

Substance Use and Abuse:

Everything Matters, Second Edition

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Instructor's Manual

Canadian Scholars' Press, 2016

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Instructor's Manual

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Chapter 1: Fundamental Concepts

LECTURE SUGGESTIONS

Group Activity/Class Discussion Questions

1. The addiction field is a very ambiguous one, filled with myth, half-truths, and ignorance. What are your core beliefs, perceptions, and knowledge about what addiction is?
2. What do you think addiction entails?
3. What is the difference between an addiction and a dependency?
4. What is the difference between an addiction and an eating disorder?
5. Who uses drugs in our society?
6. What global drug issues pertaining to psychoactive drugs are you aware of?

Multiple Choice Questions

1. A psychoactive drug
 - a) **is any chemical substance that alters the central nervous system**
 - b) is a substance classified under the Controlled Drugs and Substances Act of Canada
 - c) must be used via injection, either intramuscular, intravenous, or subcutaneous
 - d) must be taken orally, in a pill, powder, or liquid form
2. Addiction
 - a) occurs with games of chance, like roulette or poker
 - b) is a chronic brain disease
 - c) **is a bio-psycho-social phenomenon**
 - d) is the domain of neurobiologists
3. Physical dependency
 - a) **is a physiological state of cellular adaptation occurring when the body becomes so accustomed to a drug that it can only function normally when the drug is present**
 - b) needs to be considered in terms of how it disorganizes individuals' lives and how it creates crises in lives
 - c) occurs with games of chance, like craps and blackjack
 - d) occurs when a drug becomes so important to a person's thoughts or activities that the person believes that he or she cannot manage without the substance

4. Psychological dependency
 - a) is a physiological state of cellular adaptation occurring when the body becomes so accustomed to a drug that it can only function normally when the drug is present
 - b) needs to be considered in terms of how it disorganizes individuals' lives and how it creates crises in lives
 - c) occurs with games of chance, like craps and blackjack
 - d) occurs when a drug becomes so important to a person's thoughts or activities that the person believes that he or she cannot manage without the substance.**

5. To which of the following can you NOT become addicted?
 - a) sex**
 - b) alcohol
 - c) cannabis
 - d) caffeine

6. To which of the following CAN you become addicted?
 - a) food
 - b) shopping
 - c) internet
 - d) cannabis**

7. The reason that a majority of the soldiers returning from the Vietnam War who had used heroin in combat were no longer addicted to the drug when they returned to the United States was
 - a) heroin does not produce physical dependency
 - b) heroin does not produce psychological dependency
 - c) the change in their environment**
 - d) it became more difficult to obtain heroin

8. Differences in the cognitive ability of children born to crack-using mothers in urban centres in the United States during the 1980s and 1990s compared to the national average was due to
 - a) the use of crack by their fathers and mothers
 - b) the trauma in their environment**
 - c) lower school attendance
 - d) the use of crack by their mothers

9. A distinguishing difference between problem gambling and addiction is
 - a) social factors
 - b) the lack of withdrawal**
 - c) psychological dependency
 - d) there is no difference between the two

10. When a person has first contact with a drug and moves to the experimental stage
- they quickly stop
 - the most common outcome is a move to excessive use
 - if they reach the stage of addiction, premature death is the likely outcome
 - the most common outcome is integrated use**
11. The most commonly used drug by Canadian youth, excluding caffeine, is
- cannabis
 - solvents and inhalants
 - tobacco
 - alcohol**
12. Illicit global drug use is
- greatest in South America
 - greatest in higher socio-economic nations**
 - lowest in higher socio-economic nations
 - not an issue in drug producing countries
13. Per capita opioid consumption is greatest in
- Canada**
 - the Golden Triangle (Myanmar, Laos, Thailand)
 - the Golden Crescent (Afghanistan, Iran, Pakistan)
 - China
14. Per capita alcohol consumption is greatest in
- Canada
 - The United Kingdom (England, Northern Ireland, Scotland, Wales)
 - Russia**
 - Australia
15. Student Drug Use in Ontario is
- lower now than in the 1970s**
 - greater now than in the 1970s
 - unchanged since the 1970s
 - not possible to determine because of the illicit nature of student drug use
16. In terms of the impact of drugs on Portugal's GDP, their GDP became among the lowest in the world when
- it reintroduced the death penalty for trafficking
 - it decriminalized the possession of drugs**
 - it increased its police force
 - it legalized cannabis

17. The highest revenue-producing cash crop in Afghanistan is
- a) wheat
 - b) maize
 - c) cannabis
 - d) opium**

True or False Quiz: Foundations of Pharmacology

1. Inhalation is the quickest way to administer a drug to produce a change in the central nervous system.
 - a) True**
 - b) False

2. Tolerance indicates the length of time that it takes for a drug to be metabolized by the body.
 - a) True
 - b) False**

3. While the liver is responsible for the majority of elimination of a drug from the body, the lungs still remove approximately 35%.
 - a) True
 - b) False**

4. Intravenous injection is the slowest method of injection administration.
 - a) True
 - b) False**

5. Transdermal administration is the least common method of administration.
 - a) True**
 - b) False

6. Addiction consists solely of two components: physical dependency and psychological dependency.
 - a) True
 - b) False**

7. Psychological dependency is more powerful than physical dependency.
 - a) True**
 - b) False

8. Serotonin and dopamine are related.
 - a) True**
 - b) False

True or False Quiz Answers: Foundations of Pharmacology

1. *Inhalation is the quickest way to administer a drug to produce a change in the central nervous system.*

True

On average it takes eight seconds for a psychoactive drug to reach the brain once it has been inhaled, almost twice as fast as the next quickest method, intravenous injection, and considerably faster than the most common method, oral administration, that can take up to one hour.

2. *Tolerance indicates the length of time that it takes for a drug to be metabolized by the body.*

False

The process being described is half-life. Tolerance is an increased resistance to the effects of a drug that usually occurs after repeated or chronic use.

3. *While the liver is responsible for the majority of elimination of a drug from the body, the lungs still remove approximately 35%.*

False

The liver is the primary organ responsible for the elimination of drugs from the body, accounting for approximately 95% of elimination. Breath accounts for slightly less than 5%, though this is sufficient to allow for the use of the breathalyzer in testing blood alcohol levels.

4. *Intravenous injection is the slowest method of injection administration.*

False

Intravenous injection is quicker than both intramuscular injection (IM), injecting a drug into the muscle, and subcutaneous injection (SC), injecting a drug just under the skin, also referred to as skin popping.

5. *Transdermal administration is the least common method of administration.*

True

The only two psychoactive drugs that are administered across the skin are nicotine in the patch, used to help smokers quit, and LSD in the form of blotter acid. However, even for these two drugs, other forms of administration are much more common.

6. *Addiction consists solely of two components: physical dependency and psychological dependency.*

False

While to be addicted to a psychoactive drug one must be both physically and psychologically dependent, there is also a third element, the social/environmental component. Many people

also separate the spiritual dimension from the social/environmental and consider it a fourth aspect.

7. *Psychological dependency is more powerful than physical dependency.*

True

While the withdrawal component of physical dependency can be very painful, successful withdrawal can usually take place in less than one week for most psychoactive drugs. However, psychological dependency can trigger drug use weeks, months, and even years later in former users.

8. *Serotonin and dopamine are related.*

True

These are two examples of neurotransmitters. Neurotransmitters are substances that psychoactive drugs influence to produce changes in the central nervous system and thus create the euphoria that makes drug use pleasurable and/or allows the user to escape from reality, temporarily.

ASSIGNMENT SUGGESTIONS

Critical Thinking Essay

1. Define addiction and discuss the significance of your definition.
2. What distinguishes addiction from compulsive behaviours? Why is it important to have this distinction?
3. Discuss drug use in the Canadian context. What is needed to respond to this national issue?
4. What are the social and economic implications of addiction? Consider local, national, and international issues.

Take Home Assignment Questions

1. Post a personal incident that underscores your understanding of the social implications of addiction. It may relate to your work or volunteer experience, travel experience, counselling practice, or something from the media. The intent is to show how drug use is a global phenomenon that affects us all.
2. Why is it important to distinguish between an addiction and other compulsive behaviours, or do we even need to bother?
3. a) Define dependency and discuss the significance of your definition.
b) Define addiction and discuss the significance of your definition.

- c) What is the difference between those two definitions? Why is this important for those in the addiction profession to understand?
- d) Distinguish between the casual every day and media use of addiction and the more precise definition provided in chapter one. What are the treatment and counseling implications for these two definitions?
4. What are the reasons a person becomes addicted to a psychoactive drug? How do those reasons align with the ideas from your discussion in question one?
5. What is the difference between an addiction and
- i) a compulsive behaviour
 - ii) an eating disorder
6. a) What are the differences between drug use in Canada and drug use in different nations?
- b) Was the incidence of drug use in Canada and in different nations greater or less than you thought prior to completing the reading?
- c) What factors influenced your thoughts on how many people in Canada and in different nations were using psychoactive drugs?
7. Which method is the quickest way for a drug to enter the body and produce an effect? Which method is the slowest way?
8. What system(s) is/are responsible for the elimination of drugs from the body?
9. What is the definition and significance of half-life?
10. What are the fastest practical methods for administering
- i) cocaine
 - ii) alcohol
 - iii) opioids
11. What are the basic neurotransmitters associated with addiction?
12. What are some of the popular drugs that young people are currently using?
13. What differences are there between the provinces in terms of drug use by young people?
14. What is the significance of Table 1.2: Comparison of Per Capita Opioid Consumption, with Table 1.6: Changes in Afghanistan Farm-Gate Prices of Select and Illicit Crops?
15. What patterns do you see in terms of global drug use?
16. What are the economic patterns of drug use internationally?

ADDITIONAL RESOURCES

Websites

Canadian Tobacco, Alcohol and Drugs Survey (CTADS)

<http://healthycanadians.gc.ca/science-research-sciences-recherches/data-donnees/ctads-ectad/summary-sommaire-2013-eng.php>

Canadian Drug and Alcohol Use Statistics

<http://www.hc-sc.gc.ca/hc-ps/drugs-drogues/stat/index-eng.php>

Global Drug Trade

<http://www.globalresearch.ca/cocaine-heroin-cannabis-ecstasy-how-big-is-the-global-drug-trade/5381210>

United Nations Office on Drugs and Crime website:

<http://www.unodc.org/>

Videos

Hinterland: Spiders on Drugs

<https://www.youtube.com/watch?v=sHzdsFiBbFc>

Stanton Peele: Is Addiction a Disease?

<https://www.youtube.com/watch?v=05ANXZKdCg0>

What Causes Addiction?

<https://www.youtube.com/watch?v=ao8L-0nSYzg>

Johann Hari: Everything you think you know about addiction is wrong

https://www.ted.com/talks/johann_hari_everything_you_think_you_know_about_addiction_is_wrong?language=en#t-5820



Fundamental Concepts

Are you the fish that can see the water that you swim in?

Fundamental Terms

- ▶ Psychoactive drug
- ▶ Addiction
- ▶ Physical dependency
- ▶ Psychological dependency



What is NOT an addiction?

- ▶ Eating disorders
- ▶ Compulsive behaviours: shopping, internet use, sex
- ▶ Problem gambling
- ▶ **Why are these not an addiction?**
 - ▶ No psychoactive change to brain
 - ▶ Different treatment approach
 - ▶ Different treatment system



Psychoactive Drug Groupings

▶ Depressants

- ▶ Benzodiazepines, Barbiturates, Alcohol, Solvents, Antihistamines

▶ Opioids

- ▶ Codeine, Morphine, OxyContin, Heroin, Methadone

▶ Stimulants

- ▶ Cocaine, Amphetamines, Ritalin, Decongestants, Nicotine, Khat, Betel, Caffeine

▶ Hallucinogens

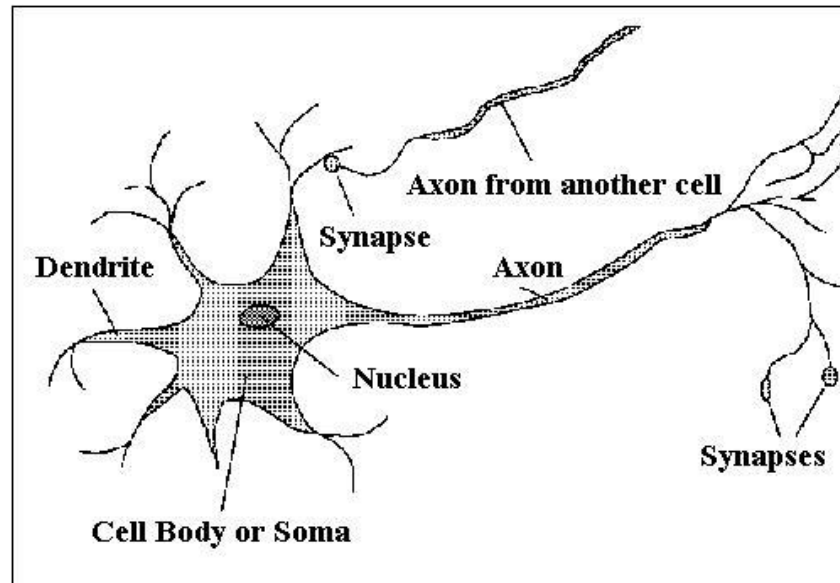
- ▶ LSD, Ecstasy, Ketamine, Cannabis

▶ Psychotherapeutic Agents

- ▶ Antidepressants, Antipsychotics, Mood Stabilizers



The Neuron



Fundamental Neurotransmitters

- ▶ Dopamine
- ▶ Endocannabinoids
- ▶ Endorphins
- ▶ Gamma-aminobutyric Acid (GABA)
- ▶ Glutamate
- ▶ Norepinephrine
- ▶ Serotonin



▶ Tolerance

- ▶ The body's adaption to the presence of the drug requiring increased amounts to produce the same outcome as originally experienced

▶ Withdrawal

- ▶ The development of physical disturbances or physical illness when drug use is suddenly discontinued in the opposite direction to the original effects of the drug



Routes of Administration

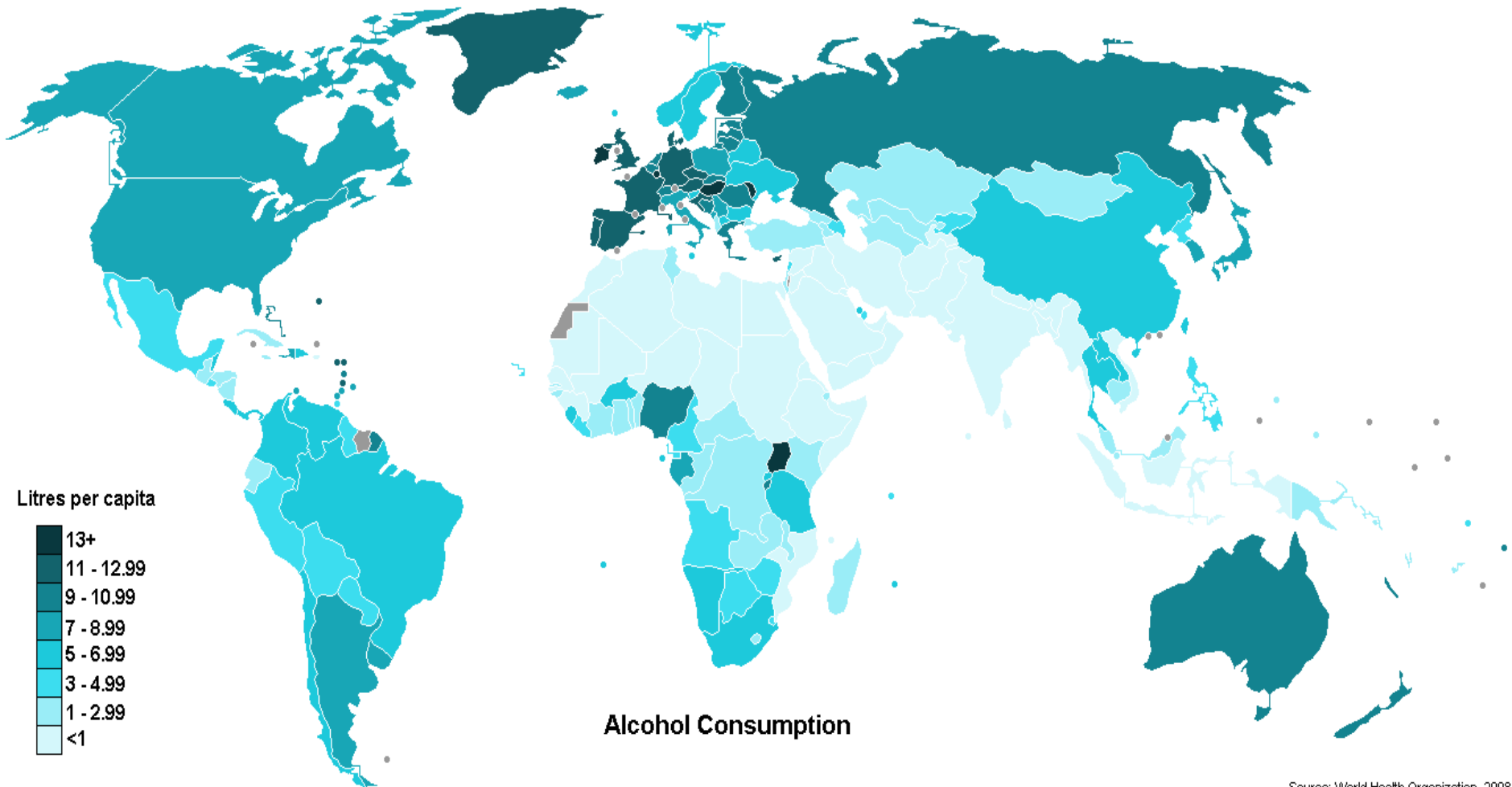
Method	Example of Drug	Time Needed for Effect	Advantages of Route	Disadvantages of Route
Oral	Alcohol	30-60 minutes	Convenient	Slow, irregular
Inhalation	Nicotine	8 seconds	Fast	Lung damage
Intravenous Injection	Heroin	15 seconds	Fast	Overdose/ infections
Mucous membrane	Cocaine	1-2 minutes	Convenient	Local tissue damage
Subcutaneous injection	Heroin	5-10 minutes	Safer & easier than IV	Infection
Intramuscular Injection	Morphine	10-15 minutes	Controlled	Painful
Transdermal	Nicotine	15-20 minutes	Convenient	Limited application/ potential misuse



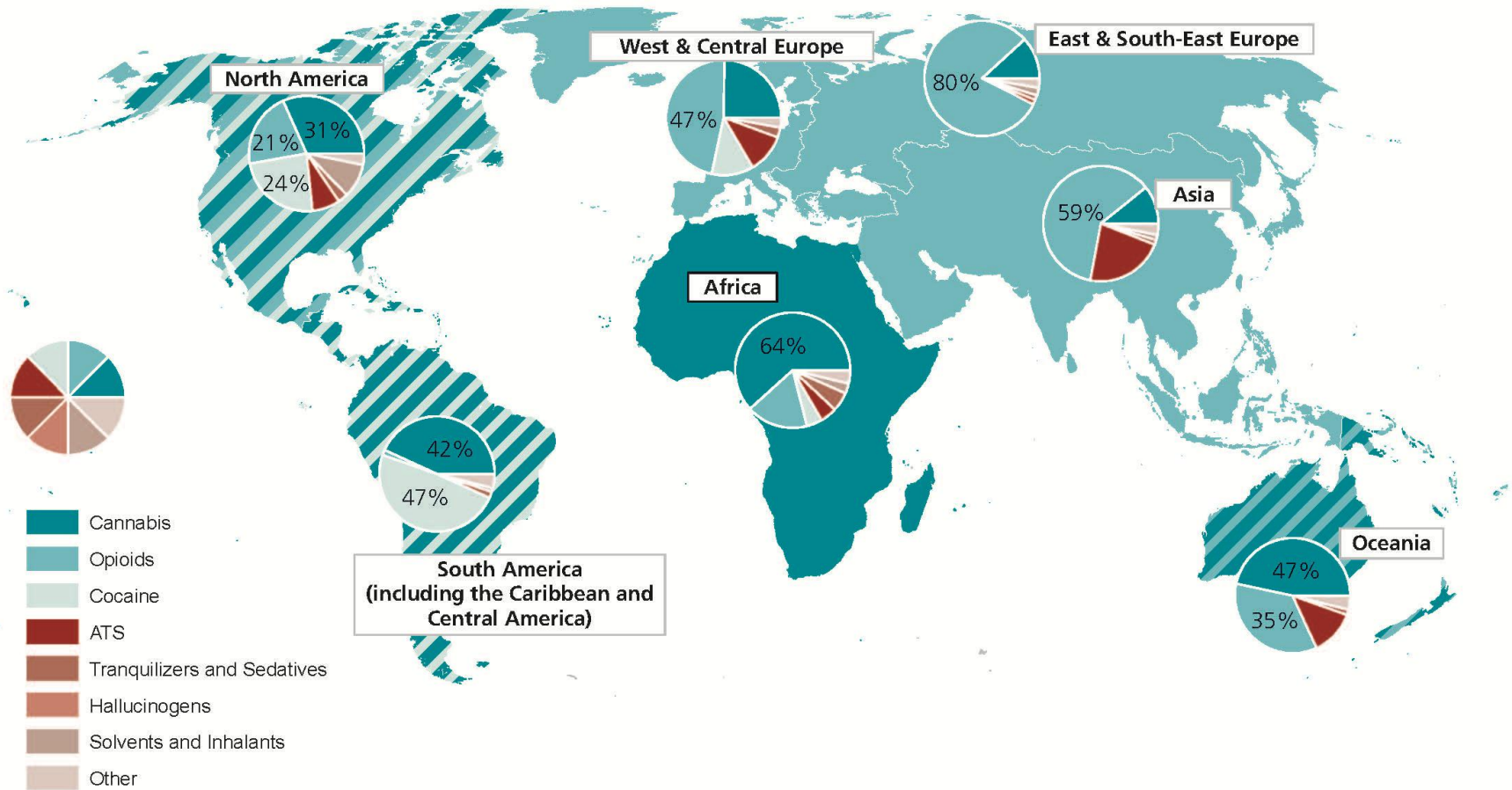
Drug Consumption



Global Alcohol Consumption



Main problem drugs as reflected in treatment demand, 2010 (or latest year available)



Notes: Percentages are unweighted means of treatment demand from reporting countries.
 Number of countries reporting: Europe (44); Africa (26); North America (3); South America (21); Asia (42); Oceania (3).
 Data generally account for primary drug use. Polydrug use may increase totals beyond 100%.
 The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.



Student Drug Use By Province (Grades 7-12)

Province	British Columbia	Alberta	Manitoba	Ontario	Quebec	New Brunswick	Prince Edward Island	Nova Scotia	Newfoundland
Depressants									
Alcohol	50.4%	48.5%	54.8%	61.8%	59.7%	50.3%	46.3%	51.7%	52.0%
Alcohol - binge drinking	23.6%	19.3%	26.7%	26.9%	*	25.3%	26.1%	27.7%	29.7%
Inhalants	3.8%	5.3%	2.2%	8.7%	0.8%	2.6%	3.6%	4.4%	4.4%
Heroin	1.3%	0.8%	0.8%	1.1%	*	*	*	*	*
Stimulants									
Amphetamines/ Methamphetamine	2.2%	1.5%	2.8%	1.9%	7.3%	2.1%	1.2%	1.6%	2.4%
Cocaine	4.4%	3.3%	3.9%	4.2%	3.4%	2.9%	3.4%	4.3%	5.3%
Tobacco	3.0%	4.0%	5.0%	4.0%	5.0%	9.0%	7.0%	5.0%	6.0%
Hallucinogens									
Cannabis (past month use)	17.1%	9.3%	13.4%	16.8%	27.2%	11.3%	9.2%	13.7%	12.2%
Cannabis (daily)	3.6%	*	4.3%	2.6%	2.6%	4.0%	2.2%	5.3%	4.6%
LSD	*	*	*	*	*	4.3%	2.5%	3.7%	4.2%
MDMA (Ecstasy)	7.1%	5.7%	4.5%	4.4%	5.7%	5.2%	3.4%	6.9%	7.2%
Psilocybin/Mescaline	*	*	*	*	*	5.5%	4.9%	7.7%	4.2%
* data not collected									
Sources: Propel Centre for Population Health Impact (2014); Young (2011).									

Ontario Student Past Year Drug Use (at least one use)

Source: Boak, Hamilton, Adlaf & Mann (2013).

Year	1977	1981	1985	1989	1993	1997	2001	2005	2009	2011	2013
N	4687	3270	4154	3915	3571	3990	3898	7726	9112	9288	10272
Depressants											
Alcohol	76.3%	75.3%	69.8%	66.2%	56.5%	59.6%	63.9%	62.0%	58.2%	54.9%	49.5%
Inhalants	9.1%	5.3%	3.8%	4.2%	3.4%	3.5%	7.6%	6.0%	6.0%	5.6%	3.4%
Medical Barbiturates	14.2%	12.5%	9.0%	7.8%	5.6%	6.0%	11.8%	*	*	*	*
Non-Med. Barbiturates	6.0%	8.1%	4.4%	2.2%	3.0%	2.5%	4.0%	1.7%	*	*	*
Med Sedative-Hypnotics	8.6%	7.5%	4.7%	3.1%	2.2%	2.1%	3.2%	*	*	*	*
Non-Med. Sed-Hypnotics	4.9%	4.9%	3.3%	2.4%	1.1%	1.7%	2.2%	1.6%	1.6%	1.9%	2.4%
Opioids											
Heroin	2.0%	1.5%	1.5%	1.2%	1.2%	1.8%	1.1%	0.9%	0.7%	*	*
Non-Medical Opioids	*	*	*	*	*	*	*	*	17.8%	14.0%	12.4%
Oxycontin/Oxyneo	*	*	*	*	*	*	*	1.0%	1.6%	1.2%	1.6%
Stimulants											
ADHD Drugs	*	*	*	*	*	*	*	*	1.6%	1.0%	1.4%
Cocaine	3.8%	4.8%	4.5%	2.7%	1.5%	2.7%	4.4%	4.4%	2.6%	2.1%	2.4%
Crack	*	*	*	1.0%	1.0%	2.2%	2.1%	2.0%	1.0%	0.7%	0.7%
Medical Stimulants	6.6%	6.1%	4.3%	3.3%	4.0%	3.7%	7.0%	*	*	*	*
Non-Medical Stimulants	7.2%	12.1%	11.8%	6.5%	5.4%	6.6%	6.3%	4.8%	4.8%	4.1%	*
Methamphetamine	2.7%	3.0%	3.1%	2.5%	2.0%	3.6%	3.9%	2.2%	1.6%	1.0%	1.0%
Tobacco	30.4%	30.3%	24.5%	23.3%	23.8%	27.6%	23.1%	14.4%	11.7%	8.7%	8.5%
Hallucinogens											
Cannabis	25.0%	29.9%	21.2%	14.1%	12.7%	24.9%	28.6%	26.5%	25.6%	22.0%	23.0%
Jimson Weed	*	*	*	*	*	*	*	*	2.3%	1.7%	1.3%
Ketamine	*	*	*	*	*	*	*	1.3%	1.6%	0.9%	*
LSD	6.1%	10.2%	7.4%	5.9%	6.9%	7.6%	4.8%	1.7%	1.8%	1.2%	1.5%
MDMA (Ecstasy)	*	*	*	*	0.6%	3.1%	6.0%	4.5%	3.2%	3.3%	3.3%
PCP	*	2.5%	1.7%	1.1%	0.6%	2.0%	2.8%	1.1%	*	*	*
Psilocybin/ Mescaline	4.3%	4.7%	4.8%	4.3%	3.1%	10.1%	11.1%	6.7%	5.0%	3.8%	3.7%
Salvia Divinorum	*	*	*	*	*	*	*	*	4.4%	3.7%	2.6%

Economics of the Drug Trade

NEW MATH

CENTRAL HIGH SCHOOL

One-thumb Eddie has three ounces of snow . . . He sells an eight-ball to Big-Daddy Lipscomb for \$280.00 and two-grams to Large Lita for \$80.00 per gram. What is the street value of the balance of the cocaine if Eddie doesn't cut it ? "

Ray Delgado

Search: 29606714

Economic Costs of Alcohol Abuse by Nation

Country	Year of Study	Population (millions)	Total Cost Estimate (US\$ Billions)
Australia	1998-1999	18.7	7.5
Canada	1992	28.3	7.5
Canada	2002	31.3	14.6
Chile	2000	15.2	3.0
Finland	1990	5.0	4.0
Germany	2002	82.5	27.4
Ireland	2000	3.8	2.4
Italy	2003	57.3	7.6
Japan	1987	122.1	5.7
Netherlands	2001	15.8	4.0
Scotland	2005-2006	5.1	2.25
South Korea	2000	47.0	.15
Thailand	2006	65.9	4.75
United Kingdom	2000	59.4	23.6
United States	2011	311.6	193.5

Sources: Thavorncharoensap, Teerawattananon, Yothasamut, Lertpitakpong, & Chaikledkaew (2009); World Health Organization (2004, 2014)

International Drug Routes



https://en.wikipedia.org/wiki/Illegal_drug_trade#/media/File:Drugroutemap.gif

Changes in Afghanistan farm-gate prices of select licit and illicit crops, 2009-2013

Agricultural Product	2009	2010	2011	2012	2013
Fresh Opium	48	128	180	163	143
Dry Opium	64	169	241	196	172
Cannabis (prime grade)	35	86	95	68	n.a.
Cannabis (third grade)	12	39	39	26	n.a.
Rice	1.0	1.1	1.1	1.2	n.a.
Wheat	0.6	0.3	0.4	0.5	n.a.
Maize	0.4	0.3	0.3	0.3	n.a.

► Source: International Narcotics Control Board (2014)