

Addiction Primer for the Health Professional

Module 1a : Mental Wellness

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Bio

Private practice 15 years
BSc Biomedical Toxicology
ND - Naturopathic Doctor
CCAC - Canadian Certified
Addiction Counsellor
Mental health / Addiction
Project Starlight

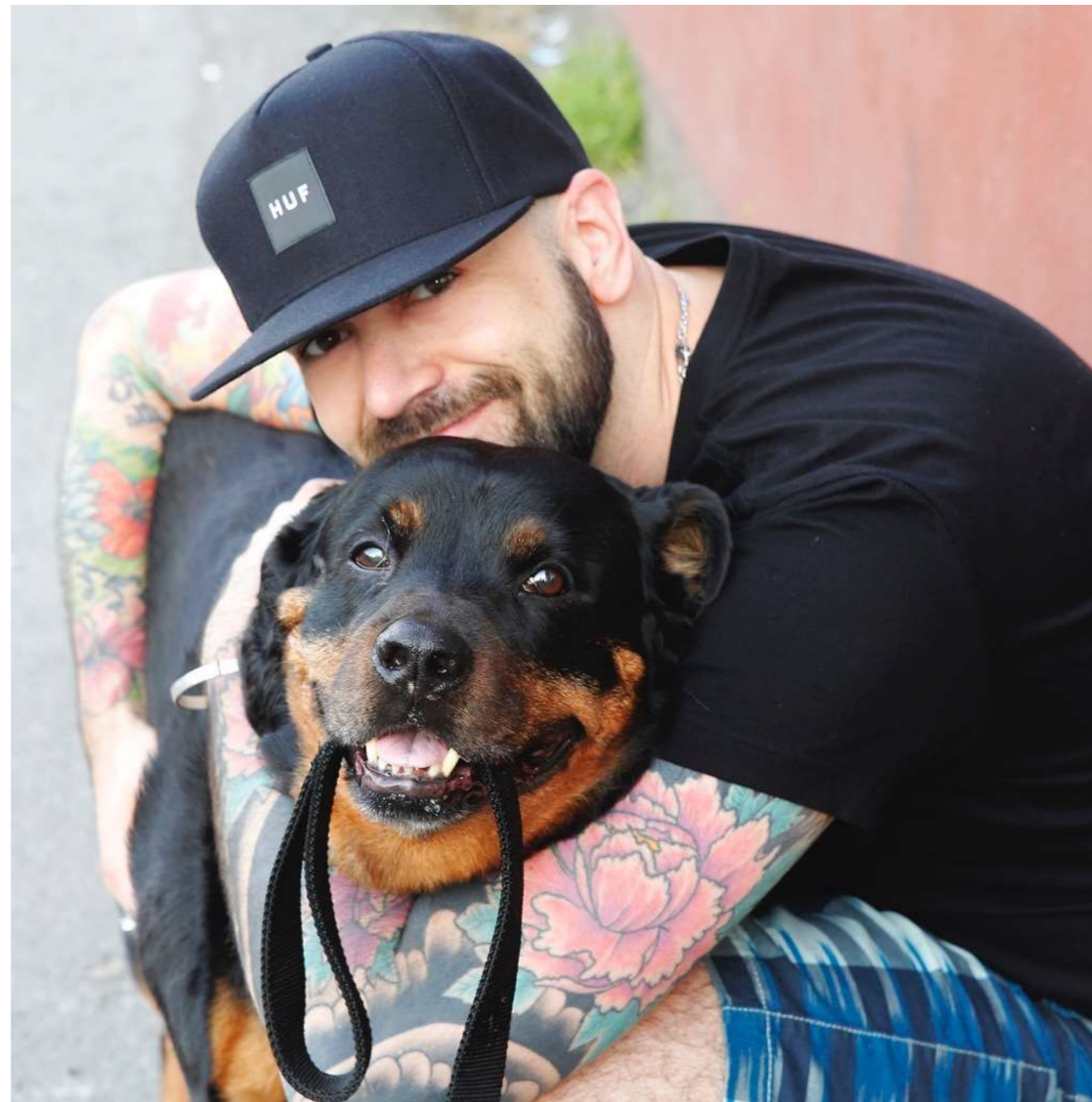
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My story...



- 19 year old - started University
- 21yo - first rave in Toronto
- 25 - moved to Vancouver
- 30 -
- 35 -
- 40 -



My passion is...

- Educating other health professionals (NDs, RMTs, DCs, RNs etc...)
- Reduce stigma of mental health and addiction
- Empower and support those in recovery
- Helping families with a loved one.
- Addiction Treatment Centre - 5yr goal !

Disclosures

- None

Content

- Science of Addiction
- Neurotransmitters
- Mesolimbic pathway (reward pathway)
- fMRI and SPECT imaging for Addiction research
- Models of Addiction
- Stigma in Addiction/Mental Health
- Continuum of Addiction
- Costs of Addiction

Signs as addictions

astrologybae:

Aries - Sex

Taurus - Food

Gemini - Gambling

Cancer - Netflix

Leo - Alcohol

Virgo - Work

Libra - Shopping

Scorpio - Smoking

Sagittarius - Video games

Capricorn - Coffee

Aquarius - Internet

Pisces - Weed

What does your
sign say?

The image shows a YouTube video player interface. The video title is "100 Years Of Drugs In America: From Coffee To Heroin". The channel is "AJ+" with 149,606 subscribers. The video has 53,501 views, 341 likes, and 7 dislikes. The video player shows a progress bar at 0:04 / 3:17. The video content features a person holding a sign that reads "100 YEARS OF DRUGS IN AMERICA".

100 YEARS OF
DRUGS IN AMERICA

100 Years Of Drugs In America: From Coffee To Heroin

AJ+ 149,606

Subscribe

53,501

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341 7

[https://youtu.be/ymxH9uV](https://youtu.be/ymxH9uVq8-g)

[q8-g](https://youtu.be/ymxH9uVq8-g)

Addiction *in* Canada

Plenty of jokes have been made recently about Rob Ford and his admitted alcohol and crack cocaine use. However, it's important to remember that the reality of addiction is no laughing matter. It's a widespread problem.

1 in 10

Canadians over 18 is dependent on drugs or alcohol



How is an addiction defined?

One common set of criteria is known as the "Four C's":

- **Cravings** for the substance
- **Inability to control** quantity or frequency of use
- An irresistible **compulsion** or urge to use
- **Continued** use despite consequences

Addiction changes the brain, disturbing the normal hierarchy of needs and desires.

Source: National Institute on Drug Abuse

Social costs

The Canadian Centre on Substance Abuse (CCSA) found that substance abuse has a tremendous impact on the economy as much as **\$79.8 billion** in a year. That's equivalent to **\$1,267** for each and every Canadian. Part of this cost comes from the abuse of legal substances.

Costs associated with drug use

\$8,296,000,000 CAD

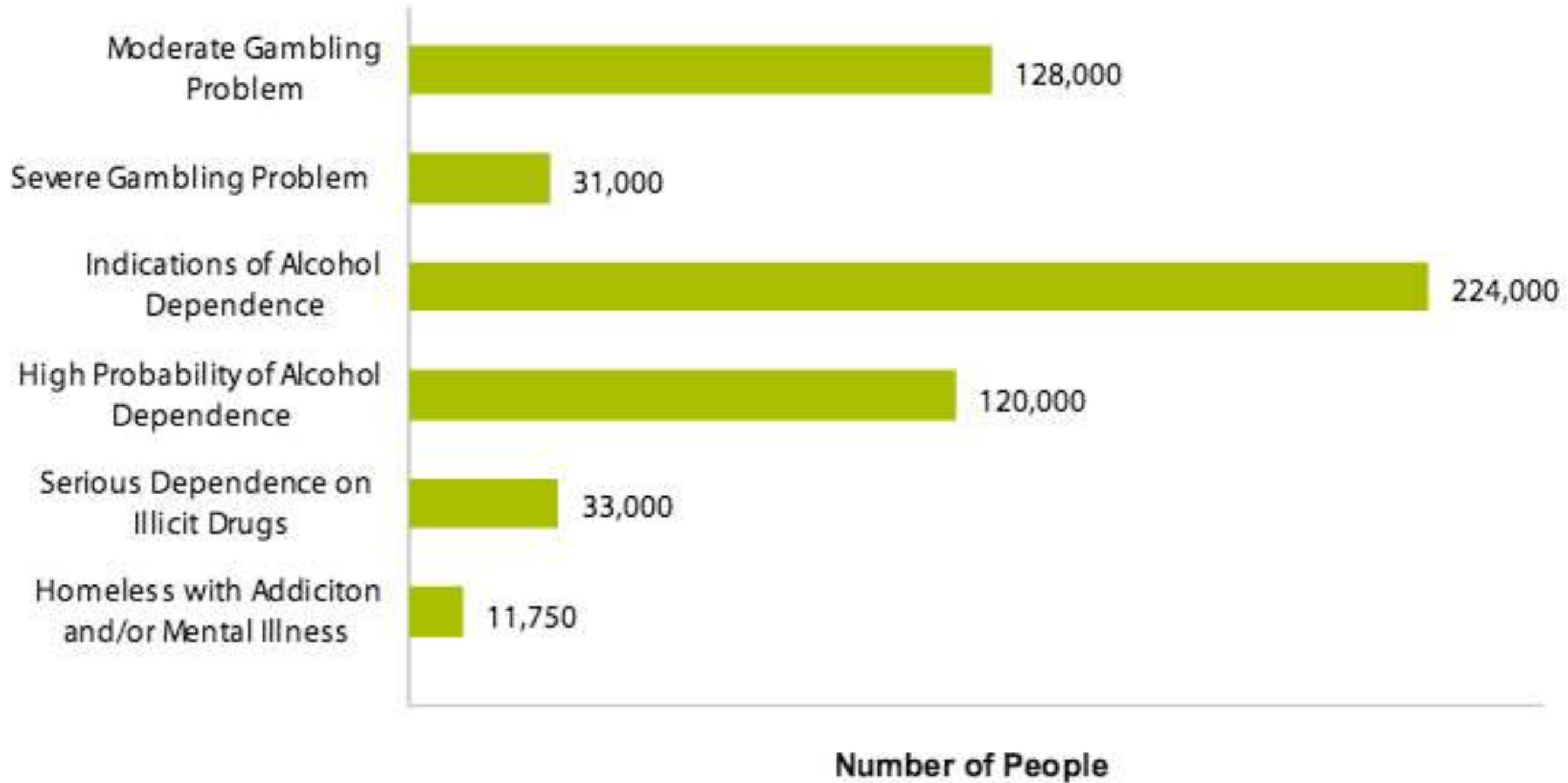
Costs associated with alcohol use

\$17,589,000,000 CAD



Addiction in Canada

Addiction in British Columbia



Canadian Statistics

- 1 in 5 experience a mental health issue or addiction per year.
- 70% mental illness = onset in childhood/adolescence.
- 20% of people with a mental illness have a co-occurring SUD.
- More than 15% of people with SUD have a co-occurring mental illness.
- Mental illness is the leading cause of disability in Canada.
- 50% of Canadians would discuss having a mental illness compared with 72% would discuss having cancer with a family member or friend. STIGMA
- 42% of Canadians are unsure whether they would socialize with a friend who has a mental illness.

Canadian Statistics

- While mental illnesses constitute more than 15% of the burden of disease in Canada, these illnesses receive less than 6% of health care dollars.
- The economic burden of mental illness in Canada is estimated at \$51 billion per year.
- Individuals with a mental illness are much less likely to be employed. Unemployment rates are as high as 70% to 90% for people with the most severe mental illnesses.

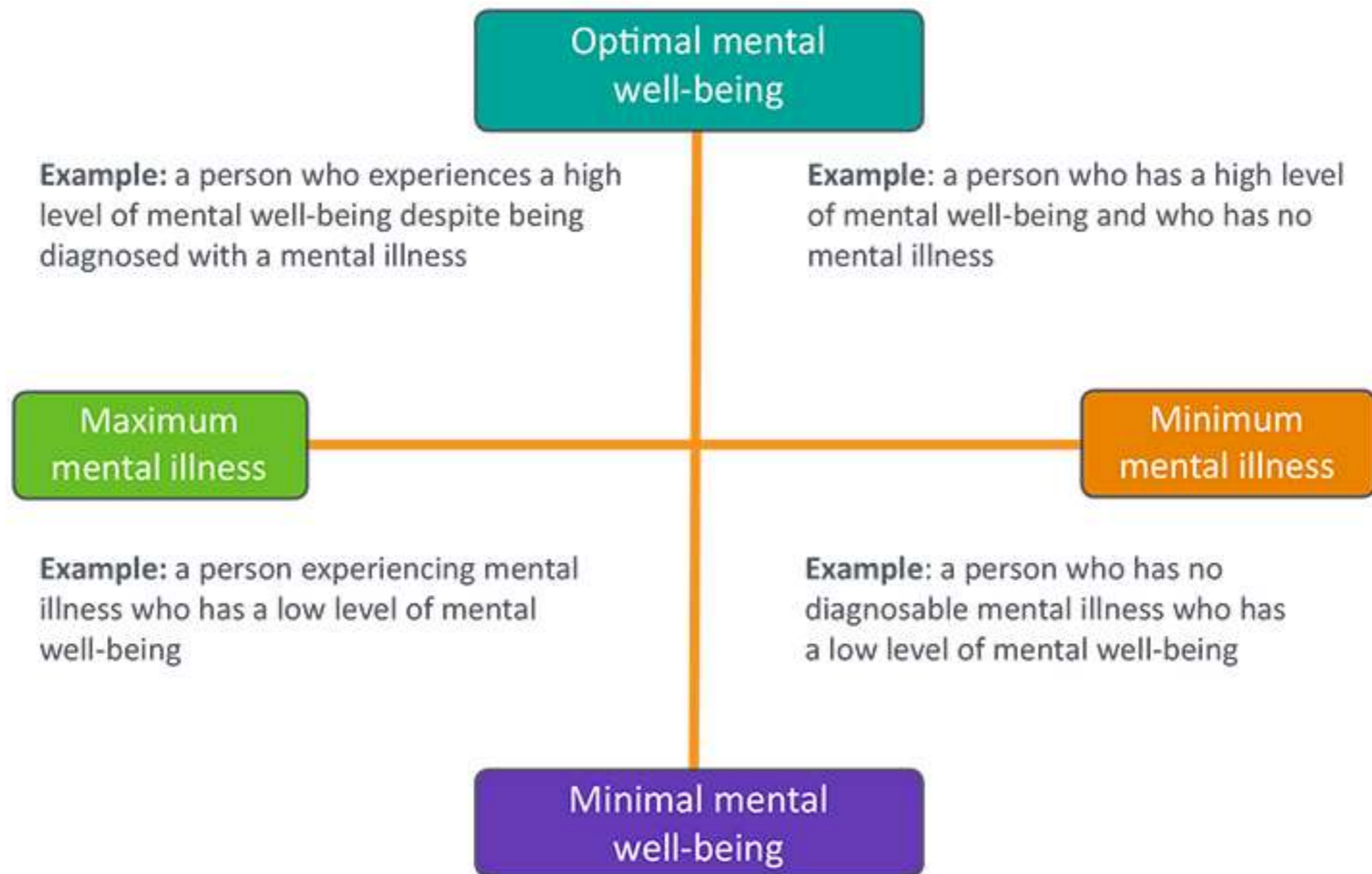
Addiction in the USA

- Over 20 million Americans over the age of 12 have an addiction (excluding tobacco).
- 100 people die every day from drug overdoses. This rate has tripled in the past 20 years.
- Over 5 million emergency room visits in 2011 were drug related.
- 2.6 million people with addictions have a dependence on both alcohol and illicit drugs.
- 9.4 million people in 2011 reported driving under the influence of illicit drugs.
- 6.8 million people with an addiction have a mental illness.
- Rates of illicit drug use is highest among those aged 18 to 25.
- Over 90% of those with an addiction began drinking, smoking or using illicit drugs before the age of 18.

A word cloud centered around the word "Wellness". The word "Wellness" is the largest and most prominent, rendered in a bright green color. Surrounding it are numerous other words in various sizes and colors (blue, purple, red, brown, green). The words are arranged in a somewhat circular pattern around the center. The most visible words include: "Physical", "Financial", "Emotional", "Health", "Exercise", "Occupational", "Social", "Sleep", "Spiritual", "Earth", "Better", "Easy", "Relax", "Day", "Resume", "tips", "Napping", "Learn", "Keep", "Diego", "Balance", "Earth", "Balance", "Social", "tips", "Napping", "Learn", "Keep", "Diego", "Balance", "Earth", "Balance". Other smaller words include "Relationship", "San", "Healthy", "Foods", "Service", "Ways", "Environmental", "Helpful", "Board", "Interview", "UC", "Budget", "Resolutions", "Stress", "Management", "Campus", "Relax", "Day", "Resume", "tips", "Napping", "Learn", "Keep", "Diego", "Balance", "Earth", "Balance".

|

Where are you on the spectrum?



- https://www.cmha.ca/mental_health/mental-health-meter/

What is mental wellness?

- What does it mean to be mentally well?
 - Ability to enjoy life.
 - Resilience
 - Balance
 - Self-actualization
 - Flexibility

Addiction is defined as...

- “Addiction is a chronic pattern of behaviour that is characterized by the repeated use of substances or behaviours despite significant and ongoing harms associated with use....”

1) Loss of <u>C</u>ontrol:	The inability to stop using a substance despite a desire or attempt to stop.
2) Use despite the <u>C</u>onsequences:	The ongoing use of a substance despite negative impact on family, job, finances, or health.
3) Increased <u>C</u>ompulsion:	The persistent and often overwhelming urge or impulse to use a substance that increases over time.

3 C's of Addiction

The Addiction cycle

- addiction follows a cycle
- consistent pattern
- affects brain & alters brain
- 4 common stages of addiction



Models of Addiction

- Medical Model = “disease of addiction is a chronic, progressive, recurring, incurable, and potentially fatal condition that is generally a consequence of genetic irregularities”
- Behavioural/Environmental Model = emphasizes the overriding significance of environmental and developmental influences.
- Academic Model = the body adapts to the toxic effects of drugs, and it is the body’s attempt to rebalance (homeostasis) that reinforces addiction.
- Diathesis-Stress Model = involves a predisposition to addiction, due to genetic and environmental influences.
- Moral Model = some failing in ones morals leads to using substances. “all they have to do is STOP”

Addiction as a moral issue?

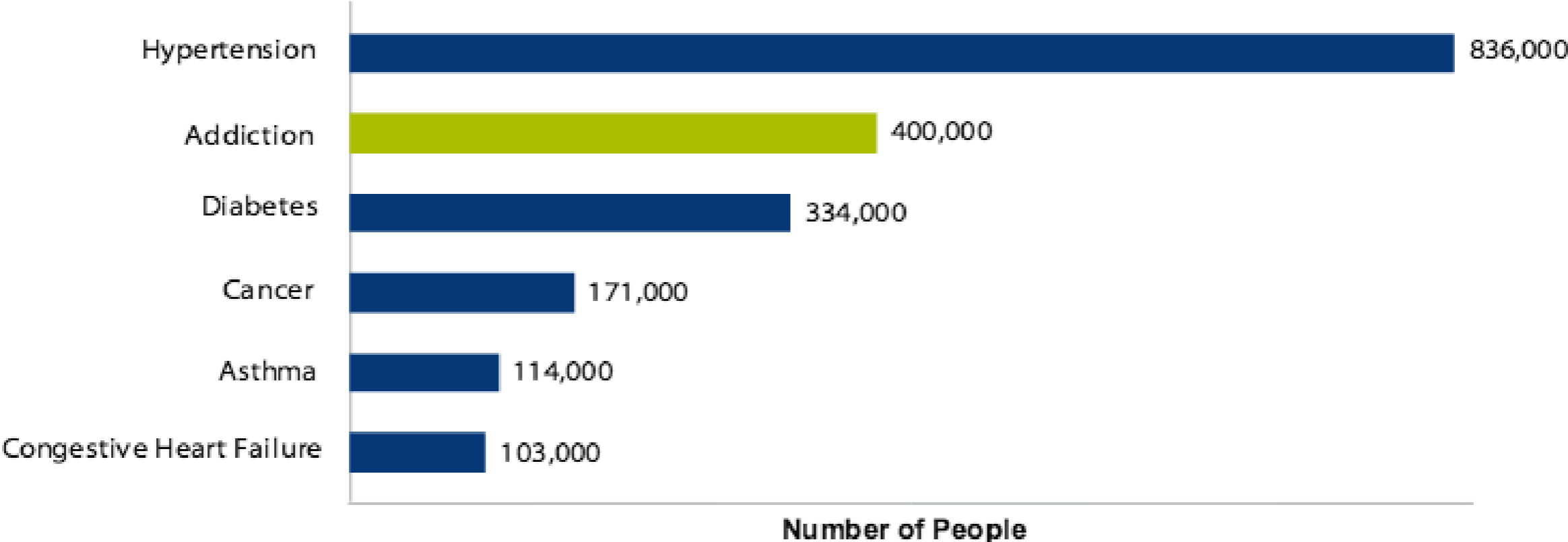
- Addiction is the result of moral weakness.
- Recovery is achieved through the use of willpower and discipline.



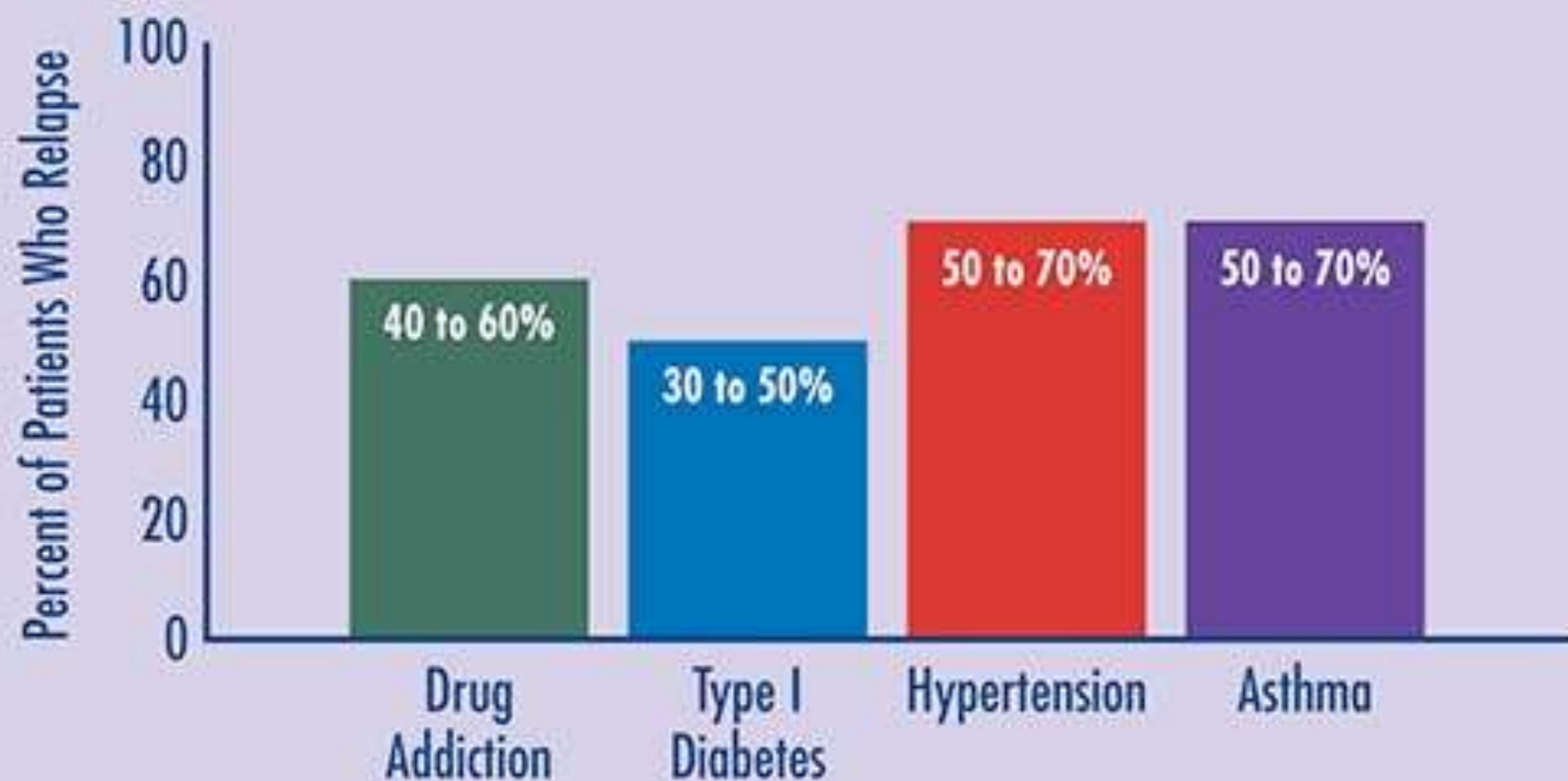
Medical Model : Why is it called a chronic disease?

Consider the number of British Columbians with an addiction compared with other chronic diseases:^{25,26}

Chronic disease in British Columbia

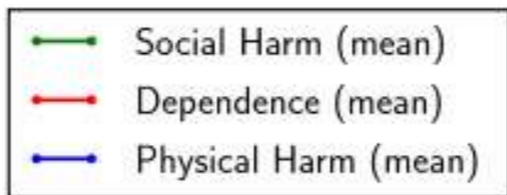
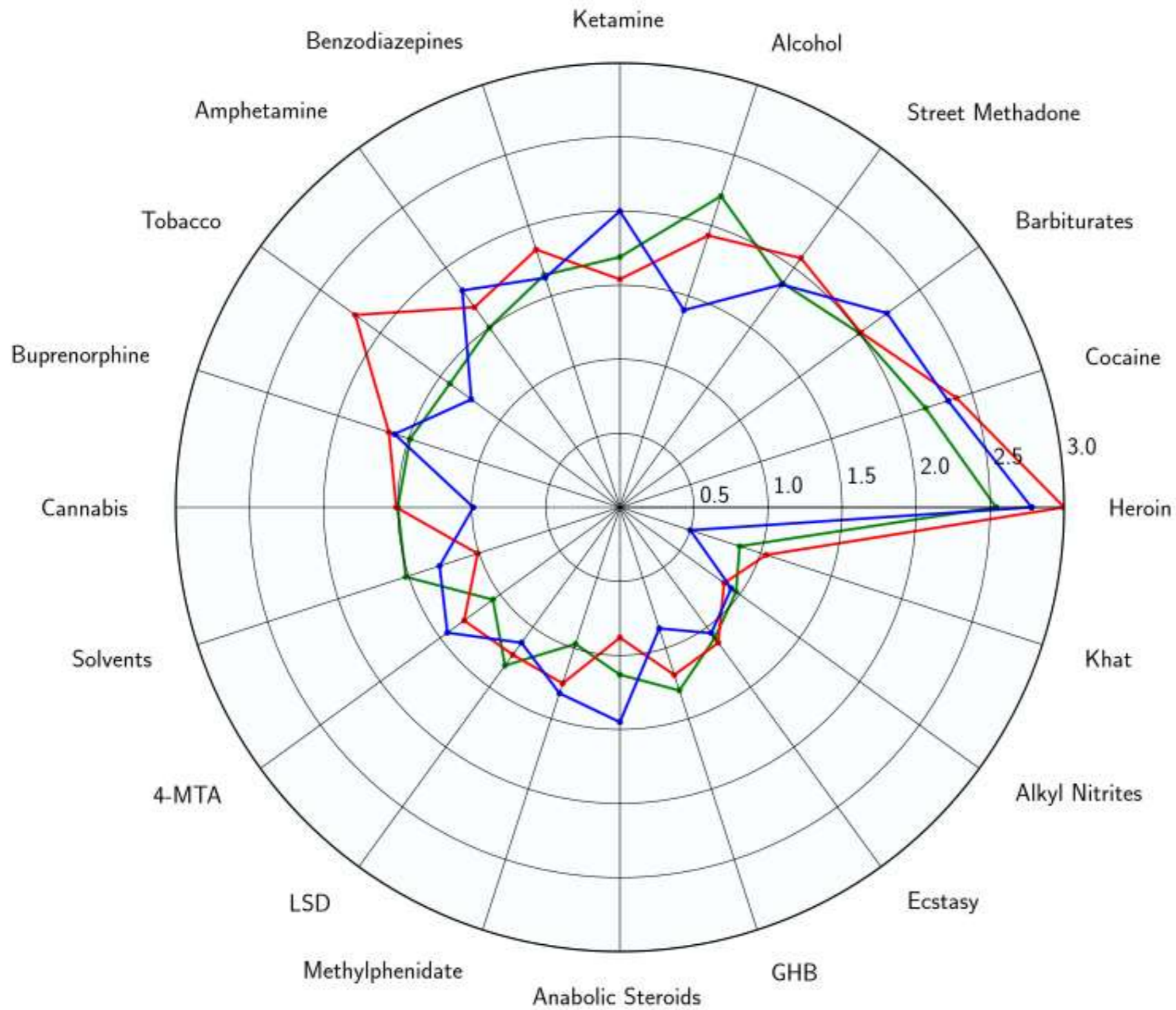


COMPARISON OF RELAPSE RATES BETWEEN DRUG ADDICTION AND OTHER CHRONIC ILLNESSES

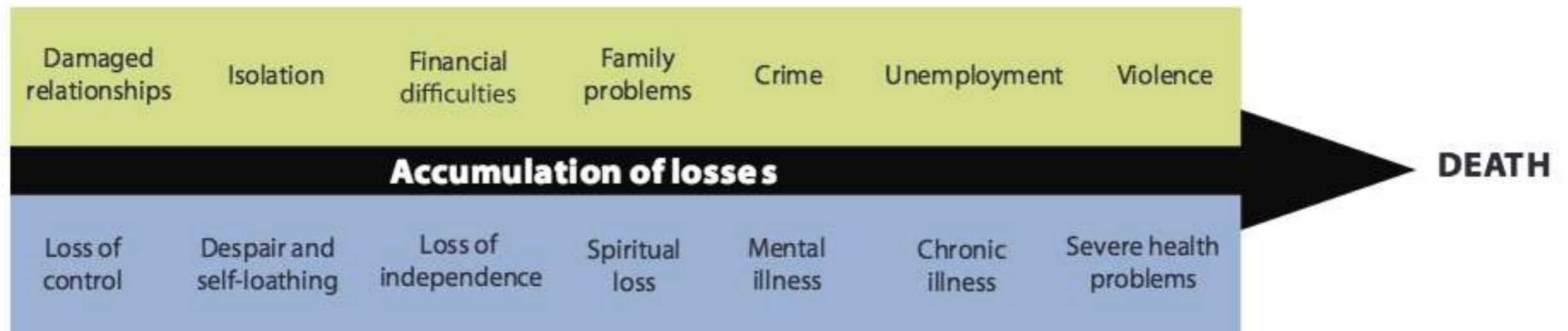


Relapse rates for drug-addicted patients are compared with those suffering from diabetes, hypertension, and asthma. Relapse is common and similar across these illnesses (as is adherence to medication). Thus, drug addiction should be treated like any other chronic illness, with relapse serving as a trigger for renewed intervention.

Source: *JAMA* 284:1689–1695, 2000.



External



Items listed above do not represent a chronological sequence of events.

Accumulation of Losses

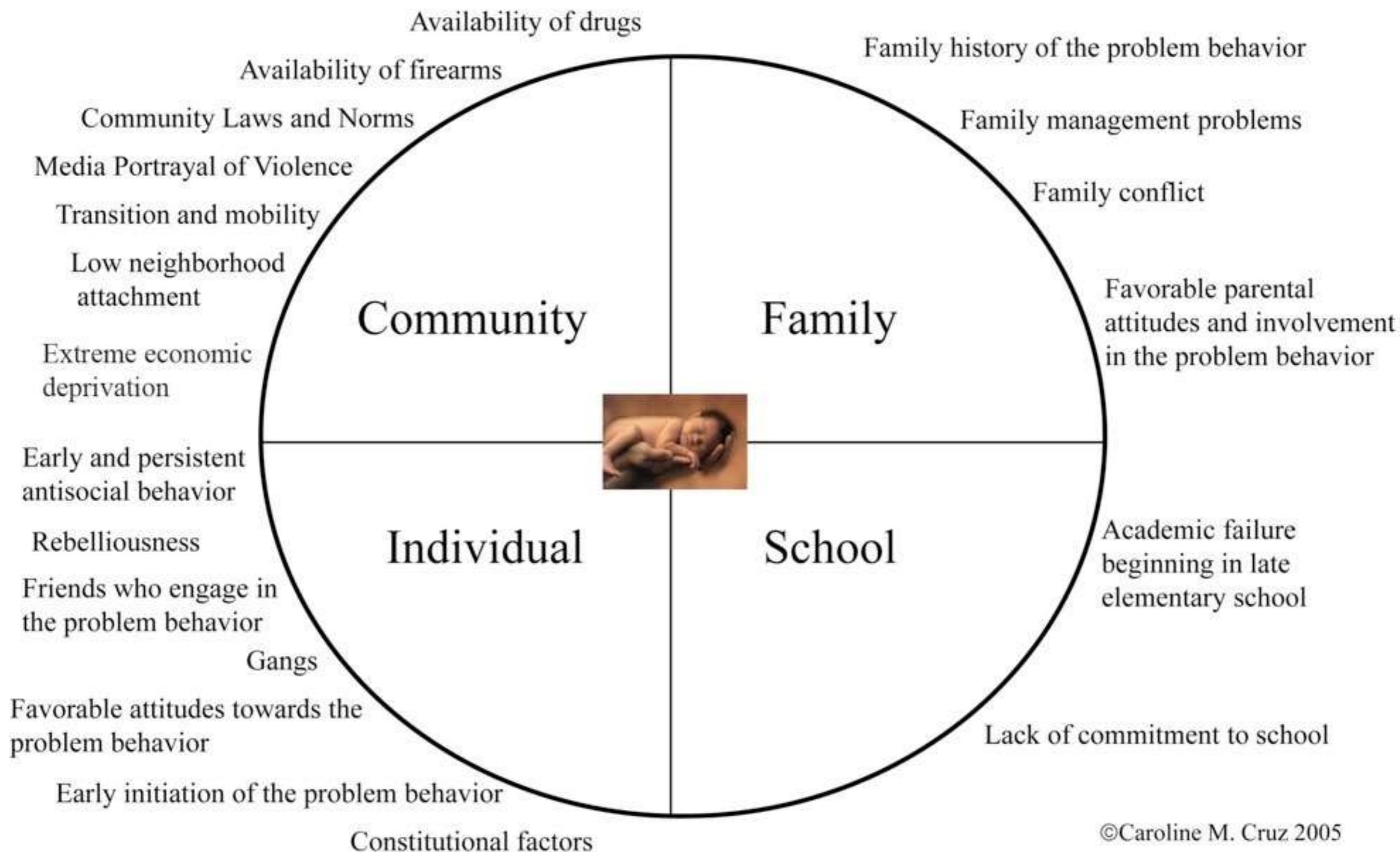
Continuum of Substance use & Abuse

- Non-use = decision not to use.
- Experimental use = desire to explore use.
- Recreational/Social use = using with friends.
- Habituated = regular use, predictable.
- Addiction/Dependent = negative effects, associated with withdrawal + dependence.

Why do people develop an addiction?

- Individual (genetics, physical, mental)
- Environment (neighbourhood, family history, social network)
- Behaviour/Drug

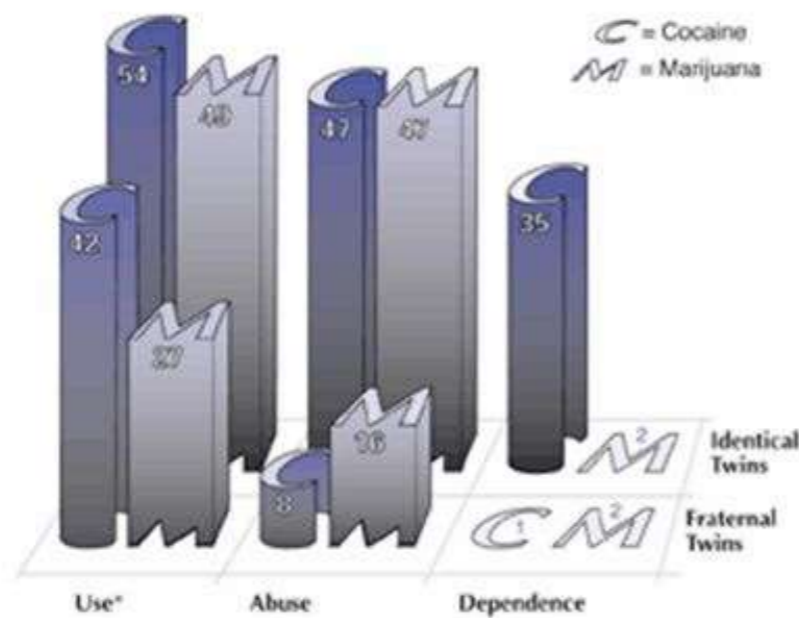
Summary of Risk Factors



Biological models

The genetics of addiction

Drug Use, Abuse, and Dependence Among Female Twin Pairs



Kendler and Prescott, (1998)

Family and twin studies

Agrawal and Lynskey (2006) – illicit drug abuse and dependence affected by genetic influences, heritability estimates between 45% and 79%

Kendler *et al.* (2003) common genetic factor influences alcohol abuse, drug abuse and dependence, and adult antisocial behaviour

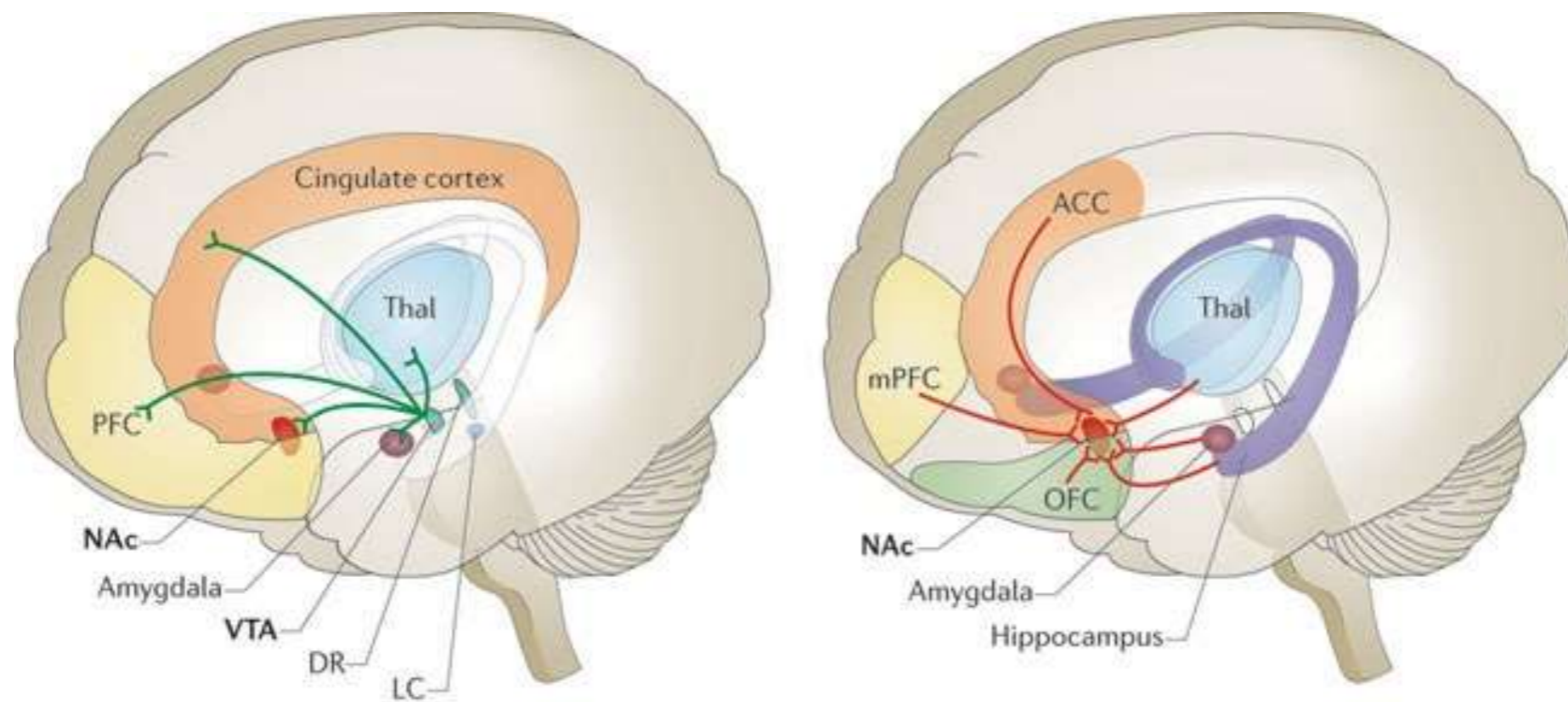
Specific genes, specific drugs

Variant of the D2 receptor gene DRD2 in $\frac{2}{3}$ deceased alcoholics compared to only $\frac{1}{5}$ of deceased non-alcoholics (Noble *et al.*, 1991). Individuals with this A1 variant have fewer dopamine receptors in pleasure centres in brain, hence become addicted to drugs that increase levels of dopamine.

Epigenetics vs Genetics - Twin Studies

Physiological Response to Drugs

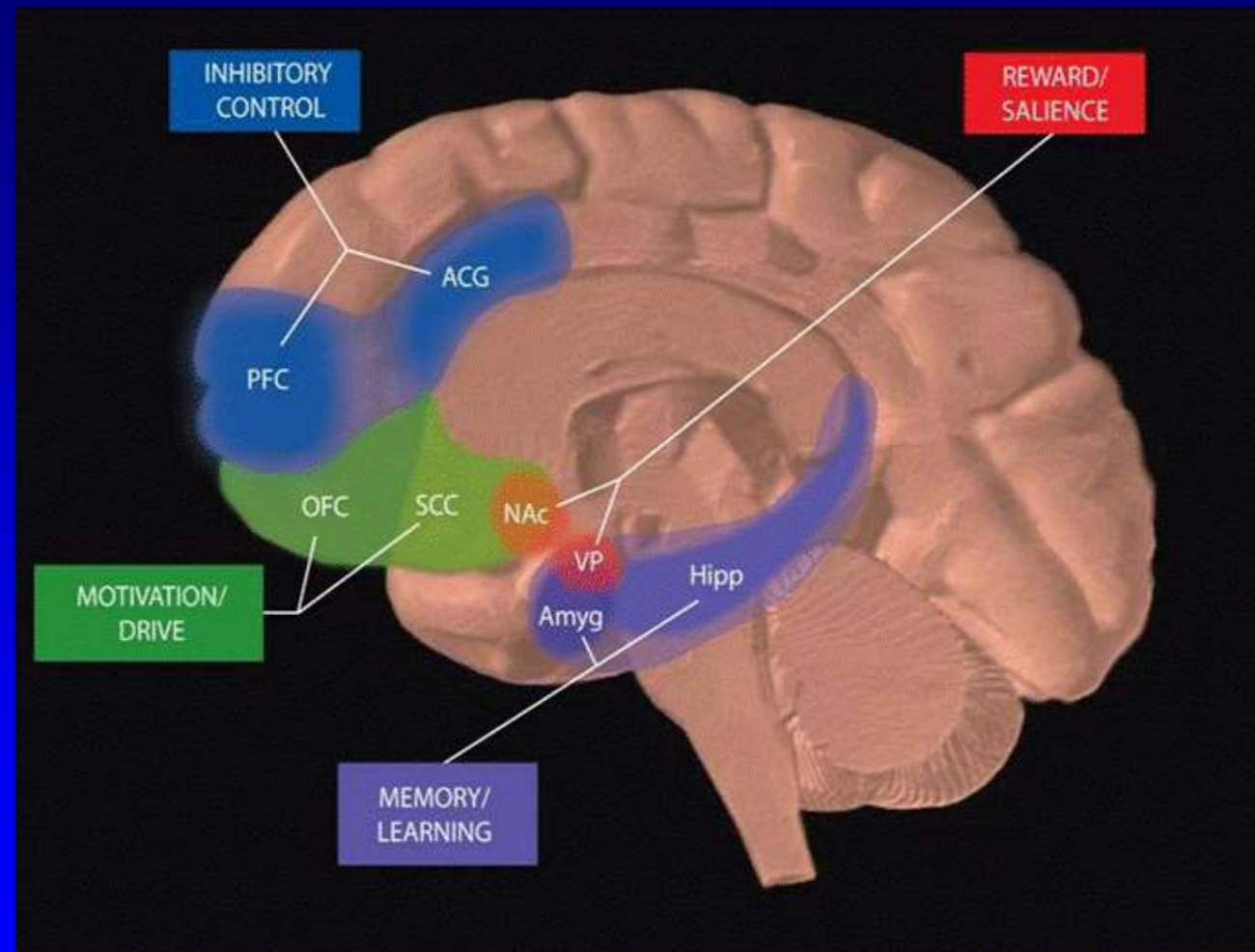
- Tolerance = larger and larger amounts must be taken to achieve the same effect.
- Tissue Dependence = physiological adaptation of the body due to prolonged use of a drug.
- Psychological Dependence = person begins to depend on a substance emotionally.
- Withdrawal = the body's attempt to rebalance itself after cessation of prolonged use of a psychoactive substance or compulsive behaviour.



Nature Reviews | [Neuroscience](#)

Neurobiology of Addiction

Circuits Involved In Drug Abuse and Addiction

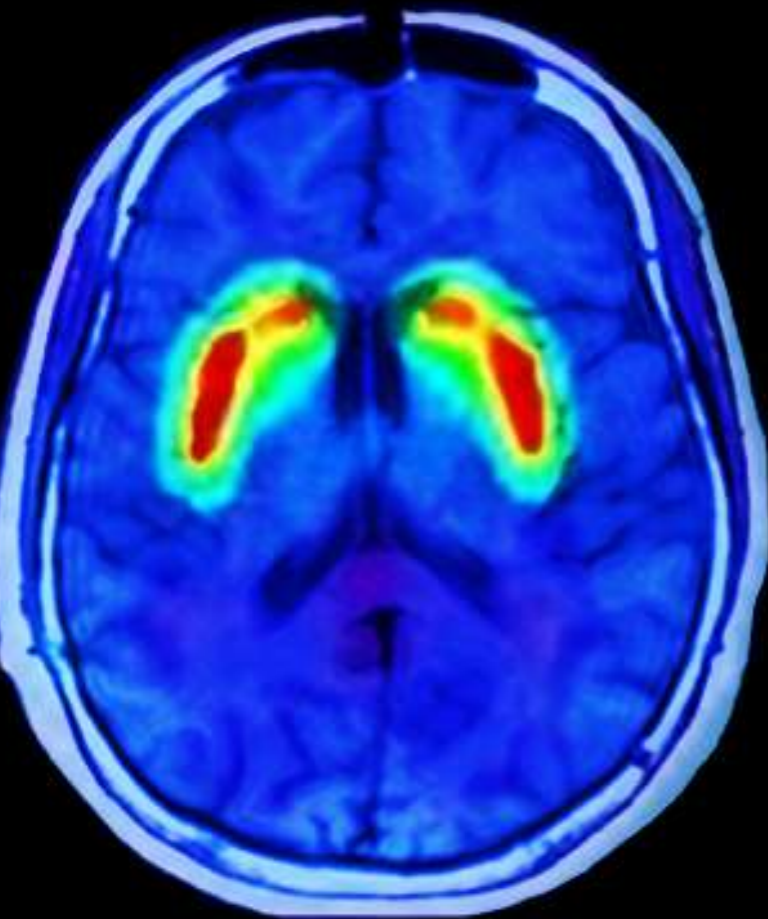


All of these brain regions must be considered in developing strategies to effectively treat addiction

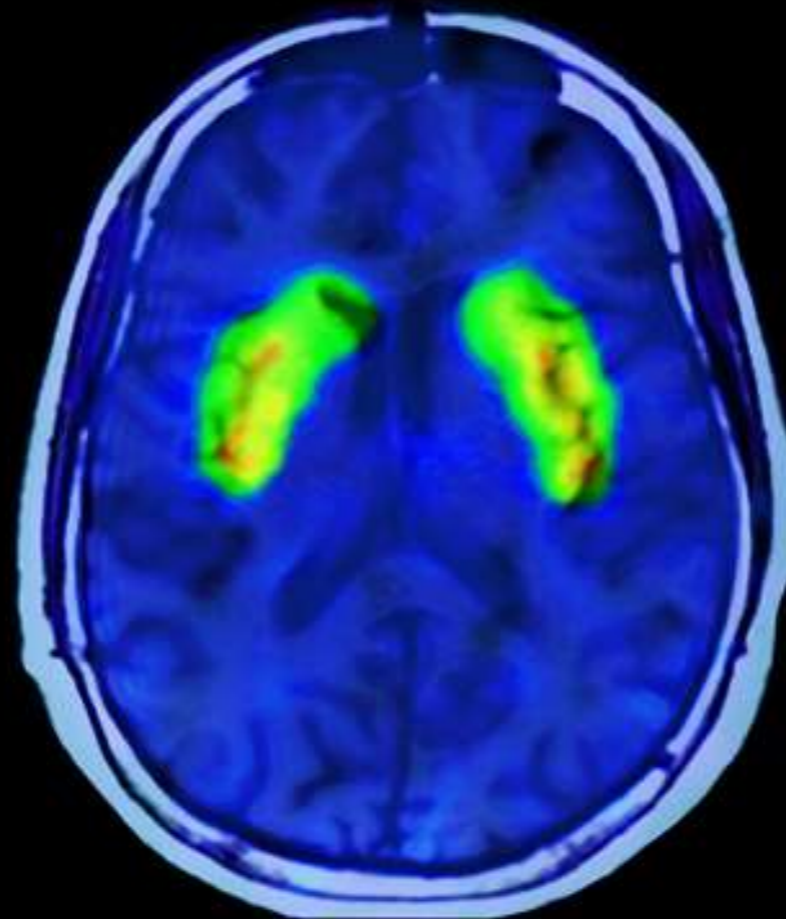
NIDA

Addiction and the brain

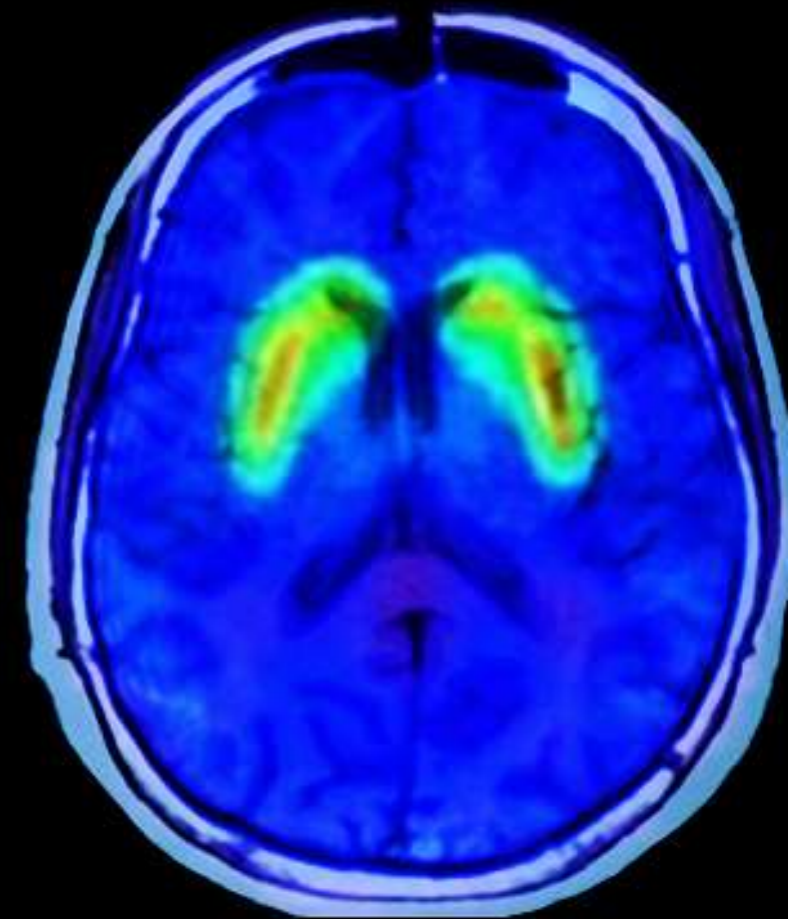
Normal



Cocaine

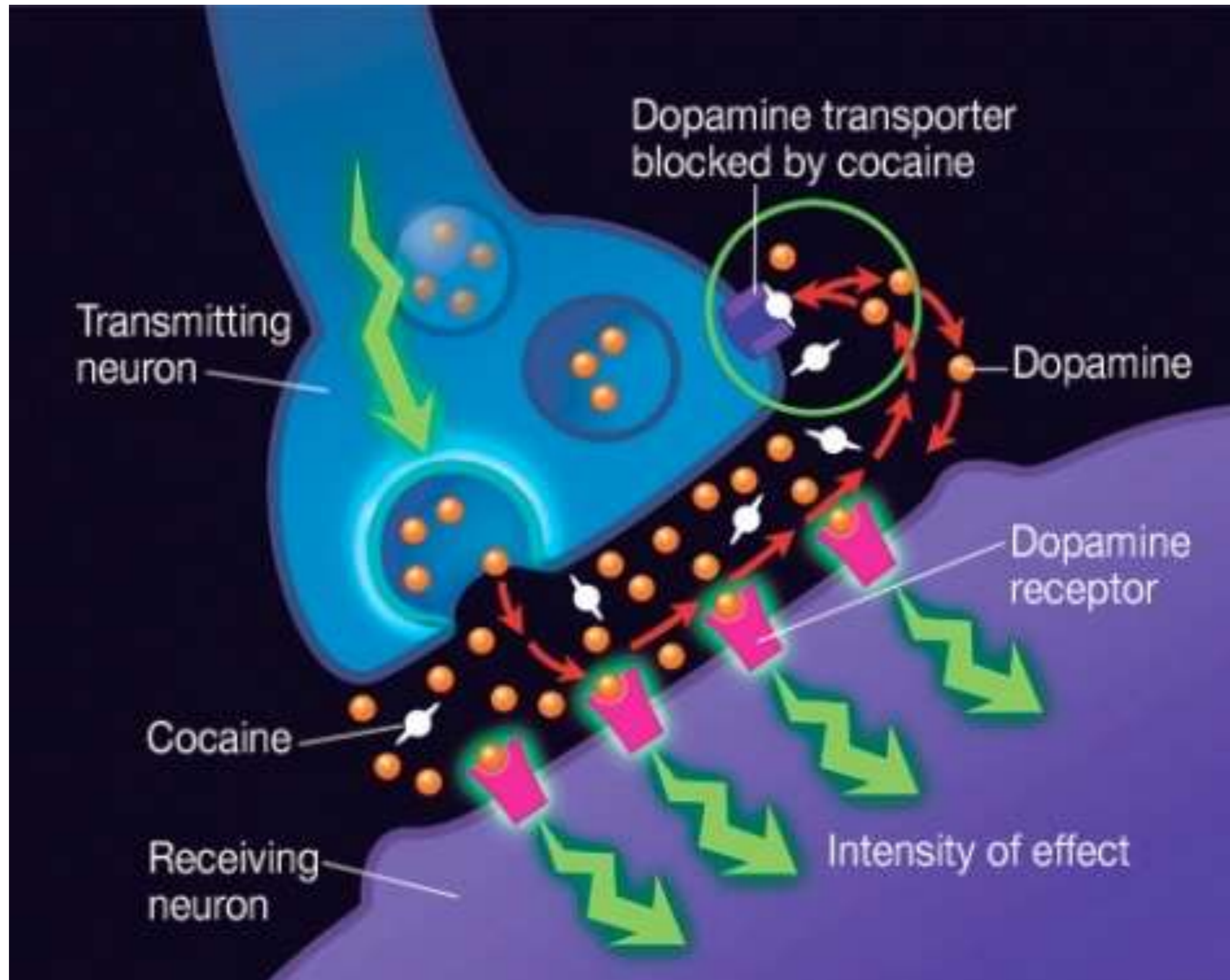


Obese



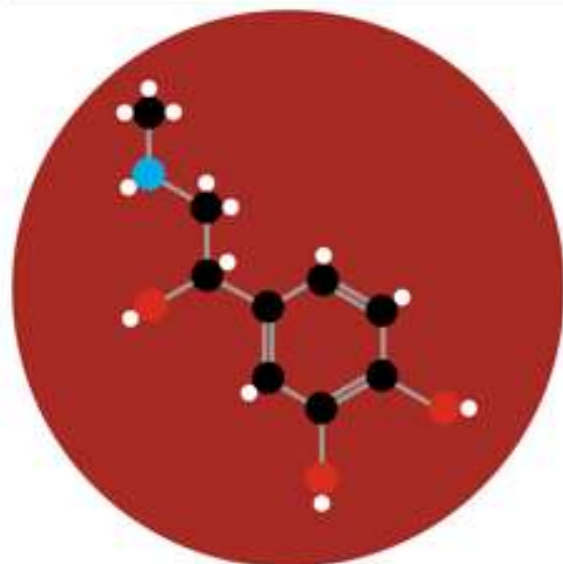
Changes in the brain

Neurotransmission



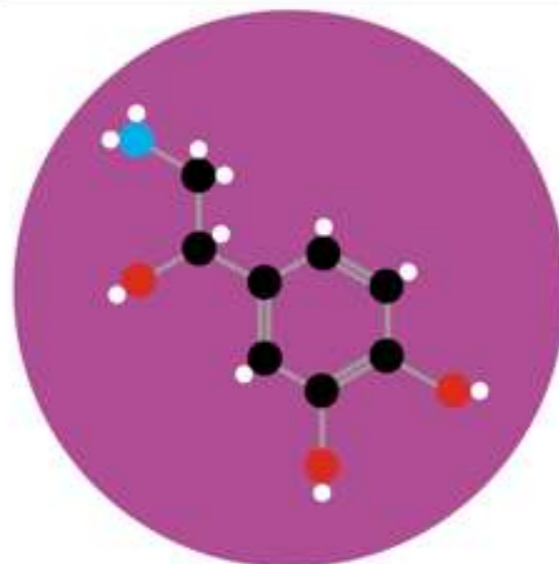
CHEMICAL STRUCTURES OF NEUROTRANSMITTERS

ADRENALINE $C_9H_{13}NO_3$
THE 'FIGHT OR FLIGHT' NEUROTRANSMITTER



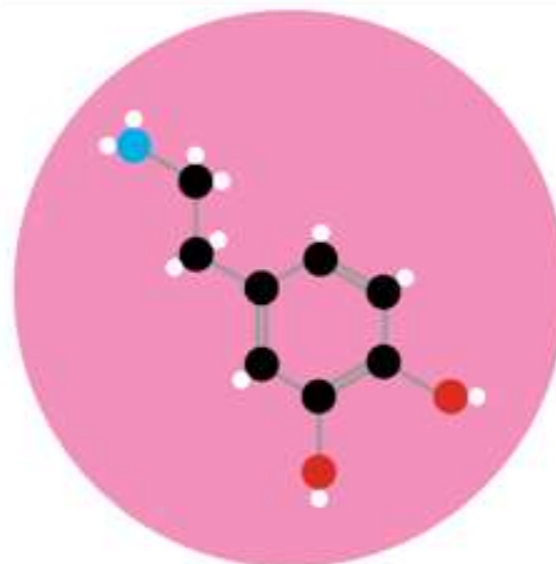
Adrenaline, also known as epinephrine, is a hormone produced in high stress or exciting situations. It stimulates increased heart rate, contracts blood vessels and dilates airways, to increase blood flow to the muscles & oxygen to the lungs. This leads to a physical boost, and heightened awareness. EpiPens, which are used to treat allergic reactions, work by injecting adrenaline.

NORADRENALINE $C_8H_{11}NO_3$
THE CONCENTRATION NEUROTRANSMITTER



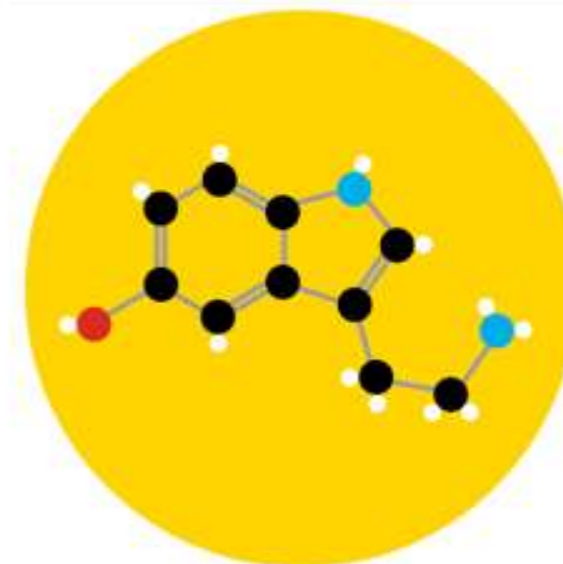
Noradrenaline, also known as norepinephrine, is a neurotransmitter that affects attention & responding actions in the brain. Alongside adrenaline, it is also involved in the 'fight or flight' response. Its effect in the body is to contract blood vessels to increase blood flow. Patients diagnosed with ADHD will often be prescribed drugs designed to help increase levels of noradrenaline in the brain.

DOPAMINE $C_8H_{11}NO_2$
THE PLEASURE NEUROTRANSMITTER



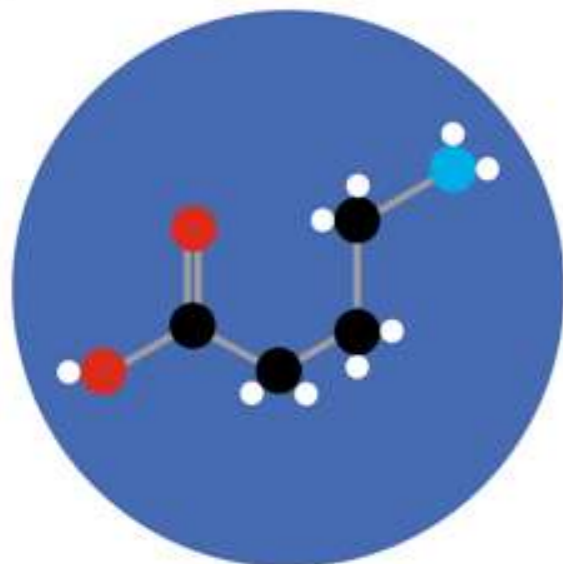
Dopamine is associated with feelings of pleasure & satisfaction. It is also associated with addiction, movement, and motivation. The feelings of satisfaction caused by dopamine can become desired, and to satisfy this the person will repeat behaviours that lead to release of dopamine. These behaviours can be natural, as with eating and sex, or unnatural, as with drug addiction.

SEROTONIN $C_{10}H_{12}N_2O$
THE MOOD NEUROTRANSMITTER



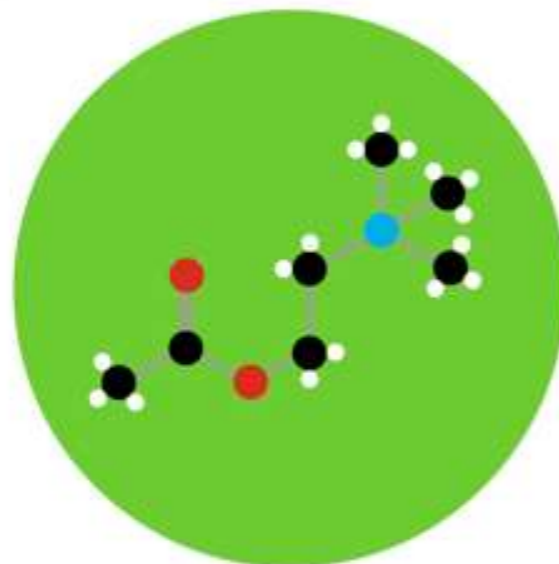
Serotonin is thought to be a contributor to feelings of well-being and happiness. It regulates the sleep cycle along with melatonin, and also regulates intestinal movements. Low levels of serotonin have been linked to depression, anxiety, and some mental disorders. Antidepressants work by increasing serotonin levels. Exercise and light levels can also both have positive effects on the levels of serotonin.

γ-AMINOBUTYRIC ACID $C_4H_9NO_2$
THE CALMING NEUROTRANSMITTER



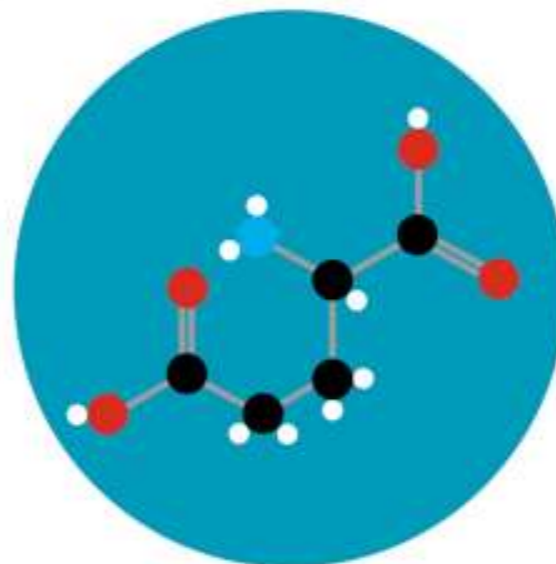
Gamma-aminobutyric acid (GABA) is the major inhibiting neurotransmitter of the brain; its role is to calm firing nerves in the central nervous system. Increased levels improve mental focus and relaxation, whilst low levels can cause anxiety, and have also been linked with epilepsy. GABA also contributes to motor control and vision. Drugs to treat epilepsy often work by increasing levels of GABA in the brain.

ACETYLCHOLINE $C_7H_{16}NO_2^+$
THE LEARNING NEUROTRANSMITTER



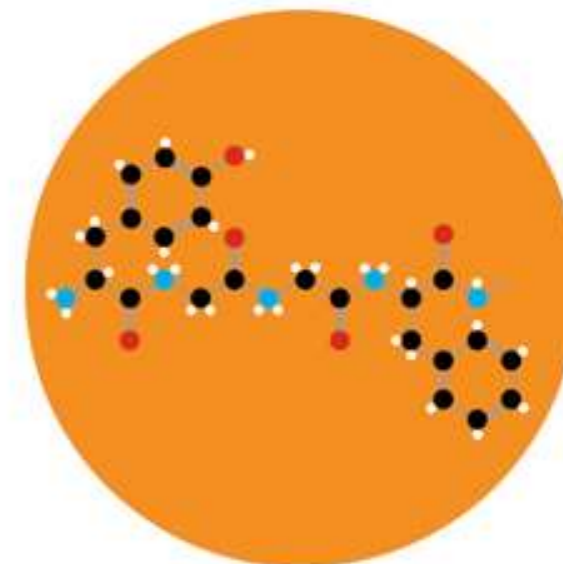
Acetylcholine, often shortened to ACh, is the principle neurotransmitter involved in thought, learning and memory. In the body, it is involved in activating muscle action. Damage to the acetylcholine producing areas of the brain has been linked with the memory deficits associated with Alzheimer's disease. Acetylcholine is also associated with attention, and enhancement of sensory perception upon waking.

GLUTAMATE $C_5H_9NO_4$
THE MEMORY NEUROTRANSMITTER



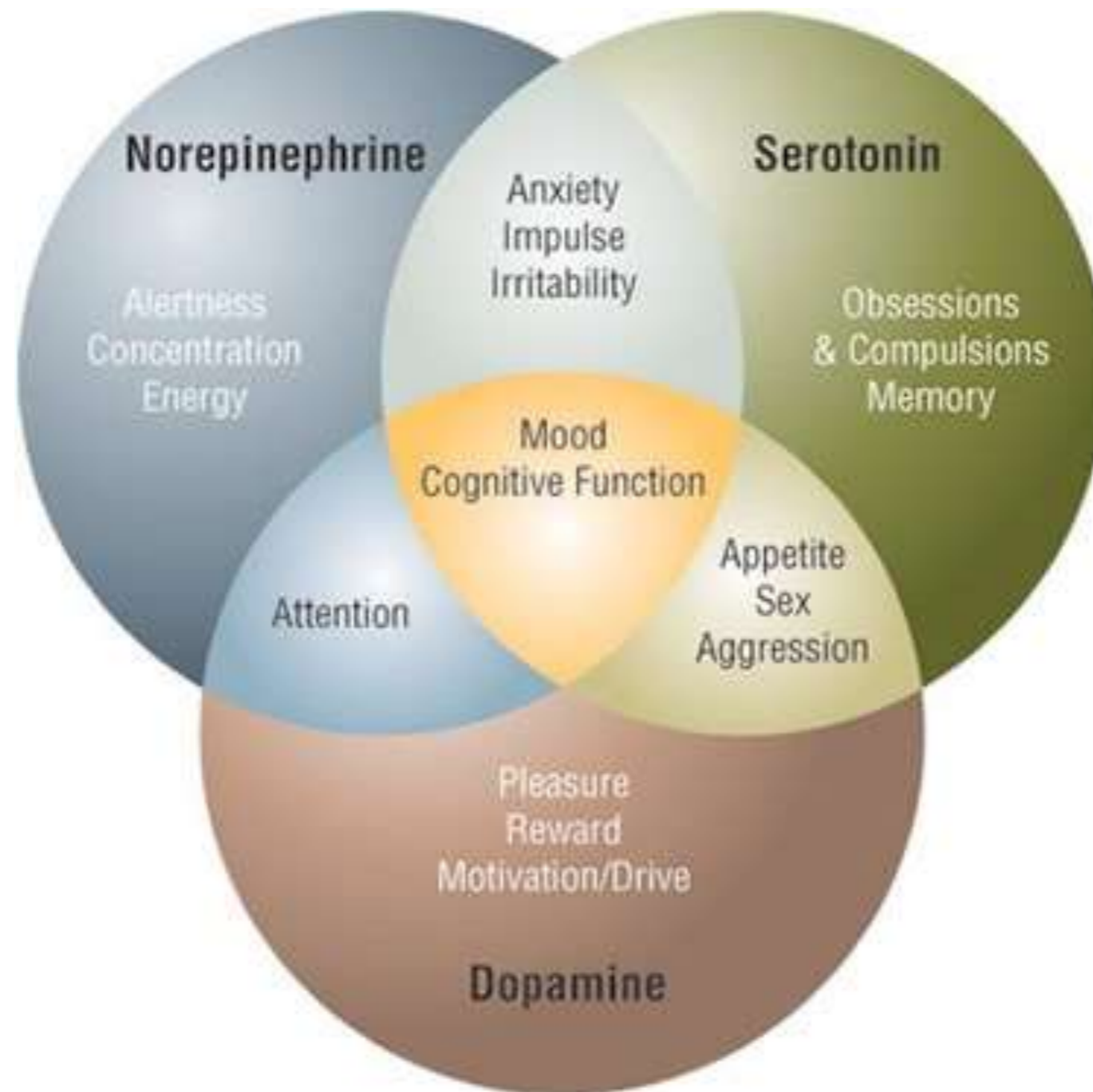
Glutamate is the most common neurotransmitter in the brain, and is involved in cognitive functions, such as learning and memory. It also regulates brain development and creation of nerve contacts. Glutamate is actually toxic to neurons in larger quantities, and if too much glutamate is present it can kill them; brain damage or strokes can lead to the creation of a harmful excess, killing brain cells.

ENDORPHINS 20+ TYPES IN THE HUMAN BODY
THE EUPHORIA NEUROTRANSMITTERS



Endorphins are a range of compounds, the biologically active section of which is shown above, formed from long chains of multiple amino acids. They are released in the brain during exercise, excitement, pain, and sexual activity, and produce a feeling of well-being or even euphoria. At least 20 types of endorphins have been identified in humans. Certain foods, such as chocolate & spicy foods, can also stimulate the release of endorphins.

Neurotransmitters



What's in the media?

'Weak' doctors blamed for flood of prescription painkillers behind epidemic of drug-related deaths

BY SHARON KIRKEY, NATIONAL POST AUGUST 25, 2015

 · 3am · Celebrity News · Tom Hardy

Tom Hardy on his drug addiction past: "I would have sold my mother for crack"

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By Jonathan Ringen | November 21, 2014 9:00 AM EST

NHL'S JARRET STOLL Erin Andrews' BF BUSTED FOR COKE & ECSTASY

Ontario plans mandatory drug tests for people on welfare

CBC News
[November 7, 2015](#)

Memory-Erasing Drug May Help Prevent Meth Addicts From Relapsing

An estimated 93 percent of meth addicts relapse, but a new study offers some hope.

 Carolyn Gregoire
Senior Health & Science Writer, The Huffington Post



Why Binge Drinking May Wire the Brain for Alcohol Dependence

By R. Douglas Fields | October 23, 2015 |  3

Cheese Has A Similar Neurological Effect As Cocaine And Heroin: Study

By Guneet Bhatia  @Guneet_B on October 26 2015 7:03 AM EDT

Not unlike mental illness, there exists a negative view and stigma around addiction, that these members of society are somehow weaker than others, that it is acceptable for us to turn a blind eye to their suffering. It's time to clear the air—addiction is a disease, and those who suffer with it need medical assistance just as those who suffer from heart disease or cancer.¹³

Dr Brian Day, President

Canadian Medical Association, 2007/2008

Stigma

Stigma

- What is Stigma? What is Discrimination?
 - Stigma is a negative stereotype and discrimination is the behaviour that results from this negative stereotype.
- A 2006 Australian study found:
 - nearly 1 in 4 of people felt depression was a sign of personal weakness and would not employ a person with depression.
 - 42% thought people with depression were unpredictable.
 - nearly 2 in 3 people surveyed thought people with schizophrenia were unpredictable and a quarter felt that they were dangerous .

How can we challenge stigma?

- learn and share the facts about mental health and illness.
- get to know people with personal experiences of mental illness.
- offer the same support to people when they are physically or mentally unwell.
- don't label or judge people with a mental illness, treat them with respect and dignity as you would anyone else.
- talk openly of your own experience of mental illness. The more hidden mental illness remains, the more people continue to believe that it is shameful and needs to be concealed. *

Language Matters

Language is powerful - especially when talking about addictions.

Stigmatizing language perpetuates negative perceptions.

"Person first" language focuses on the person, not the disorder.

When Discussing Addictions...

SAY THIS

NOT THAT

Person with a substance use disorder

Person living in recovery

Person living with an addiction

Person arrested for drug violation

Chooses not to at this point

Medication is a treatment tool

Had a setback

Maintained recovery

Positive drug screen

Addict, junkie, druggie

Ex-addict

Battling/suffering from an addiction

Drug offender

Non-compliant/bombed out

Medication is a crutch

Relapsed

Stayed clean

Dirty drug screen

Language does
matter!

Stigmatizing language

- Addict, Abuser, Junkie. [*person in active addiction*]
- Abuse. [*misuse, harmful use, problem use, risky use*]
- Clean, Dirty. [*negative, positive, substance-free*]
- Habit or Drug Habit. [*substance misuse disorder, active addiction*]
- User. [*person who misuses...*]

Johann Hari:

Everything you think you know about addiction is wrong

TEDGlobalLondon · 14:42 · Filmed Jun 2015

21 subtitle languages ?

View interactive transcript



Really good TED Talk!

<https://youtu.be/PY9DcIMGxMs>

The Addiction Workshop

"Star-light, Star-bright, the first Star I see tonight" -
What would you wish for?

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Dr. Aaron Van Gaver BSc ND Inc.
Naturopathic Physician

*"You take the first step,
I'll walk with you the rest."*

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End of Module #1a

- Module # 2 - Current Medical Options
 - ◆ understanding how MD's triage patients
- Module # 3 - Assessments in Addiction
 - ◆ how to assess patients with addiction issues
- Module # 4 - Naturopathic Options in Addiction
 - ◆ treatment options/protocols for ND's

Questions?