your responses are strictly confidential.)



Thank you for your time!

End of Workshop 1

Volume C, Module 1, Workshop 2: **Alcohol & Benzodiazepines; Medical Issues, Detoxification Approaches, Pharmacotherapies**



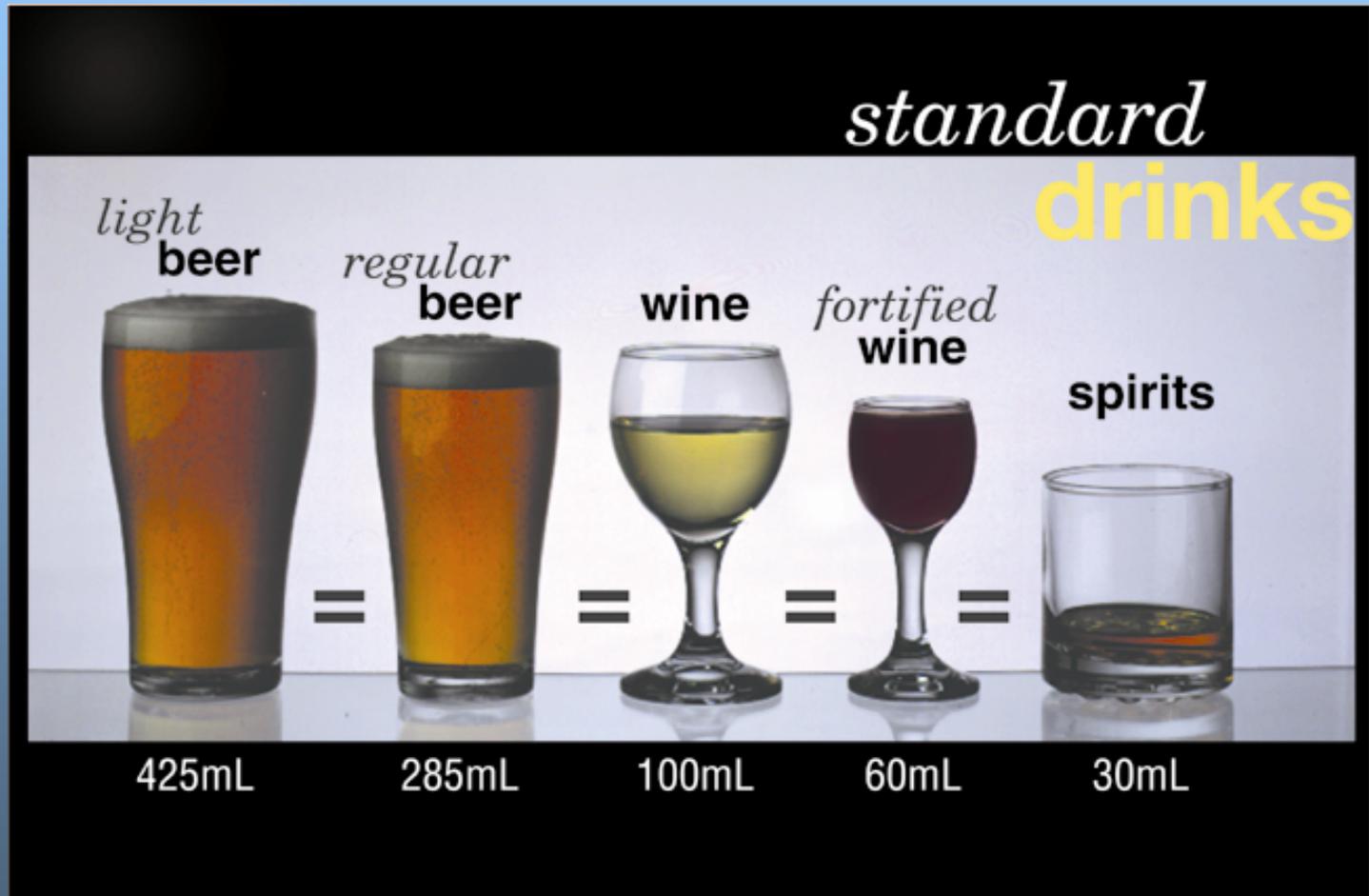
Training objectives



At the end of this training you know:

1. Acute and chronic effects of alcohol and benzodiazepines, the medical and psychiatric dangers associated with intoxication, overdose, withdrawal, and interactions with other substances
2. Treatment protocols to treat intoxication and overdose
3. Withdrawal approaches and protocols
4. Necessary treatments following detoxification
5. Proper setting and support services needed to properly conduct withdrawal treatments

Alcohol



Acute alcohol-related harms

Physical injury and psychological harms and death arise from:

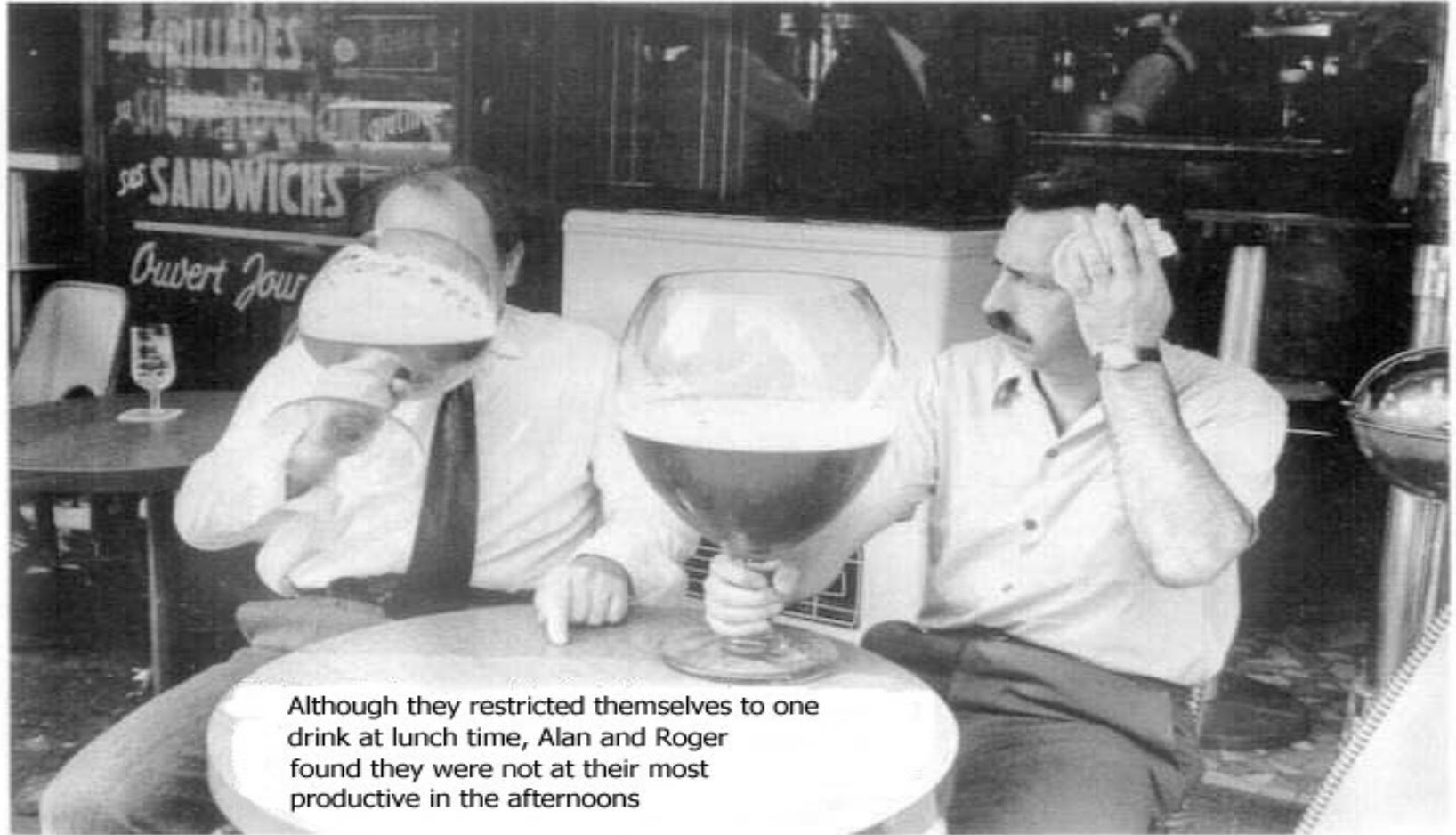
- | | | |
|---|---|--|
| <ul style="list-style-type: none">➤ Falls➤ Physical assaults➤ Sexual assaults➤ Domestic violence➤ Traffic accidents➤ Occupational & machinery injuries | <ul style="list-style-type: none">➤ Fires➤ Drowning➤ Child abuse➤ Unprotected sex leading to STDs and HIV➤ Overdose | <ul style="list-style-type: none">➤ Comorbidity➤ Dehydration➤ Sleep disturbances➤ Raised blood pressure➤ Shortness of breath |
|---|---|--|

Alcohol



- Still the most popular “drug”
 - In some societies over 80% of population drinks
- 8% drink daily, peak in males +60 yrs (23%).
40% drink weekly.
- At-risk drinking now defined as:
 - risks of harm in the long term (chronic harm)
 - risks of harm in the short term (acute harm)

A standard drink

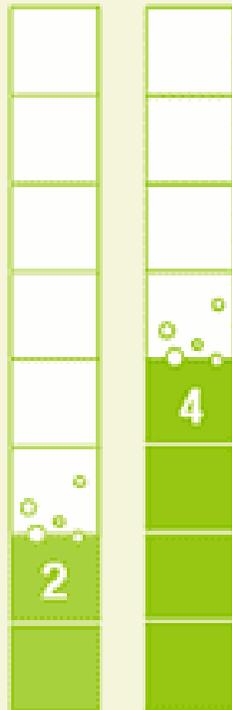


Although they restricted themselves to one drink at lunch time, Alan and Roger found they were not at their most productive in the afternoons

Risky drinking levels (for chronic harm)

Low-Risk
Standard Drinks

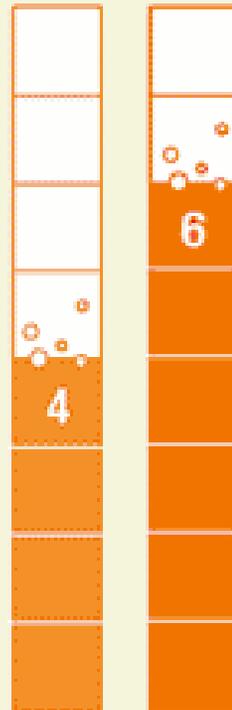
WOMEN **MEN**



Average 2 per day Average 4 per day

Risky
Standard Drinks

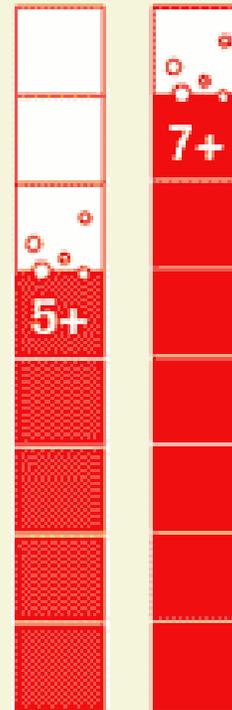
WOMEN **MEN**



3 - 4 per day 5 - 6 per day

High-Risk
Standard Drinks

WOMEN **MEN**



5+ per day 7+ per day

Alcohol-induced memory loss



- Teenagers (28.4%) were most likely to have a memory loss incident following drinking:
 - 4.4% reported “blackouts” occurring on weekly basis
 - 10.9% reported “blackouts” on a monthly basis
 - Memory loss occurred after drinking for:
 - 12% male drinkers aged > 40 years
 - 7% female drinkers aged > 40 years
 - 20% - 30% of all other age groups
-

Predisposing factors for high-risk drinking

- Family history of alcohol problems
 - Childhood problem behaviours related to impulse control
 - Poor coping responses in the face of stressful life events
 - Depression, divorce, or separation
 - Drinking partner
 - Working in a male-dominated environment
-

Concurrent mental health problems

Alcohol may:

- **exacerbate existing mental health problems**
 - **interact with prescribed medications**
 - **reduce or exacerbate the effect of certain medications**
 - **reduce patient compliance with treatment regimens**
-

Women and alcohol

Women are more susceptible to the effects of alcohol due to:

- smaller physical size
- decreased blood volume
- lower body water to fat ratio
- reduced ADH activity in gastric mucosa (hence reduced stomach metabolism of alcohol).



Resulting in:

- earlier development of organ damage
 - increased risk of intoxication related harms; e.g., assault, injury.
-

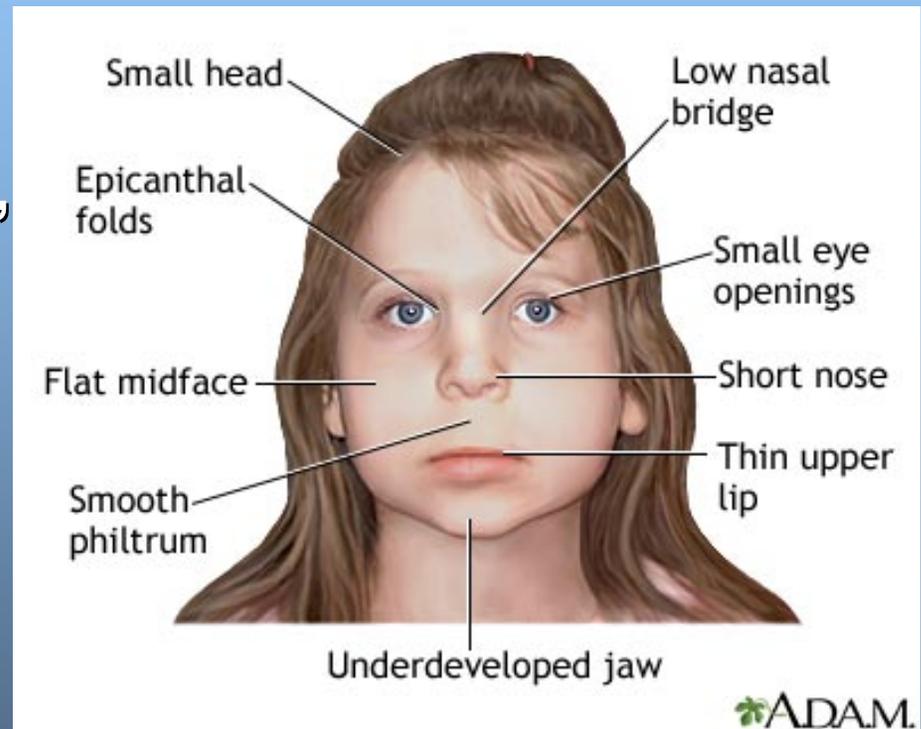
Fetal Alcohol Syndrome (FAS)

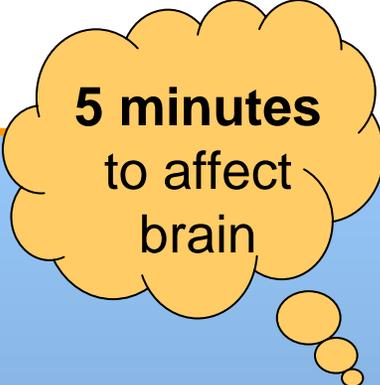
Increasing prevalence of risky drinking by young women has raised concerns about fetal alcohol syndrome / effects.



FAS Diagnosis

1. Prenatal or postnatal growth retardation
2. Brain dysfunction (intellectual retardation, poor muscle tone, irritability)
3. Facial dysmorphism
 - Microcephaly
 - Microphthalmia (smallness of the eye)
 - Thin upper lip



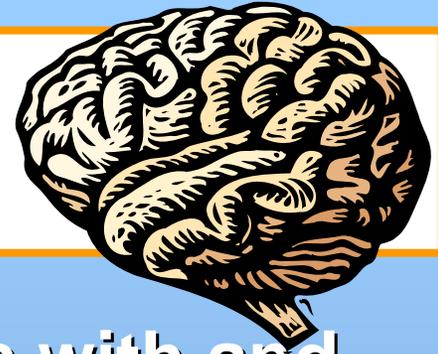


5 minutes
to affect
brain

2% excreted
unchanged in
sweat, breath,
& urine

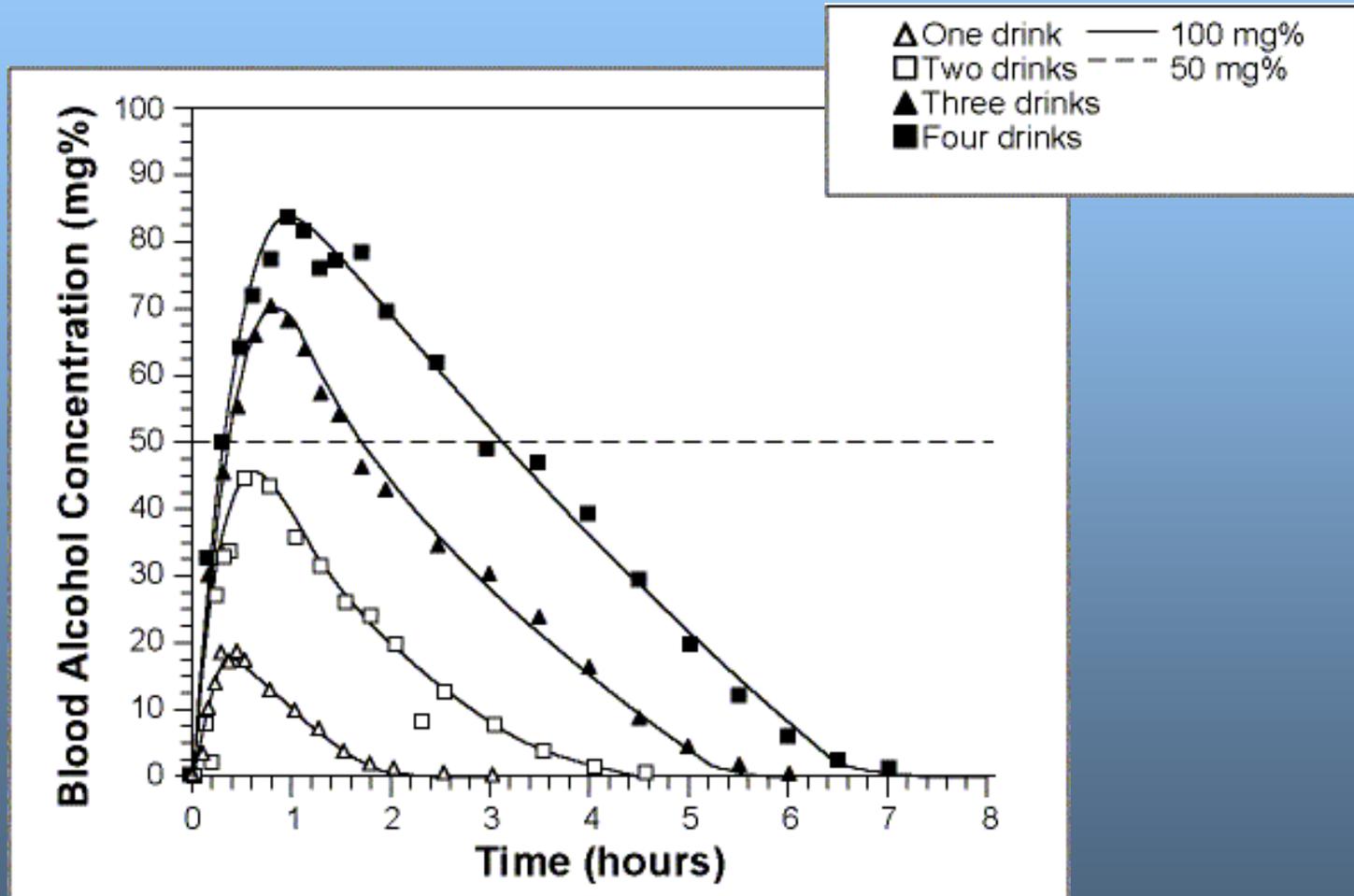
- *Rapidly absorbed* into blood by stomach (20%) and small intestine (80%)
- *Metabolised* by liver (95% – 99%)
alcohol → acetaldehyde → acetic acid & H₂O → CO₂
- *Distributed* in body fluids (not fat)
- 1 standard drink per hour raises BAC by about 0.01–0.03 g%.

Alcohol: Effects on the brain



- No single receptor. Alcohol interacts with and alters function of many different cellular components.
 - Primary targets are GABA, NMDA glutamate, serotonin, and ATP receptors
 - Stimulates dopamine and opioid systems
 - Effects of chronic consumption are opposite to acute because of homeostatic compensation
-

Alcohol Metabolism



Effects of alcohol intoxication

.01-.02	Clearing of head
.02-.05	Mild throbbing rear of head, slightly dizzy, talkative, euphoria, confidence, clumsy, flippant remarks
.06-1.0	↓ inhibitions, ↑ talkativeness, ↓ motor co-ord, ↑ pulse, stagger, loud singing!
0.2-0.3	Poor judgement, nausea, vomiting
0.3-0.4	Blackout, memory loss, emotionally labile
0.4+	Stupor, breathing reflex threatened, deep anaesthesia, death

Types of problems

Intoxication

Regular Use

Dependence

Withdrawal

Craving

Obsessive

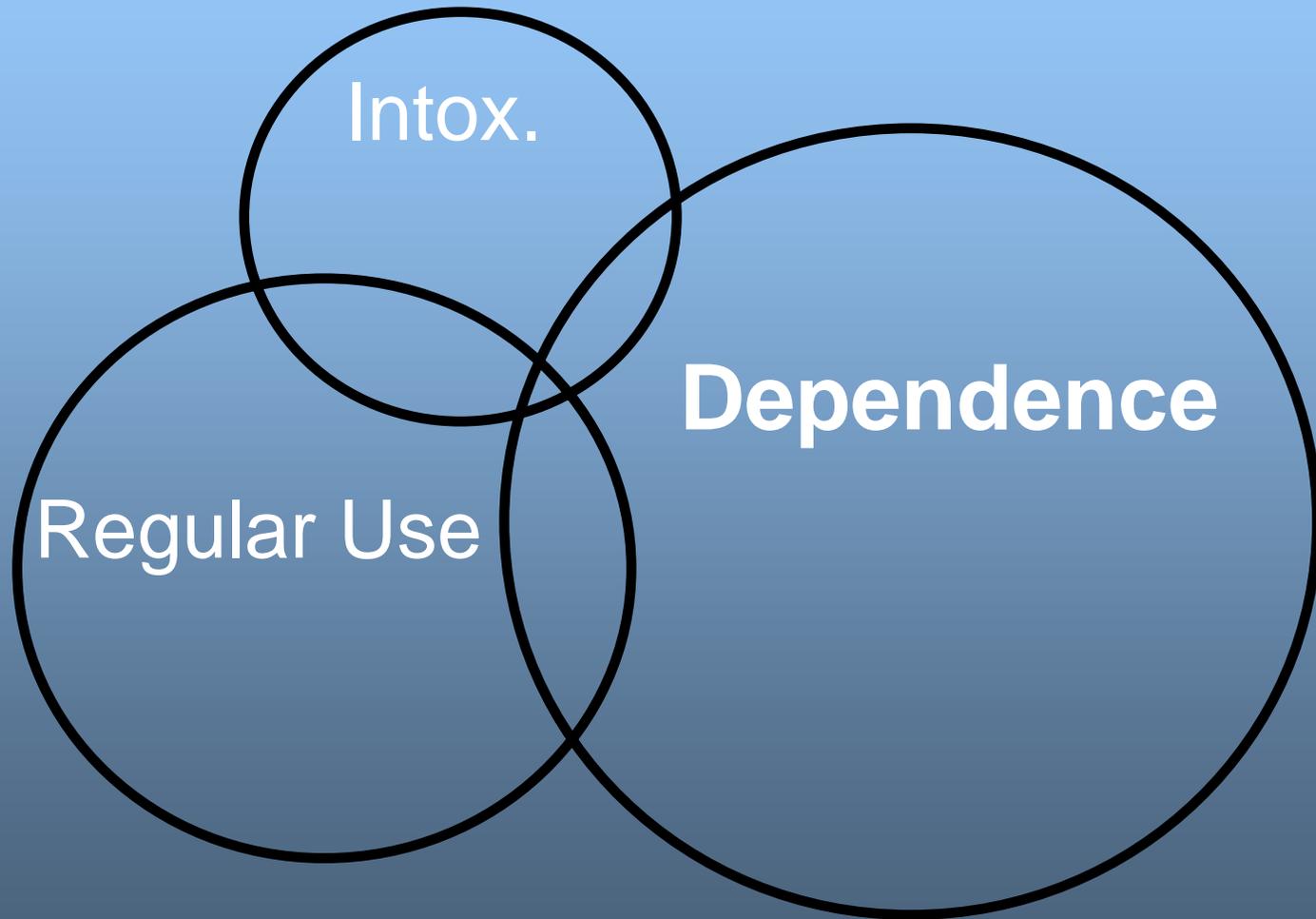
Cognitive

Conflict

Loss of

Control

Types of problems: Clinical samples



Binge drinking



Binge drinking can lead to:

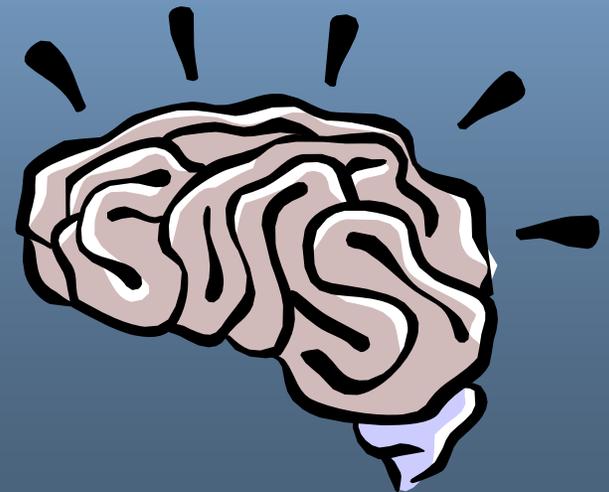
- **increased risk taking**
 - **poor judgement / decision making**
 - **Misadventure / accidents**
 - **increased risky sexual behaviour**
 - **increased violence**
 - **suicide**
-

Harms associated with high-risk alcohol use

- **Hypertension, CVA**
 - **Cardiomyopathy**
 - **Peripheral neuropathy**
 - **Impotence**
 - **Cirrhosis and hepatic or bowel carcinomas**
 - **Cancer of lips, mouth, throat, and esophagus**
 - **Cancer of breast**
 - **Fetal alcohol syndrome**
-

Alcohol-related brain injury

- Cognitive impairment may result from consumption levels of >70 grams per day
- Thiamine deficiency leads to:
 - Wernicke's encephalopathy
 - Korsakoff's psychosis
- Frontal lobe syndrome
- Cerebellar degeneration
- Trauma



Interventions and treatment for alcohol-related problems

- Screening and assessment → individualised interventions
 - Brief intervention and harm reduction strategies
 - Withdrawal management
 - Relapse prevention / goal-setting strategies
 - Controlled drinking programs
 - Residential programs
 - Self-help groups
-

Brief Intervention

Consider the patient's:

- perspective on drinking
- attitudes towards drinking goals
- significant others
- short-term objectives

Provide:

- information on standard drinks, risks, and risk levels
 - encouragement to identify positive alternatives to drinking
 - self-help manuals
 - follow-up session
-

Two steps towards alcohol brief intervention (BI)

1. Screening

- For example, the alcohol AUDIT, a 10-item questionnaire

2. Intervention

- Information
 - Brief counselling
 - Advice
 - Referral (if required)
-

AUDIT – The **FLAGS** approach



After administering the AUDIT, use
“**FLAGS**”:

- **F**eedback results
 - **L**isten to patient concerns
 - Provide **A**lcohol education and information
 - **G**oals of treatment – identify and plan
 - **S**trategies discussed and implemented
-

Harm-minimising strategies

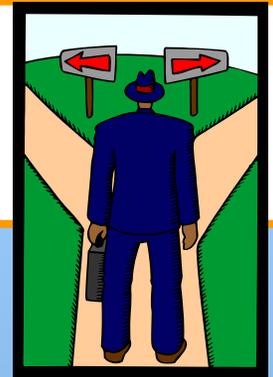
Benefits of cutting down or cutting out:

- save money
- be less depressed
- lose weight
- less hassles for family
- have more energy
- sleep better
- better physical shape

Reduce the risk of:

- liver disease
- cancer
- brain damage
- high blood pressure
- accidents
- injury
- legal problems

Choosing a treatment option



Severity

No major lifestyle disruptions, not severely dependent

Major lifestyle disruptions, significant dependence

Goal

Reducing consumption /controlled (or even Abstinence)

Abstinence

Treatment options

For example:

- outpatient counselling
- group or individual work (skills training, relapse prevention)
- marital and family therapy
- loss and grief counselling
- self-help / support groups

Above options plus:

- withdrawal management
- pharmacotherapy
- residential rehabilitation

Withdrawal

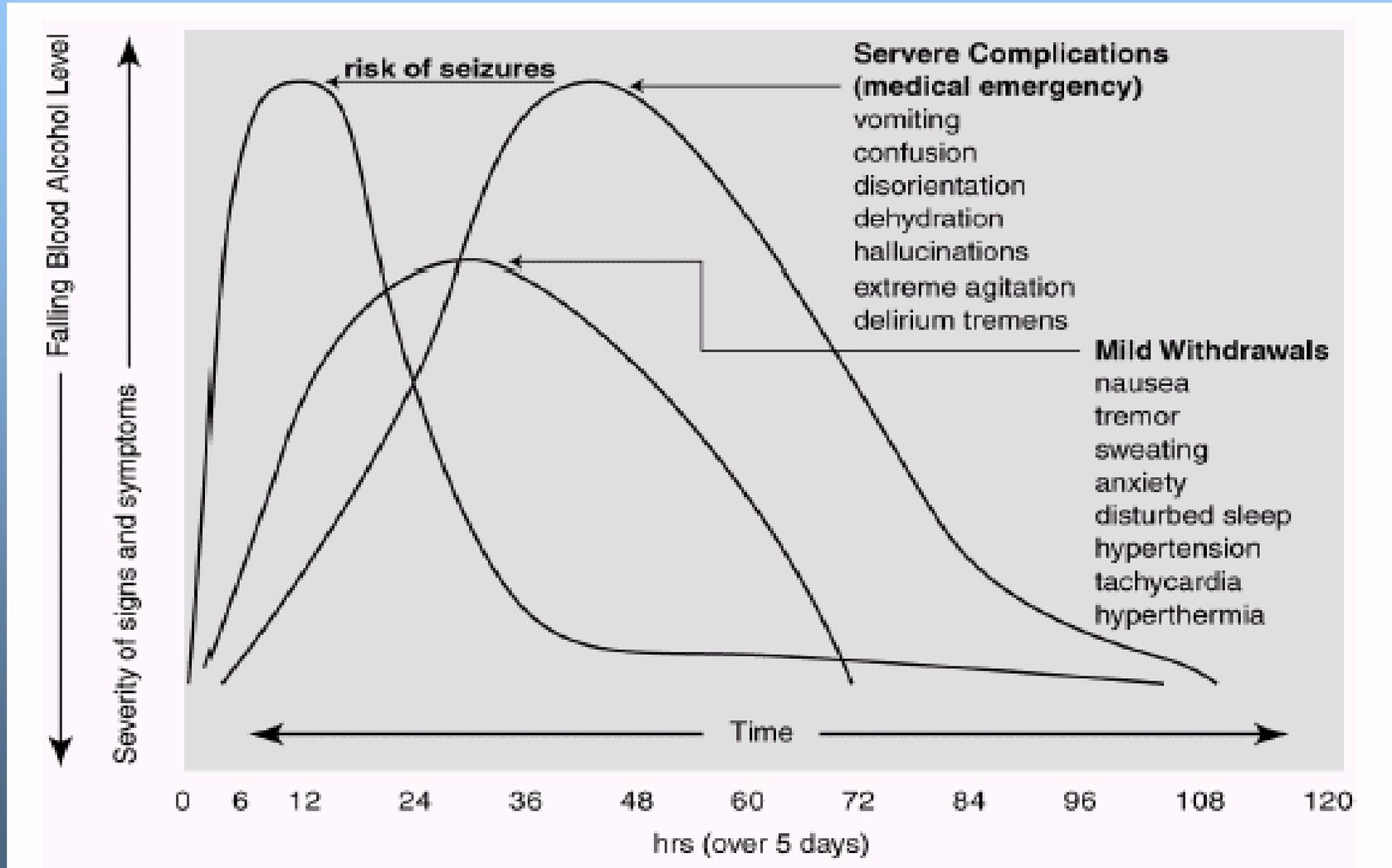
Usually occurs 6–24 hours after last drink:

- Tremor
- anxiety and agitation
- Sweating
- nausea and vomiting
- Headache
- sensory disturbances
hallucinations

Severity depends on:

- pattern, quantity and duration of use
- previous withdrawal history
- patient expectations
- physical and psychological wellbeing of the patient (illness or injury)
- other drug use/dependence
- the setting in which withdrawal takes place

Progress of Alcohol Withdrawal from Time of Last Drink



(Source: deCrespigny & Cusack (2003))

Adapted from NSW Health Detoxification Clinical Practice Guidelines (2000–2003))

Treatment of alcohol withdrawal symptoms

Medications for Symptomatic Treatment

- Diazepam
- Thiamine & multivitamins
- Antiemetic
- Analgesia (e.g., paracetamol)
- Antidiarrhoeal



Post-withdrawal management

Treatment options:

- retain in treatment, ongoing management
- seek referral

Considerations:

- patient's wants (abstinence or reduced consumption, remaining your patient)
- severity of problems

Pharmacotherapies:

- acamprosate
 - naltrexone
 - disulfiram
-

Naltrexone and Acamprosate

- Effective.
 - Work well with variety of supportive treatments, e.g., brief intervention, CBT, supportive group therapy.
 - Start following alcohol withdrawal. Proven efficacy where goal is abstinence, uncertain with goal of moderation.
 - No contraindication while person is still drinking, although efficacy uncertain.
 - Generally safe and well tolerated.
-

Clinical guidelines



Naltrexone 50 mg daily:

- indicated especially where strong craving for alcohol after a priming dose
- ↓ likelihood of lapse progressing to relapse
- LFTs < x3 above normal
- side effects: nausea in the first few days

Acamprosate 600 mg (2 tabs) tds:

- indicated especially when susceptible to drinking cues or drinking triggered by withdrawal symptoms
- low potential for drug interactions
- need normal renal function
- side effects: diarrhoea, headache, nausea, itch

Disulfiram

- Acetaldehyde dehydrogenase inhibitor – 200 mg daily
 - → unpleasant reaction with alcohol ingestion (depending on dose)
 - Indications: alcohol dependence + goal of abstinence + need for external aid to abstinence
 - Controlled trials: ↑ abstinence rate in first 3–6 months
 - Best results with supervised ingestion & contingency management strategies
 - Caution when using with patients who have significant symptoms of depression
-

Benzodiazepines

***“Benzodiazepines:
the opium of the
masses”***

Benzodiazepines: History

- 1950s** Invented by Swiss chemists who identified its sedative effects
- 1950s–60s** Chlordiazepoxide (Librium) marketed as a safer alternative to barbiturates; along with newer benzodiazepines (BZDs), promoted as having no dependence-inducing properties!
- 1970s–80s** BZDs most commonly prescribed drug class in the world
- 1990s on** Some decline in the number of prescriptions due to problems related to dependence and reduced therapeutic value. Generally safer than barbiturates; problems are with longer term and polydrug use
- 1998** 8.89 million prescriptions dispensed
-

General medical / psychiatric indications for benzodiazepine use

- **Anxiolytic – chronic / phobic anxiety & panic attacks**
 - **Sedative and hypnotic – sleep disturbance & anaesthesia / premedication**
 - **Anticonvulsant – status epilepticus, myoclonic & photic epilepsy**
 - **Muscle relaxant – muscle spasm / spasticity**
 - **Alcohol withdrawal**
-

Exercise: Case study

After the recent and unexpected death of her husband from an MI, Shirley, aged 62, presented for you to check her cardiac state as she fears a similar fate to her husband's.

She is afraid to go out alone, and she fears going to sleep as she is scared she will not wake up. She experiences occasional non-radiating chest pain. She has been taking sleeping tablets for several years and finds that they are now no longer working.

What would be an appropriate treatment option and plan for Shirley?

Patterns of use

- BZDs are one of the most prescribed drugs
 - 4% of all prescriptions from general practitioners are for benzodiazepines (BZDs)
 - Predictors for BZD prescription include:
 - being female
 - being elderly
 - being an established patient
 - attending a busy doctor, or a doctor in inner urban area
 - Over 40% of prescriptions given to people ≥ 70 years old
 - Night time use tends to increase with age
 - 58% of current users report daily use for ≥ 6 months
-

BZDs and long-term use

- Long-term use is common and associated with:
 - altered use patterns (from nighttime to daytime use)
 - excessive sedation
 - cognitive impairment
 - increased risk of accidents
 - adverse sleep effects
 - dependence and withdrawal (even at therapeutic doses)
 - BZDs have an additive effect with alcohol / other CNS depressants, increasing the risk of harm
 - BZDs have limited long-term efficacy
-

BZD and illicit drug use

- Illicit BZD use is usually oral, although around 5% are likely to inject (usually males)
 - Often 2nd drug of choice for illicit drug users, as BZDs assist withdrawal from opioids, stimulants, and alcohol
 - Estimated around 70% of people using ≥ 50 mg per day are polydrug users, who tend to:
 - be younger
 - have higher daily doses and higher lifetime exposure
 - use in combination with other CNS depressants to increase intoxication
 - prefer fast-acting BZDs (diazepam, flunitrazepam)
 - may convert form to enable injection
-

Benzodiazepines: Half-life

Benzodiazepines	Half-life (hrs) ² [active metabolite]	Appr. Equivalent Oral dosages (mg) ³
Alprazolam (Xanax, Xanor, Tafil)	6-12	0.5
Diazepam (Valium)	20-100 [36-200]	10
Clonazepam (Klonopin, Rivotril)	18-50	0.5

Pharmacodynamics

- Rapidly absorbed orally (slower rate of absorption IM)
 - Lipid soluble - differences determine rate of passage through blood brain barrier, i.e.,
 - ↑ lipophilic → ↑ speed of onset
 - Duration of action variable –
 - ↑ lipophilic → ↓ duration of action due to distribution in adipose tissue
-

Metabolism

- **Metabolised in the liver – mostly oxidative transformation prior to conjugation with glucuronic acid for urinary excretion**
 - **Elimination half life (drug & active metabolites) ranges from 8 – >60 hours, if short half life & no active metabolites, it rapidly attains steady state with minimal accumulation**
-

Neurotransmission

- Potentiate neurotransmission mediated by GABA (main inhibitory neurotransmitter), therefore neurons are more difficult to excite
- Specific neuronal membrane receptors for BZD closely associated with synaptic GABA receptors
- Receptors distributed through CNS, concentrated in reticular formation & limbic systems, also peripheral binding sites
- Further understanding of the effects of BZDs on receptor subgroups may lead to the development of non-sedating anxiolytic BZDs

Effects: Low dose

Short term:

- Sedation
- Anxiety relief
- Anticonvulsant properties
- Can usually attend daily business (though should not drive in first 2 weeks of treatment)

Other effects:

- Drowsiness, lethargy, fatigue
 - Impaired concentration, coordination, memory
 - Reduced ability to think and learn
 - Clumsiness, ataxia
 - Depression
 - Mood swings
 - Blurred vision and / or vertigo
 - Light-headedness
 - Nausea, constipation, dry mouth, loss of appetite
-

Effects: High dose

Short term

- Sedation
- Intoxication
- Drowsiness

Other effects

- Paradoxical excitement
- Mood swings
- Hostile and erratic behaviour

Toxicity

- **Performance deficits**
- **Emotional blunting**
- **Muscle weakness**
- **Sensitivity**
- **Potentiates other drugs**
- **Euphoria, hypomania**

Drug + alcohol interactions

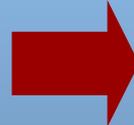


➤ CNS depressants,
e.g., benzodiazepines



Confusion, depressed
respiration

➤ Antipsychotics,
antidepressants



Decreased metabolism,
toxicity & CNS
depression

➤ Opioid analgesics,
antihistamines (some)



CNS depression

➤ Hypoglycaemics
(chlorpropamide),
metronidazole,
cephalosporins
(some)



Facial flushing,
headache

Overdose

- **Benzodiazepines are the most commonly implicated drug in overdose cases**
 - **On their own, unlikely to cause death despite causing respiratory depression**
 - **Serious / potentially fatal implications when used in combination with other CNS depressants**
-

Overdose response

Overdose depresses the conscious state and respiratory system. Airway management and assisted ventilation is necessary.

Flumazenil®

- a BZD antagonist which reverses BZD overdose, though contraindicated outside the emergency department
- precipitates seizures in:
 - chronic BZD users
 - pre-existing epilepsy
 - tricyclic antidepressant users
 - concurrent amphetamine or cocaine users

Assessment

- Review BZD medication
 - initial reasons for use
 - type of BZD, response to, and patterns of use
 - side-effects reported or observed
 - current / past withdrawal history and symptoms
 - Obtain physical history (concurrent medical problems)
 - Mental health history (e.g., depression)
 - Other drug (and alcohol / prescription drug) use
 - Discuss options
 - risks of continued and prolonged use
 - withdrawal potential / risks, management options
-

Dependence

Two groups of patients are especially likely to develop dependence.

- 1. Low dose dependence occurs among women and elderly prescribed low doses over long time periods (up to 40% experience withdrawal symptoms)**
 - 2. High dose dependence occurs among polydrug users**
-

Withdrawal

- 40% of people on long-term therapeutic BZD doses will experience withdrawal if abruptly ceased
 - Symptoms occur within 2 “short-acting” to 7 day “long-acting” forms
 - BZD withdrawal:
 - is not life-threatening & usually protracted
 - initial symptoms / problems re-emerge on cessation
 - issues usually more complicated on cessation
 - Seizures uncommon (unless high dose use or abrupt withdrawal, \pm alcohol use)
 - Two main groups of users:
 - prescribed (older women)
 - high level, erratic polydrug use
-

Withdrawal severity

Severity of withdrawal is dependent on:

- pattern and extent of use
(duration, quantity, type (half-life))
 - withdrawal experience
(prior symptoms, success, complications)
 - coexisting physical / mental health problems
-

3 Areas of BZD withdrawal

Anxiety and anxiety-related symptoms

- anxiety, panic attacks, hyperventilation, tremor
- sleep disturbance, muscle spasms, anorexia, weight loss
- visual disturbance, sweating
- dysphoria

Perceptual distortions

- hypersensitivity to stimuli
- abnormal body sensations
- depersonalisation/derealisation

Major events

- seizures (grand mal type)
 - precipitation of psychosis
-

Withdrawal management

- Obtain an accurate consumption history
 - Calculate diazepam equivalent and substitute. Reduce gradually over 6–8 weeks (or longer, e.g., 3–4 months)
 - Reduce dose by a fixed rate at weekly intervals (usually 10%–20% initially, then 5%–10% / week, or slower when dose at 15 mg or less).
 - Supervision of long-term BZD reductions (3-4 months)
 - Dose at regular times
 - Regularly review and titrate dose to match symptoms
 - If symptoms re-emerge, dose may be plateaued for 1–2 weeks, or increased before reduction resumed
 - Provide support, *not* pharmacological alternatives for conditions such as insomnia and anxiety.
-

Outpatient withdrawal protocol

- Consider outpatient withdrawal management:
 - if willing, committed, compliant, and has adequate social supports
 - if taking ≤ 50 mg diazepam equivalent or therapeutic doses
 - if no previous history of complicated withdrawal
 - if able to attend weekly reviews
 - Develop an individualised withdrawal plan considering:
 - psychosocial factors
 - coping skills
 - previous attempts
 - counselling / referral needs
-

Inpatient withdrawal protocol



Inpatient withdrawal management is necessary if the patient:

- is using ≥ 50 mg diazepam equivalent for >14 days
 - has a history of alcohol or other drug use or dependence
 - has concurrent medical or psychiatric problem
 - has a history of withdrawal seizures
 - if significant symptoms are predicted
 - is in an unstable social situation
 - has previous poor compliance / doubtful motivation
 - is in concurrent methadone stabilisation
-

Drug interactions

BZDs either potentiate / increase effects or interfere with metabolism or absorption of:

- alcohol
 - antidepressants and antihistamines
 - disulfiram, cimetidine, erythromycin
 - anticonvulsants
 - anticoagulants, oral diabetic agents
 - cisapride
-

Exercise: Case study

Meg, a 47-year-old woman, always has alcohol on her breath and frequently falls. She moved into the suburb a few months ago and is well known at the local liquor shop and hotel. She denied alcohol use until a recent fracture and hospital admission. Since her discharge, she has started drinking again, mostly spirits.

She presents to you late one afternoon seeking benzodiazepines.

As her doctor, how will you respond?

If her alcohol use continues, how can harm be reduced?

Thank you for your time!

End of Workshop 2



Questions?



Comments?

Workshop 3: Psychostimulants, Volatile Substances, and Cannabis: Medical Issues and Treatment Approaches

Treat  net

International network of drug dependence
treatment and rehabilitation resource centres



UNITED NATIONS
Office on Drugs and Crime

Training objectives



At the end of this training you will:

- Understand acute and chronic effects of psychostimulants, volatile substances, and cannabis and the medical and psychiatric dangers associated with intoxication, overdose, withdrawal, and interactions with other substances.
 - Know treatment protocols to treat intoxication and overdose
 - Know withdrawal approaches and protocols
 - Know about necessary treatments following detoxification
 - Know proper setting and support services needed to properly conduct treatments
-

Stimulants



Stimulants

Description: A group of synthetic and plant-derived drugs that increase alertness and arousal by stimulating the central nervous system. Although MDMA (ecstasy) has some hallucinogenic properties, it is often classified as a stimulant

Medical Uses: Short-term treatment of obesity, narcolepsy, and hyperactivity in children

Method of Use: Intravenous, intranasal, oral, smoking

Types of stimulant drugs

Amphetamine Type Stimulants (ATS)

- Amphetamine
 - Dexamphetamine
 - Methylphenidate
 - Methamphetamine (“speed,” “crystal,” “ice,” “yaba,” “shabu”)
-

Types of stimulant drugs

Cocaine Products

- Cocaine powder (generally sniffed, injected, smoked on foil)
- “Crack” (smoked)



Types of stimulant drugs

Methyldioxymethamphetamine (MDMA)

(A synthetic drug with psychostimulant and hallucinogenic properties)

- Commonly referred to as *ecstasy*. Sold in tablet form
 - Estimated to be 10 million users worldwide
-

Scope of the ATS problem worldwide

- According to surveys and estimates by WHO and UNODC, ATS is the most widely used category of illicit drugs in the world except for cannabis.
- Worldwide, there are an estimated 26 million or more regular users of amphetamine, methamphetamine, or ecstasy, as compared to approximately 16 million heroin users and 14 million cocaine users.
- Methamphetamine accounts for over 90% of the ATS used worldwide



Methamphetamine vs. cocaine

- Cocaine half-life: 2 hours
 - Methamphetamine half-life: 10 hours
 - Cocaine paranoia: 4 - 8 hours following drug cessation
 - Methamphetamine paranoia: 7-14 days
 - Methamphetamine psychosis - May require medication / hospitalisation and may not be reversible
 - Neurotoxicity: Appears to be more profound with amphetamine-like substances
-

Acute stimulant effects

Psychological

- Increased energy
 - Increased clarity
 - Increased competence
 - Heightened feelings of sexuality
 - Increased sociability
 - Improved mood
 - Powerful rush of euphoria - freebase and intravenous only
-

Acute stimulant effects

Physical

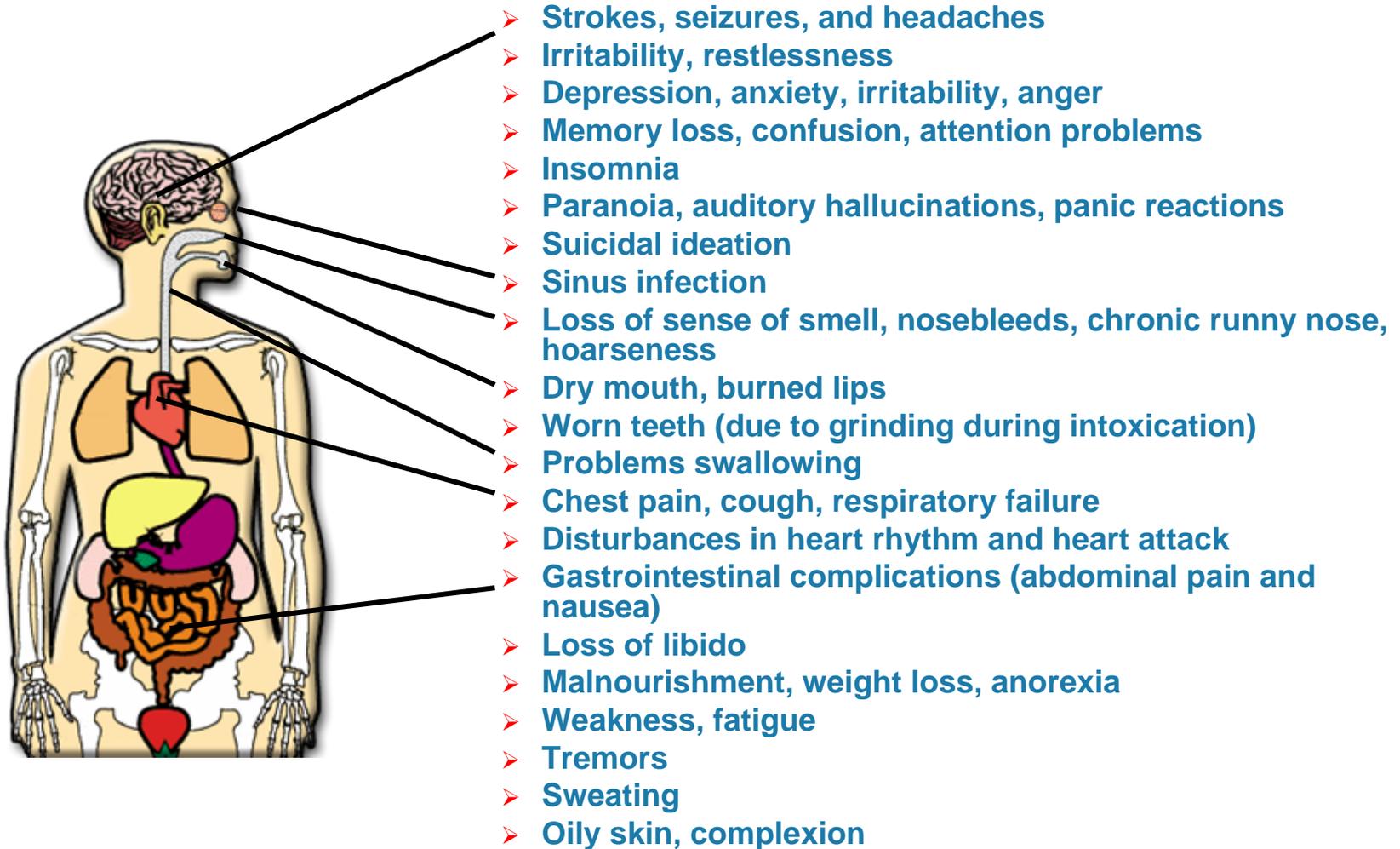
- Increased heart rate
 - Increased pupil size
 - Increased body temperature
 - Increased respiration
 - Cardiac arrhythmias
 - Constriction of small blood vessels
 - Decreased appetite
 - Decreased need for sleep
-

Chronic stimulant effects

Physical

- Weight loss / anorexia
 - Sleep deprivation
 - Respiratory system disease
 - Cardiovascular disease
 - Headaches
 - Severe dental disease
 - Needle marks and abscesses - intravenous only
 - Seizures
-

Long-term effects of stimulants







Meth use leads to severe tooth decay



“Meth Mouth”

Source: *The New York Times*, June 11, 2005

Prenatal meth exposure



Preliminary findings on infants exposed prenatally to methamphetamine (MA) and nonexposed infants suggest...

- Prenatal exposure to MA is associated with an increase in SGA (small for gestational size).
- Neurobehavioural deficits at birth were identified in NNNS (Neonatal Intensive Care Unit Network Neurobehavioral Scale) neurobehaviour, including dose response relationships and acoustical analysis of the infant's cry.

(Source: Lester et al., 2005)

Chronic stimulant effects

Psychological

- Severe anxiety
 - Paranoia
 - Psychosis
 - Irritability
 - Confusion
 - Desire to isolate
 - Memory impairment
 - Inability to concentrate
 - Loss of control
 - Aggressiveness
-

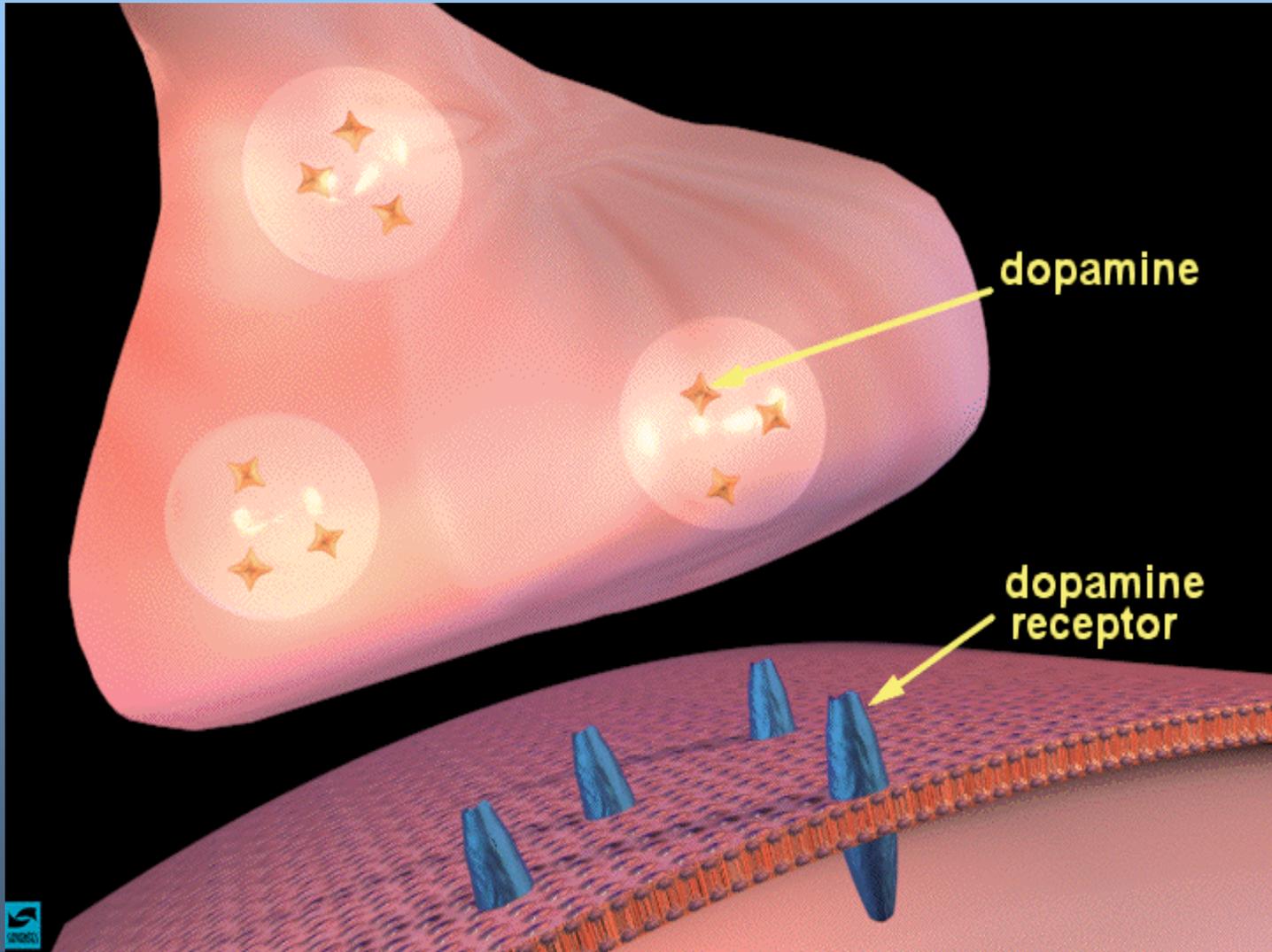
Methamphetamine: Psychiatric consequences

- **Paranoid reactions**
 - **Protracted memory impairment**
 - **Depressive/dysthymic reactions**
 - **Hallucinations**
 - **Psychotic reactions**
 - **Panic disorders**
 - **Rapid addiction**
-

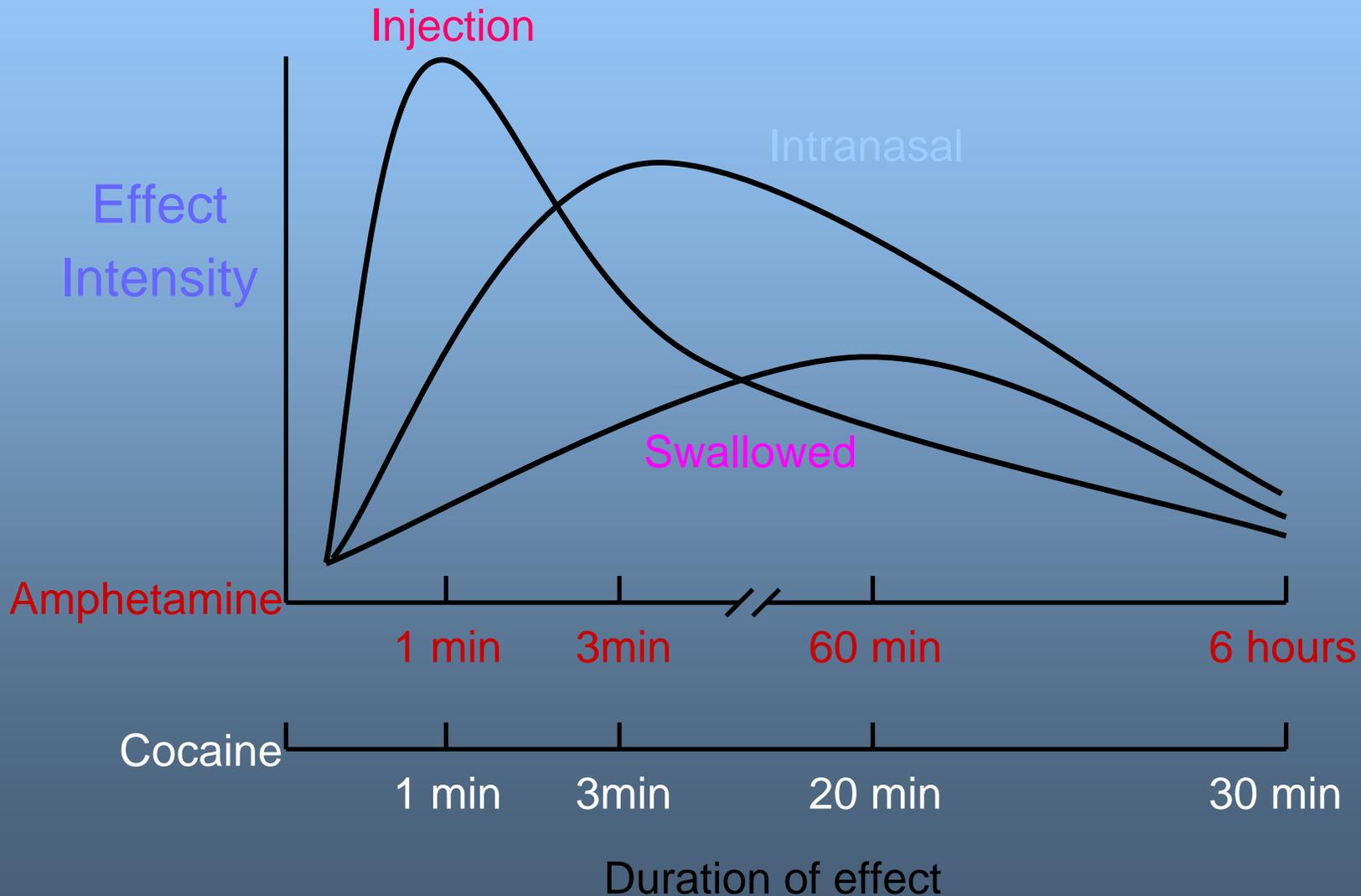
Stimulant withdrawal symptoms

- Depression
 - Difficulty concentrating
 - Increased need for sleep / insomnia
 - Memory dysfunction
 - Anxiety
 - Decreased sex drive
 - Low energy
 - Irritability
 - Headache
 - Craving
-

Synaptic activity



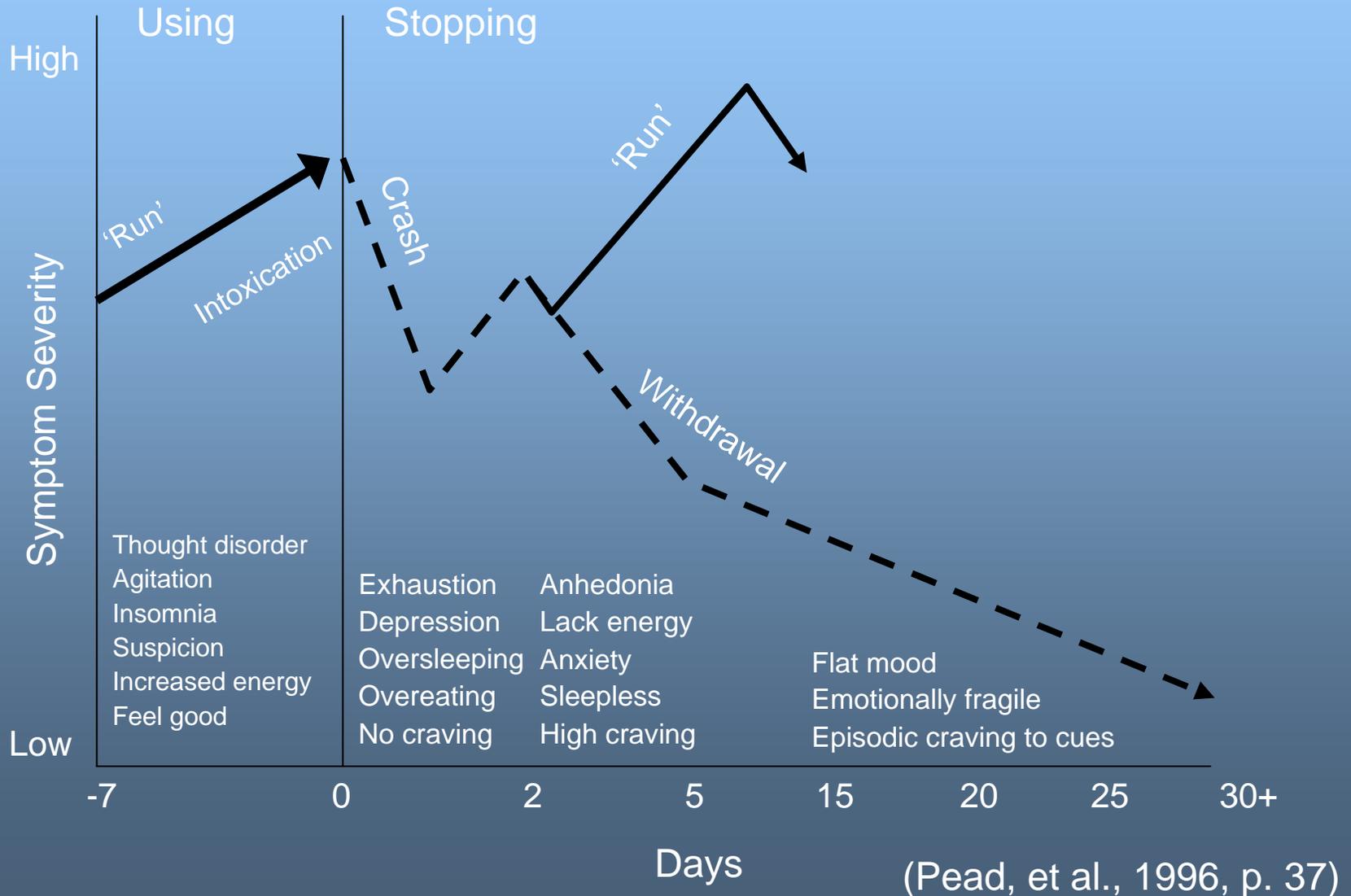
Meth / Amphetamine Effects: Onset and Duration



Amphetamine Effects

Mild	Moderate	Toxic
<p>Feel good Alert Energy Confidence</p>	<p>Feel great Increased libido Increased stamina No need for sleep</p>	<p>Extreme agitation Incoherence Increased temperature Dehydration Thought disorder Violent aggression</p>
<p>Sleeplessness Reduced appetite Dry mouth</p>	<p>Crash Suspicion Headache Teeth grinding Anxiety</p>	<p>Stroke Heart attack</p>

'Typical' Pattern of Use



Assessment points



- Occupation
 - Age
 - Social activities
 - Alcohol and drug (AOD) use history
 - patterns of use, drug type, route, other drug use
 - Physical health (e.g., stability of weight)
 - Mental health (emotional lability, psychosis/paranoia)
 - Current level of intoxication / evidence of withdrawal
 - Laboratory investigations
-

Management of toxic reactions

Priorities are:

- maintain airway, circulation, breathing
- control elevated body temperature (hydration, cold water, ice)
- control seizures (IV diazepam)
- manage psychotic symptoms (antipsychotics)
- reassurance, support, comfort, minimal stimulation

Treatment depends on patient's condition on presentation.

Activity: Case study

Rory, a 24-year-old student, presents with persistent headache, lethargy, and unexplained weight loss. He is “burning the candle at both ends,” working in a bar and studying, and states that “life is pretty hectic” at present. Speed helps him get things done.

Describe a brief intervention for Rory.

Psychostimulant Withdrawal

Crash (Days 1–3)	Peak symptoms (Days 2–10)	Residual symptoms (from 1–8 weeks)
<ul style="list-style-type: none">• exhaustion• depression• oversleeping• no cravings	<ul style="list-style-type: none">• dysphoria• lack energy• increased appetite• generalised aches and pains• re-emergence of mild psychotic features, including:<ul style="list-style-type: none">misperceptionsparanoid ideationhallucinationsanxiety.• sleeplessness• high craving	<ul style="list-style-type: none">• episodic craving• insomnia <p>Fluctuating:</p> <ul style="list-style-type: none">• irritability• agitation• restlessness• dysphoria• lethargy• amotivation

Withdrawal treatment

Immediate withdrawal treatment

- setting (outpatient or inpatient)
- supportive environment, information, and reassurance
- provide ongoing monitoring
- plan long-term management strategies

Planning for prolonged withdrawal

- anticipate it will be prolonged (i.e., affecting sleep, mood, cravings)
 - plan for lapse and relapse
-

Pharmacotherapies for psychostimulant withdrawal



- Aim to decrease discomfort
- Benzodiazepines
 - assist sleep or reduce anxiety and agitation
 - avoid long-term prescribing
- Antipsychotics and Antidepressants
 - available research shows limited efficacy

Promising pharmacotherapies?

- Newton, T. et al (Biological Psychiatry, Dec, 2005) Bupropion reduces craving and reinforcing effects of methamphetamine in a laboratory self-administration study.
 - Elkashef, A. et al (Neuropsychopharmacology, 2007) Bupropion reduces meth use in an outpatient trial, with particularly strong effect with less severe users.
 - Tiihonen, J. et al (recently completed; reported at the ACNP methamphetamine satellite meeting in Kona, Hawaii) Methylphenidate SR (sustained release) has shown promise in a recent Finnish study with very heavy amphetamine injectors.
-

Low threshold treatment services for MSM methamphetamine users

- **Street outreach and field workers in clubs and bath houses**
 - **Needle exchange**
 - **Drop-in centres for food, medical services**
 - **Housing for homeless methamphetamine users**
 - **HIV risk reduction groups employing peer and professional counselling**
 - **No empirical evidence at this point**
-

Activity: Case study

Kylie, a 33-year-old lawyer, recently discovered she was pregnant. She has an active work and social life, and consequently, tends to eat poorly. The pregnancy was unplanned. She is concerned about the health of her baby and her lifestyle that precludes regular eating habits.

How would you incorporate an AOD history into your consultation?

What triggers may lead you to suspect psychostimulant use?

Cocaine

- Alkaloid from plant leaf of *Erythroxylon coca*
- Known as *coke*, *charlie*, *snow*, *okey doke*
- Sold in '*lines*'
- Central nervous system stimulant with local anaesthetic actions
- Also stimulates the sympathetic nervous system
- Blocks reuptake of dopamine, noradrenaline, and serotonin



Cocaine



Crack



Crack in vials

Cocaine: Metabolism

- Rapid onset of action (2–8 minutes respectively)
 - Peak blood levels occur in 5–30 minutes
 - Action is brief:
 - half-life of 15–30 minutes if injected
 - half-life of up to 30 minutes if snorted
 - Metabolised by liver, 1%–2% excreted unchanged in urine
 - Inactive metabolites can be detected in:
 - blood or urine for 24–36 hours after use
 - hair for weeks to months after use
-

Cocaine: Acute and chronic effects

Very similar to those associated with methamphetamine. Since the half-life of cocaine is much shorter, in comparison to methamphetamine there is:

- Somewhat less severe neurotoxicity**
 - Somewhat lower frequency of drug-induced psychosis**
 - Somewhat shorter protracted withdrawal symptoms**
-

Cocaine: Symptoms of withdrawal

- Dysphoria (rather than depression), which may persist (up to 10 weeks). Plus at least two of:
 - fatigue
 - insomnia / hypersomnia
 - psychomotor agitation
 - craving
 - increased appetite
 - vivid unpleasant dreams
 - Withdrawal tends to peak 2–4 days following cessation of use.
-

Cocaine pharmacotherapy



- Disulfiram has been shown to reduce cocaine use significantly in non-alcohol using cocaine-dependent individuals. However, further research is needed.
 - There is substantial use of other medications for “treating” short- and long-term effects of cocaine use. However, controlled research shows no evidence to support use of these medications.
-

Cocaine: Withdrawal management

- **Non-stimulating / non-threatening environment**
 - **Possible suicide precautions**
 - **To date, no effective pharmacotherapies for withdrawal management**
 - **Prescribed medications:**
 - **Short-term use of benzodiazepines (anxiety, agitation, promote sleep)**
-

Psychostimulant interventions

- Be non-judgemental, do not insist on abstinence
 - Engage and retain patient in treatment
 - Understand patient's treatment goals
 - Tailor intervention to suit patient, including level and intensity of referrals
 - Offer flexible service delivery, consistent with a patient's changing goals and needs
 - Provide psychosocial support
 - Address concurrent mental health needs, e.g., anxiety, bipolar, or attention deficit disorders are common with cocaine use.
-

Treatments for stimulant-use disorders with empirical support

- Cognitive-Behavioral Therapy (CBT)
- Community Reinforcement Approach
- Contingency Management
- 12-Step Facilitation
- Brief Cognitive Behavioral Therapy
- Matrix Model

All have demonstrated efficacy for the treatment of cocaine and / or methamphetamine dependence.

Volatile Substances

CRACK



Volatile substances



- Commonly referred to as ‘inhalants’, ‘solvents’, ‘solvent based products’
- Common terms include ‘chroming,’ ‘huffing,’ ‘sniffing,’ ‘bagging’
- Comprise a group of chemical compounds that change from a liquid or semi-solid to gaseous state when exposed to air
- Inhalation of the vapour through the mouth or nose produces a psychoactive effect (intoxication and euphoria).

What substances are used?

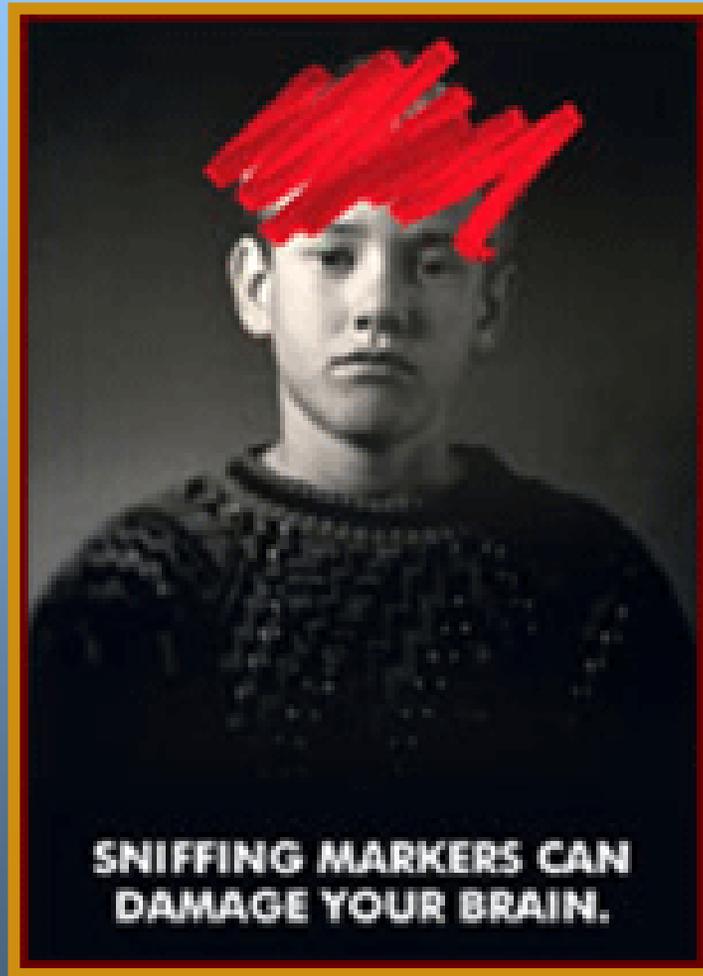
- Inhalants are found in hundreds of products at supermarkets, newsagencies, hardware stores, and industrial sites
- 4 categories of inhalants:
 - Solvents
 - Aerosols
 - Gases
 - Nitrites



Pharmacology

- High lipid solubility promotes rapid absorption from the lungs
 - Acute intoxication occurs after 3–5 minutes (10–15 breaths are sufficient)
 - Peak plasma concentration reached in 15–30 minutes
 - Half-life varies from hours to days
 - Metabolised in kidneys and liver
 - Accumulate in lipid rich organs (i.e., liver, brain)
 - Crosses placental barrier
-

Highest prevalence among 14- to 17-year-olds



Appeal of volatile substances

- Inexpensive
 - Readily available despite legislation precluding sale to minors
 - Can be packaged in small, discrete containers
 - Create both rapid intoxication and rapid resolution of intoxication (can use and still return home sober)
-

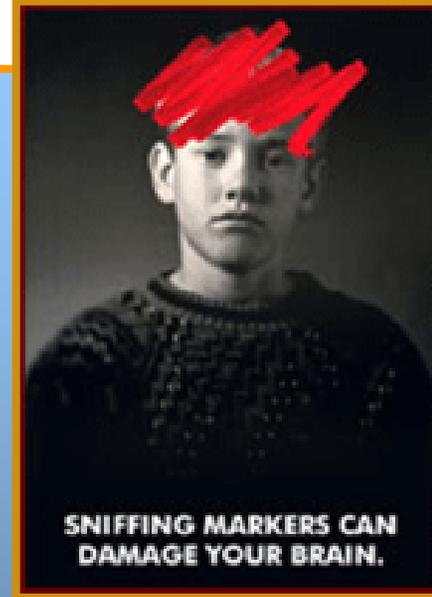
Who uses inhalants?

Lack of good epidemiological data, however data from Australia indicates:

- highest prevalence among 14- to 17-year-olds (c.f., older adults)
- a small percentage try, but most cease use after a few attempts
- primarily a short-term, experimental activity by young males (however, female use is increasing)
- recreational users tend to combine solvents and cannabis with ecstasy, speed, or LSD
- not restricted to Indigenous communities, but Indigenous youth (compared with non-Indigenous) tend to:
 - show greater habitual use
 - use more frequently
 - use over a longer period
 - use of solvents is of international concern

Why do youth use volatile substances?

- *“Because it’s fun and exciting”*
- *“I like the way it makes me feel – I feel drunk”*
- *“It takes away my bad feelings”*
- *“I wanted to be part of the gang”*
- *“My brothers were doing it so I wanted to try it”*
- *“Because I want to do something my parents don’t like”*
- *“Because it’s easy to get and I’m not allowed to get alcohol”*



Patterns and methods of use

3 major patterns of use:

- experimental / occasional
- social
- long-term dependent / chronic

Methods of use:

- sniffing
 - huffing
 - bagging
-

Cues for detecting recent use



- Red, watery eyes
 - Sneezing & coughing (URTI-like symptoms)
 - Chemical smell or odour on breath
 - Glue, solvent, or paint stains on clothing, fingers, nose, or mouth
 - Apparent intoxication / altered behaviour / risk taking
 - Incoherence, confusion
 - Poor coordination
 - Excessive sweating
 - Unusual spots, marks, rashes and sores around nose and mouth
 - Excessive nasal secretions, constantly sniffing
-

Volatile effects – short term

Desired effects

- **Euphoria**
- **Excitation**
- **Exhilaration**
- **Sense of invulnerability**
- **Disinhibition**

Negative acute/ short-term effects

- **Drowsiness**
- **'Flu-like' symptoms**
- **Nausea and vomiting**
- **Headaches**
- **Diarrhoea, abdominal pain**
- **Unpleasant breath**
- **Nosebleeds and sores**
- **Reckless behaviour**

Volatile effects – high doses

Effects at high doses

- Slurred speech
 - Poor coordination
 - Disorientation, confusion
 - Tremor
 - Headaches
 - Delusions
 - Visual distortions or hallucinations
 - Unpredictable behaviour, *then*:
 - ataxia
 - stupor
 - final stages (seizures, coma cardiopulmonary arrest, death)
-

Volatiles - overdoses

High Doses put user at risk for:

- Convulsions, seizures, coma
- Respiratory depression
- Cardiac arrhythmias

Injury or death can occur from:

- Risk-taking behavior (drowning, falls, etc.)
 - Suffocation
 - Aspiration of vomit
 - Burns, explosions
 - Poisoning, organ failure (chronic use)
 - Laryngeal spasm (Butane), respiratory arrest
 - Lead poisoning (gasoline / petrol)
-

Tolerance and dependence

- Tolerance develops rapidly with regular use
 - Psychological and physical dependence, while rare, may also occur
-

Withdrawal

- **Onset and duration**
 - not classified in DSM IV but features of possible “withdrawal syndrome” may commence 24-48 hours after cessation of use
 - **Withdrawal Symptoms**
 - sleep disturbances
 - tremor
 - irritability and depression
 - nausea
 - diaphoresis
 - fleeting illusions
 - **Treatment**
 - symptomatic
-

Problems with long-term use

Patients may present with a variety of symptoms as a consequence of long-term use, including:

- chronic headache
 - sinusitis, nosebleeds, increased nasal secretions
 - diminished cognitive function
 - ataxia
 - chronic coughing
 - chest pain or angina
 - tinnitus
 - extreme tiredness, weakness, dizziness
 - depression / anxiety
 - shortness of breath
 - indigestion
 - stomach ulcers
-

Complications from long-term use

CNS complications

- acute encephalopathy
- chronic neurological deficits
- memory, thinking
- hearing loss, and loss of sense of smell
- nystagmus
- motor impairment, especially secondary to lead poisoning
- peripheral nerve damage

Other systems

- *Renal* – nephrolithiasis, glomerulopathies
- *Hepatic* – reversible hepatotoxicity
- *Pulmonary* – e.g., pulmonary hypertension, acute respiratory distress
- *Cardiovascular* – e.g., VF, arrhythmias, acute cardiomyopathy
- *Haematological* – e.g., blood dyscrasias

Impact

Use of volatile substances (as with use of other psychoactive drugs) impacts not only personal health but also:

- families
 - workplace safety
 - community (e.g., anti-social behaviour)
-

Responding to intoxication

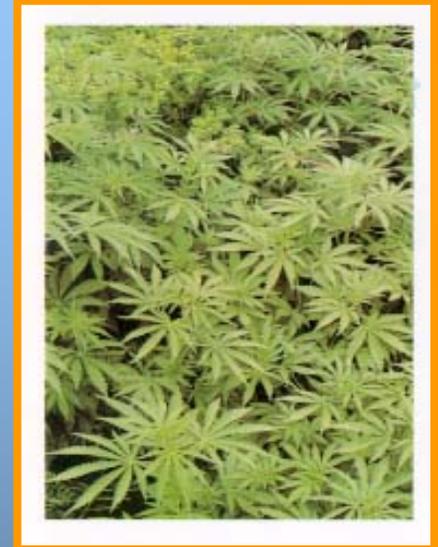
- Ensure fresh air
 - Be calm, and calming
 - Don't chase, argue, use force
 - Persuade to cease sniffing (if able to understand)
 - Take person to a safe environment
 - Don't attempt to counsel while intoxicated
 - Follow-up with parents
 - If drowsy or heavily intoxicated
 - consider the best environment for the individual and monitor physical and mental health
-

Interventions

- Brief intervention
- Harm reduction
- Counselling
- Group counselling
 - Family support and counselling
 - Be involved in developing community responses (e.g., Drug Action Teams)

Avoid lectures to school / youth groups – evidence suggests it may increase curiosity and level of use.

Cannabinoids



Marijuana



Hashish

Cannabis



- The most widely used illicit drug
- The drug most likely to be seen in general medical practise
- Generally an experimental or recreational drug, but the most common illicit drug of dependence
- Use is common among polydrug users
- 70% of all drug-related offences relate to cannabis

THC or delta-9-tetrahydrocannabinol is the active ingredient of cannabis

Case study

Mark is a 23-year-old unemployed labourer who presents ostensibly with fatigue. On examination, some psychotic symptoms are apparent.

Upon questioning, he says he has been smoking 30 cones of cannabis a day.

He is restless, with significant mood swings, racing thoughts and paranoia but no real features of lasting psychosis.

Is his presentation consistent with his drug use?

How long are his symptoms likely to last?

What advice might you give him regarding future use?

Cannabis: Forms

A



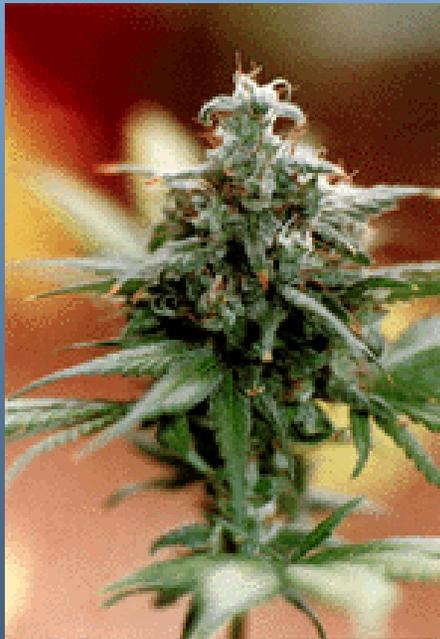
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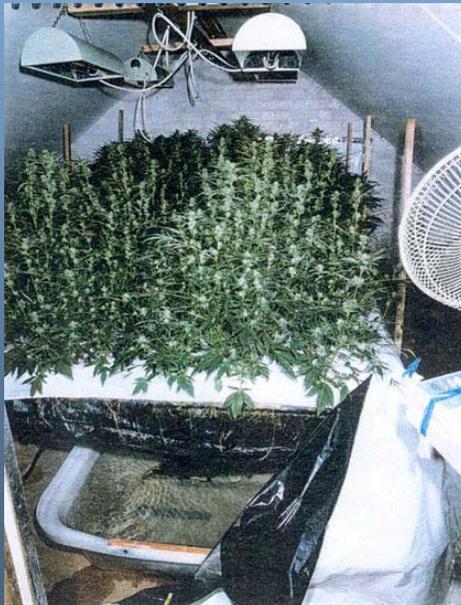
C



D



E



Hydroponic Cannabis Garden
Photo by FluffyWeed420. © Erowid

F



¼ Kilogram bar of Hashish
Photo by Carliño, © 2001 Erowid.org

G

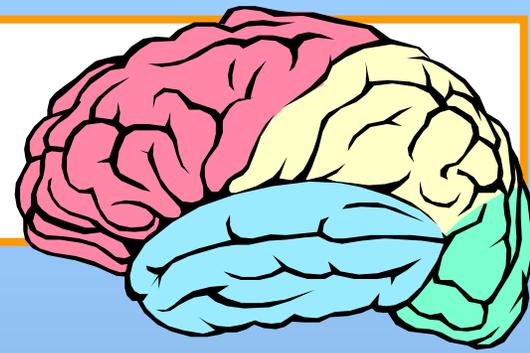


Dried Cannabis Buds
photo by G4nj4M4th, © 2002 Erowid.org

Cannabis: Properties

- Frequently, but erroneously, classified as a narcotic, sedative, or hallucinogen. Sits alone within a unique class.
 - Degree of effects determined by the THC concentration of specific cannabis material used.
 - Major active constituent is THC (delta-9-tetrahydrocannabinol).
 - rapidly absorbed and metabolised when smoked, less so when ingested (1–3 hours for psychoactive effects).
 - Attaches to specific cannabinoid receptors (endogenous brain molecule – anandamide).
-

Cannabis: Brain receptors



- Two types of cannabinoid receptors
CB₁ & CB₂
 - CB₁ receptors in brain (cortex, hippocampus, basal ganglia, amygdala) and peripheral tissues (testes, endothelial cells)
 - CB₂ receptors associated with the immune system
- Most cannabis effects are via THC acting on CB₁ receptors, which facilitate activity in mesolimbic dopamine neurones

Cannabis: Forms & routes



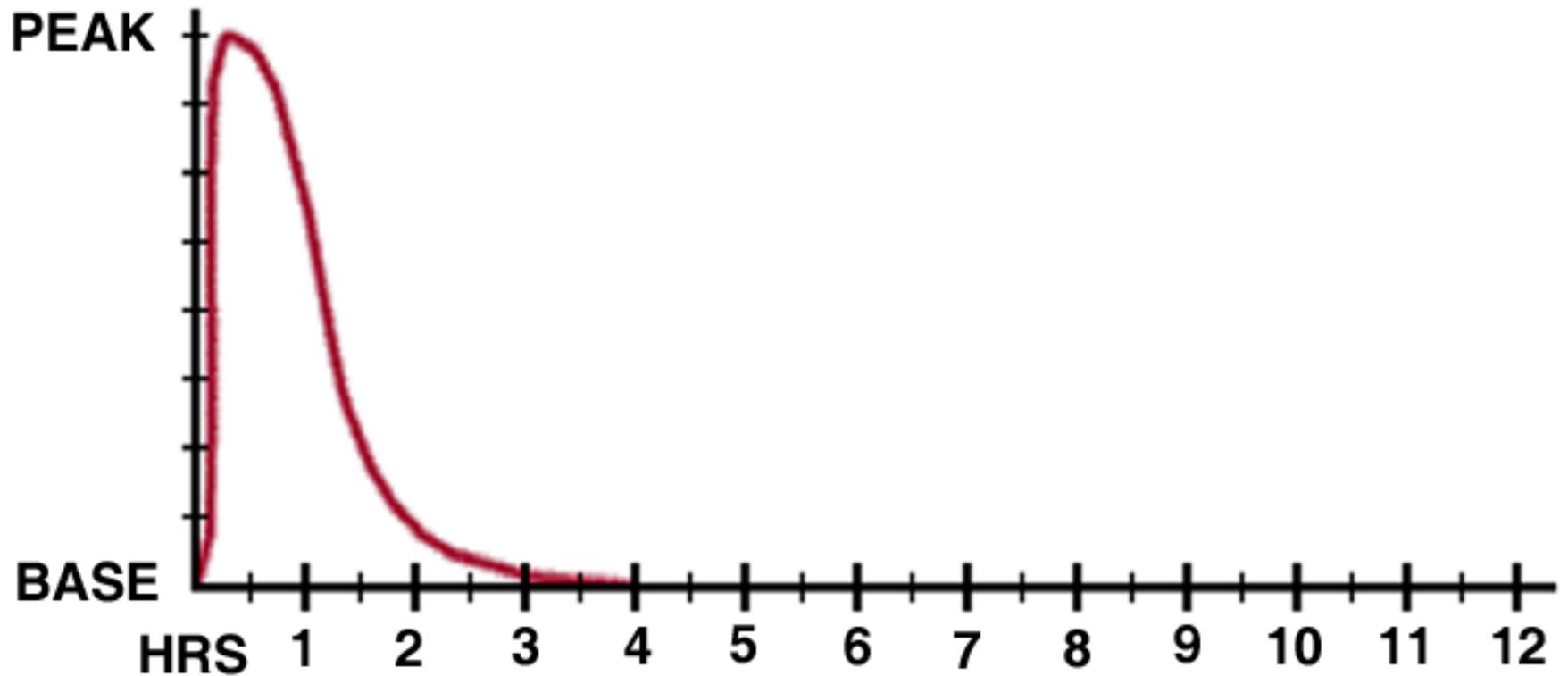
Forms include:

- dried flowers/leaves / buds (marijuana/ganja)
 - 1% – 24% THC (depending on genetic and environmental factors)
- extracted dried resin, sometimes mixed with dried flowers and pressed into a cube (hashish)
 - around 10% – 20% THC
- extracted oil using an organic solvent (hashish oil)
 - 15% – 30% THC

Route of administration can affect dose:

- smoked (joint, pipe, bong, bucket bong, δ dose)
 - 50% absorbed, peak concentration 10 – 30 mins, lasts 2 – 4 hours
- ingested (cake, biscuits)
 - 3% – 6% absorbed, peak concentration 2 – 3 hours, lasts up to 8 hours

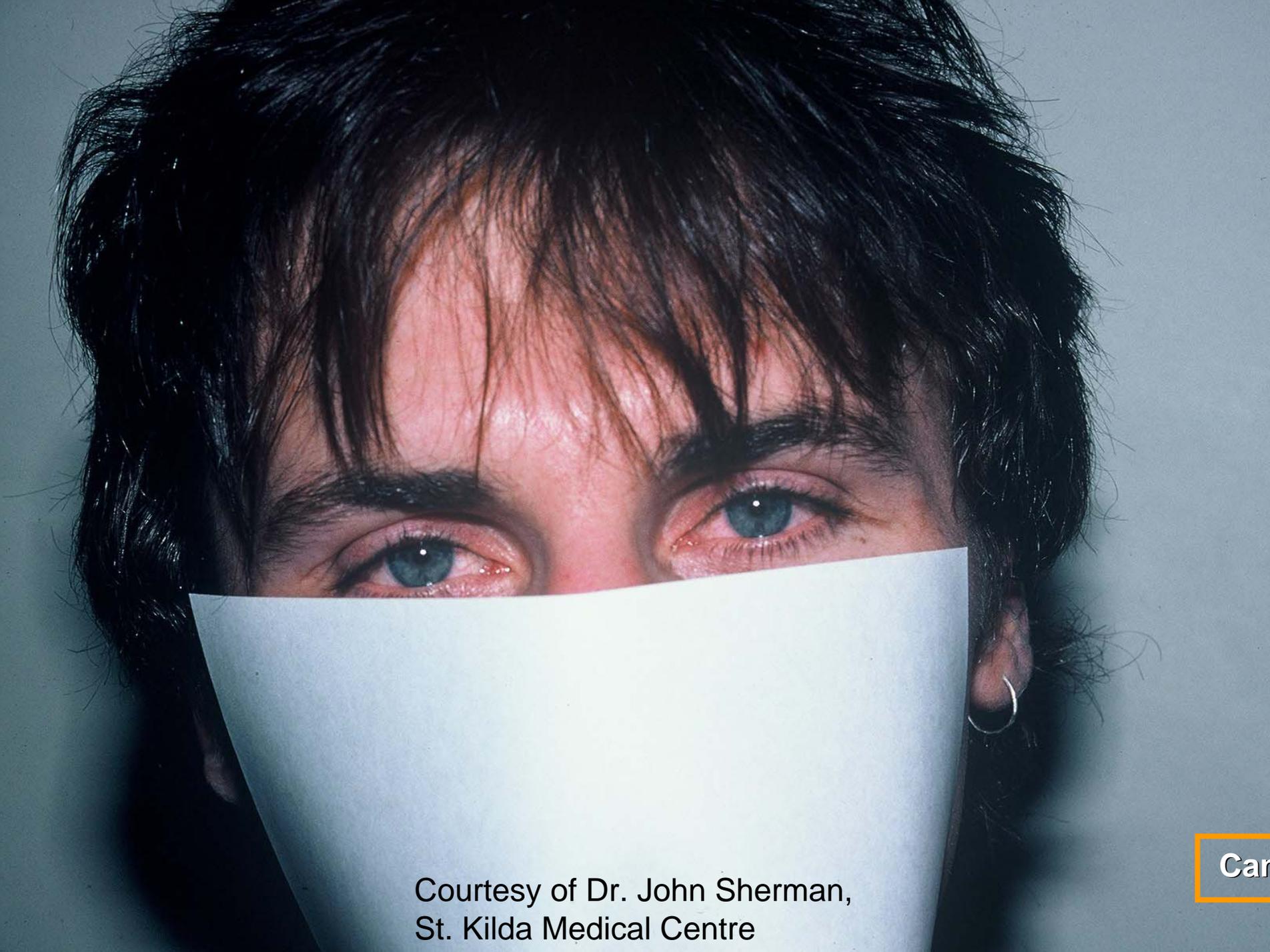
Cannabis: Time to Peak Effect



Cannabis: Acute effects

- Analgesia
- Euphoria, altered concentration, relaxation, sense of calm or wellbeing, disinhibition, confusion
- Increased appetite, thirst
- Heightened visual, auditory and olfactory perceptions, inability to appropriately interpret surroundings
- Reduced intra-ocular pressure (used for glaucoma treatment)
- Nausea, headaches
- With consistent use, URTIs
- Problems associated with intoxication

Cannabis overdose does not result in death.



Courtesy of Dr. John Sherman,
St. Kilda Medical Centre

Short term, high-dose effects

Cannabis also affects:

- Short-term memory
- ability to learn and retain new information
- task performance
- balance, stability, mental dexterity
- the cardiovascular and respiratory systems

Short-term, high-dose use may result in:

- synaesthesia
 - pseudo- or true hallucinations
 - delusions, feelings of depersonalisation
 - paranoia, agitation, panicky feelings, “psychosis”
-

Long-term effects



- **CNS**
 - **Respiratory system**
 - **Cardiovascular system**
 - **Immune system**
 - **Endocrine and reproductive systems**
 - **Adverse social outcomes**
 - **Mental health problems**
 - **Cognitive impairment**
 - **Dependence**
-

Cannabis and psychosis

- THC may exacerbate symptoms of schizophrenia through increase in dopamine release
 - THC likely precipitates schizophrenia in those vulnerable, i.e., those with a personal or family history of schizophrenia
 - Some reports of onset of cannabis-associated schizophrenia in individuals without family risk factors
-

Cannabis dependence

- The “cannabis dependence syndrome,” while now clearly described, is perceived as less pronounced than for other drugs (i.e., opioids, alcohol)
 - Not yet listed in DSM IV
 - Variation in frequency, duration of use and dose result in difficulty predicting rapidity, development, and duration of withdrawal
-

Withdrawal symptoms

- Anxiety, restlessness, irritability, agitation
 - Racing thoughts
 - Mood swings and increased aggression
 - Feelings of unreality
 - Fear, sometimes paranoia
 - Anorexia, stomach pain
 - Weight loss
 - Increased body temperature
 - Nausea and salivation
 - Drowsiness, through disturbed sleep, and an increase in vivid dreams
-

Assessment



Assessment should focus on:

- drug type, history, route, pattern of use, expenditure
- tolerance, dependence, potential for withdrawal
- history or evidence of psychiatric sequelae
- health complications of cannabis use
- psychosocial context of use (time spent using, obtaining drug, social impact, etc.)
- previous attempts to cut down or quit

Assessment tools:

- SDS
 - ASSIST
-

Treatment approaches (1)

Brief Advice

- Provide information on the harms associated with:
 - intoxication
 - long-term, regular use of cannabis
- Provide advice on reducing or ceasing use:
 - ‘Delay’, ‘Distract’, ‘Avoid’, ‘Escape’, and dealing with ‘Lapses’
- Adopt brief motivational and cognitive-behavioural techniques to manage withdrawal and craving
- Other strategies may include:
 - exercise, stress management, relaxation, hobbies, diet, friends.

Early intervention may be more effective than education.

Treatment approaches (2)

No specific pharmacotherapies are available yet for managing cannabis withdrawal or relapse.

Treatment approaches (3)

- **Relapse prevention can be achieved through:**
 - supportive treatment
 - regular follow-up
 - encouraging patient to follow-up treatment with counselling or support groups
 - use of self-help tools and techniques
 - **Harm reduction can be promoted by:**
 - assisting patients to identify harms and possible solutions
 - discussing risks associated with driving or work
 - discussing possible psychosis with those predisposed to such
-

Withdrawal management

- No specific pharmacotherapies for managing cannabis withdrawal or relapse
 - Effectively managed as an outpatient, however severe dependence may require specialised assistance
 - engage in brief interventions, including relapse prevention and problem solving skills
 - consider shared care with psychologists and / or experienced AOD workers
-

Pharmacology for withdrawal



Medications may be useful for a limited time:

- sedative / hypnotics

e.g., diazepam 5 – 10 mg qid prn,
temazepam, 10 – 20 mg nocte for a few
days

- antipsychotics (for severe agitation or
psychosis)

e.g., haloperidol or novel agents



Questions?



Comments?

Post-assessment



Please respond to the post-assessment questions in your workbook.

(Your responses are strictly confidential.)



Thank you for your time!

End of Workshop 3

END OF MODULE 1