Holiday Heart

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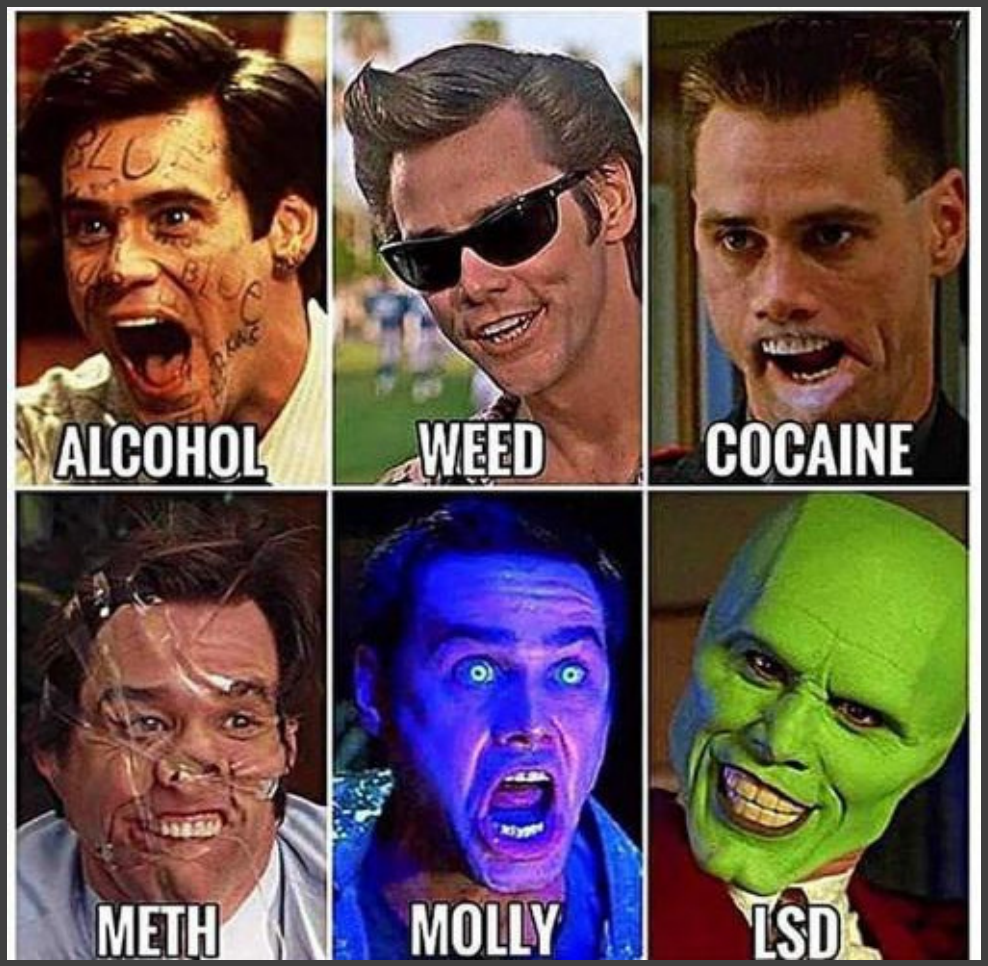
Disclosures

None

Objectives

- Differentiate between substance use, substance abuse, and dependence
- Define the prevalence and incidence as well as any risk factors for various substance-induced cardiovascular conditions
- List effects of substances on the cardiovascular system
- Describe evidenced- based treatment and prevention strategies available



Drugs described through the many faces of Jim Carrey

Substances

- Alcohol
- Marijuana
- Heroin
- Cocaine
- Methamphetamine

Definitions

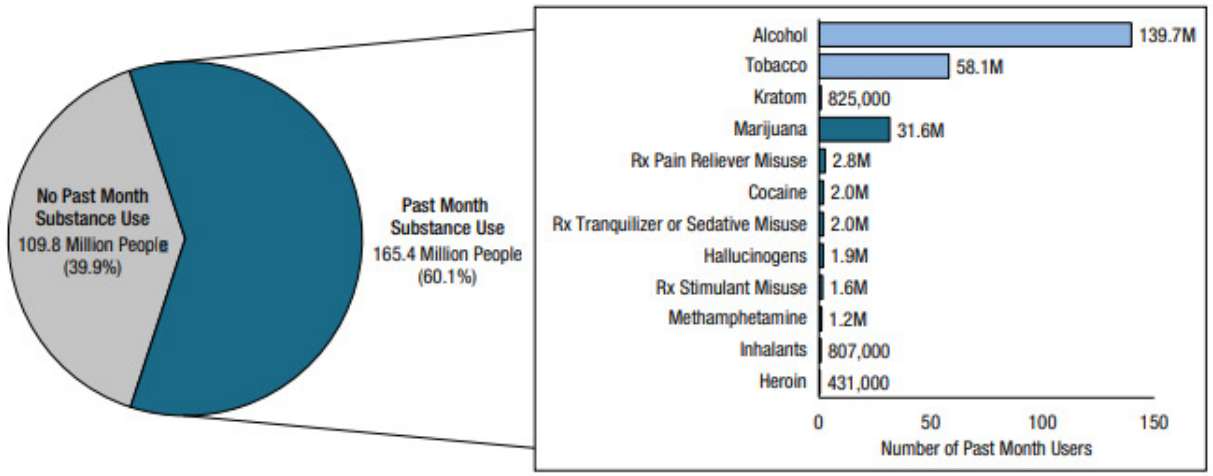
- Use
- Abuse
  - Continuing to use despite interference with life
- Dependence
  - Addiction; may include withdrawal symptoms
- Substance Use Disorder

- Conner, et al., 2014; Seitz, et al., 2019

Overall Trends

- In those 12 and older, 165.4 million used a substance in the last month
  - 50.8% used alcohol
  - 21.1% used tobacco
  - 13% used illicit drug or marijuana

Figure 1. Past Month Substance Use among People Aged 12 or Older: 2019



Rx = prescription.

Note: Substance Use includes any illicit drug, kratom, alcohol, and tobacco use.

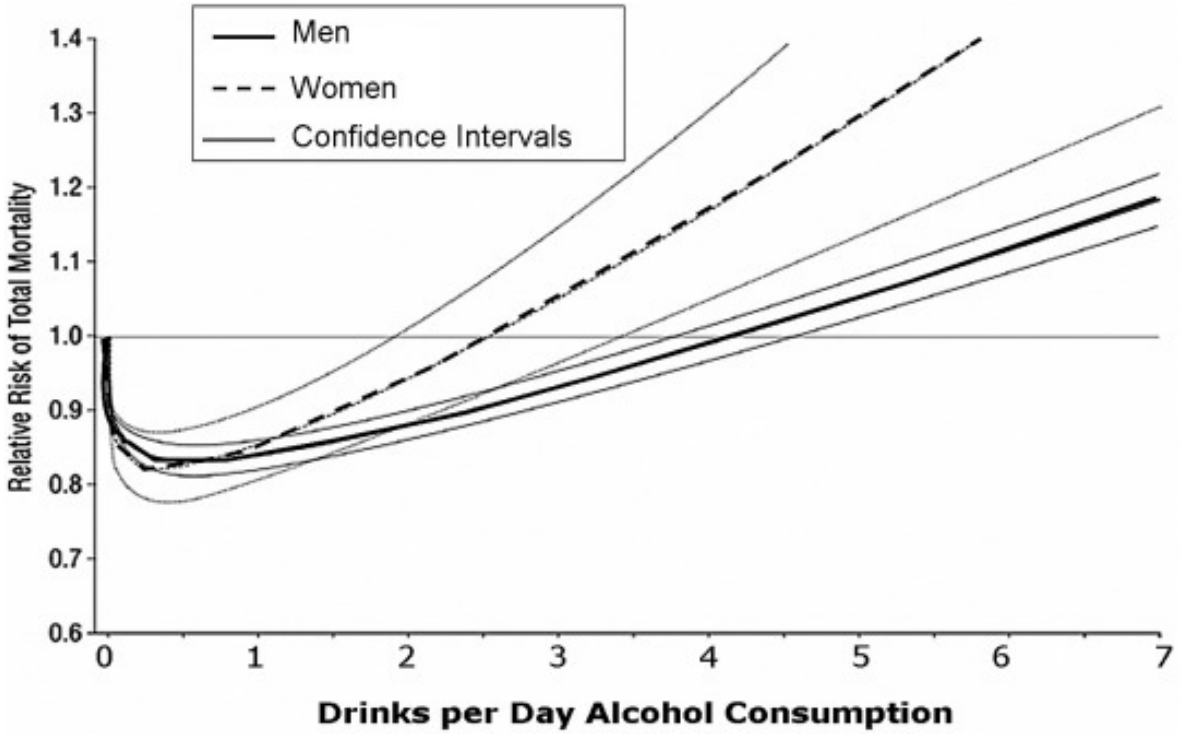
Note: The estimated numbers of current users of different substances are not mutually exclusive because people could have used more than one type of substance in the past month.

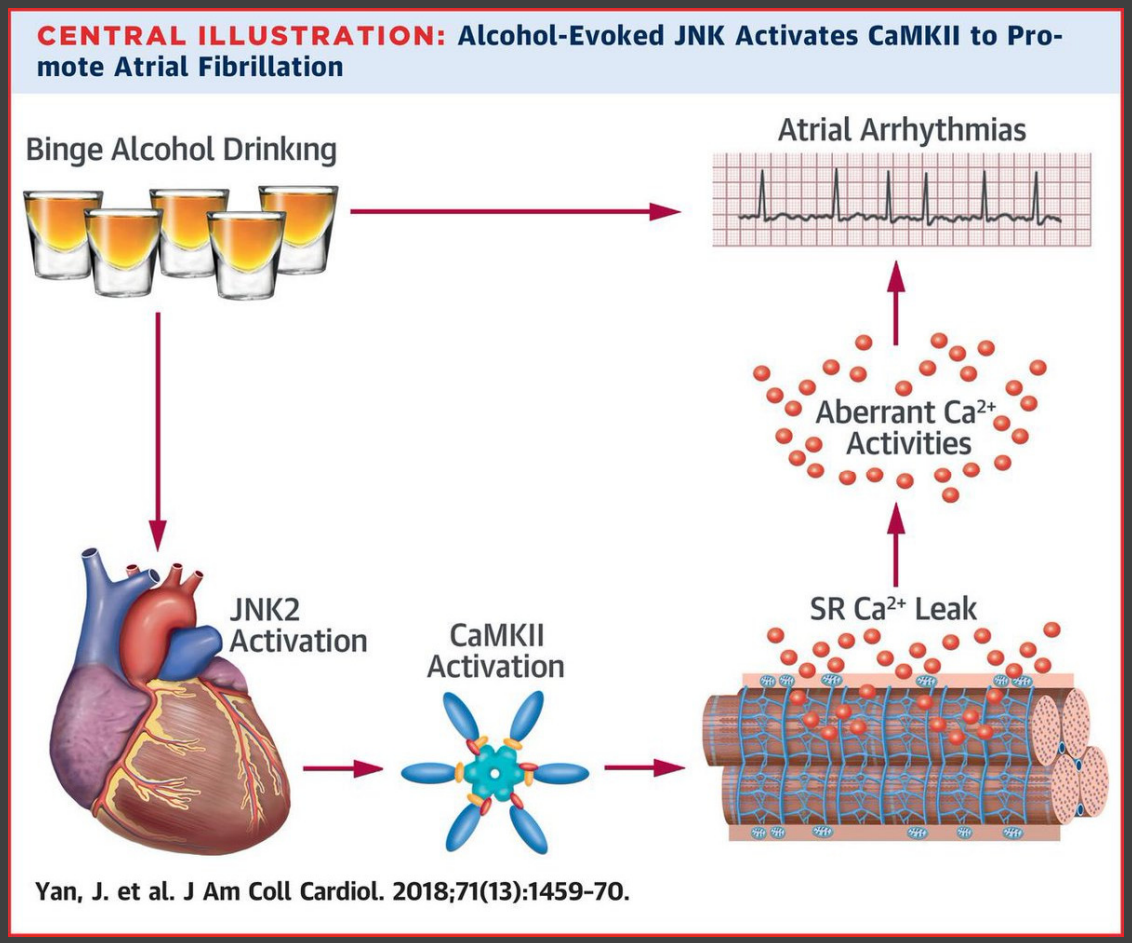
SAMSHA, 2020

Alcohol effects on the heart

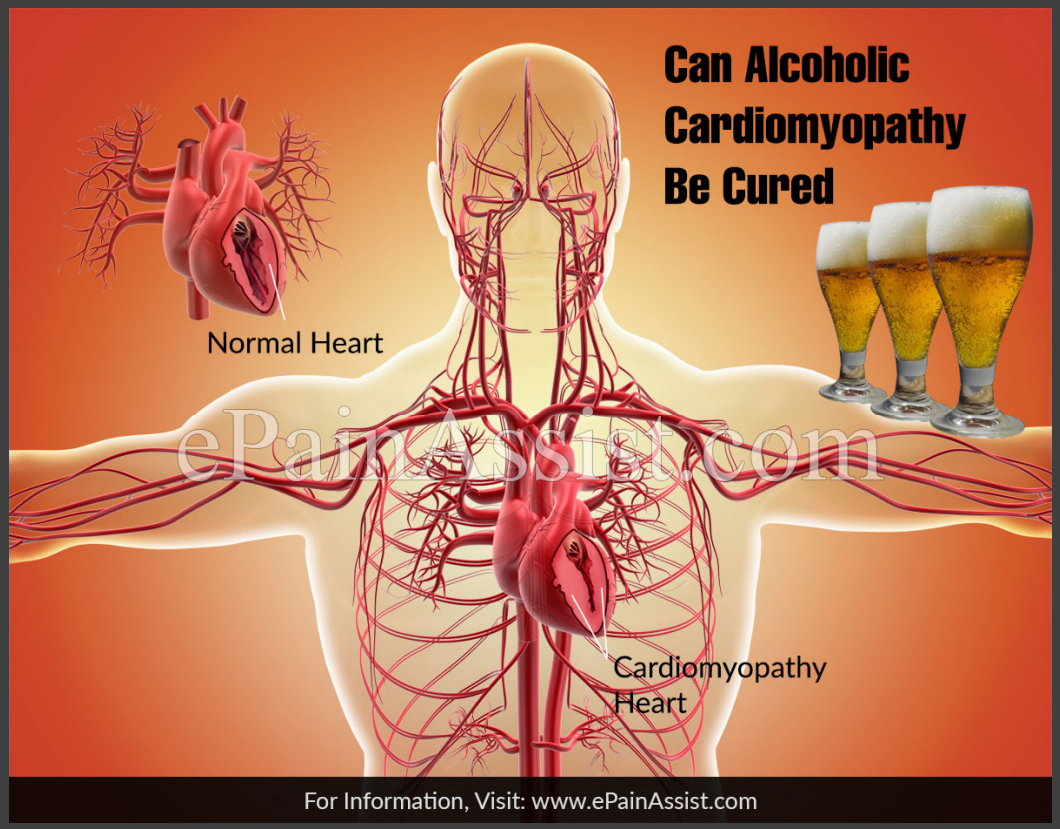
- Good
- Bad
- Ugly

The Good


Men
Women
Confidence Intervals
Relative Risk of Total Mortality
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0
1
2
3
4
5
6
7
Drinks per Day Alcohol Consumption



The Bad: Holiday Heart



The Ugly: Alcoholic Cardiomyopathy

- Alcohol effects on left ventricle function can be reversible If:
- Short duration of alcohol
- Started before fibrosis occurs
- Abstinence is ensued
- Takes 1-6-18 months

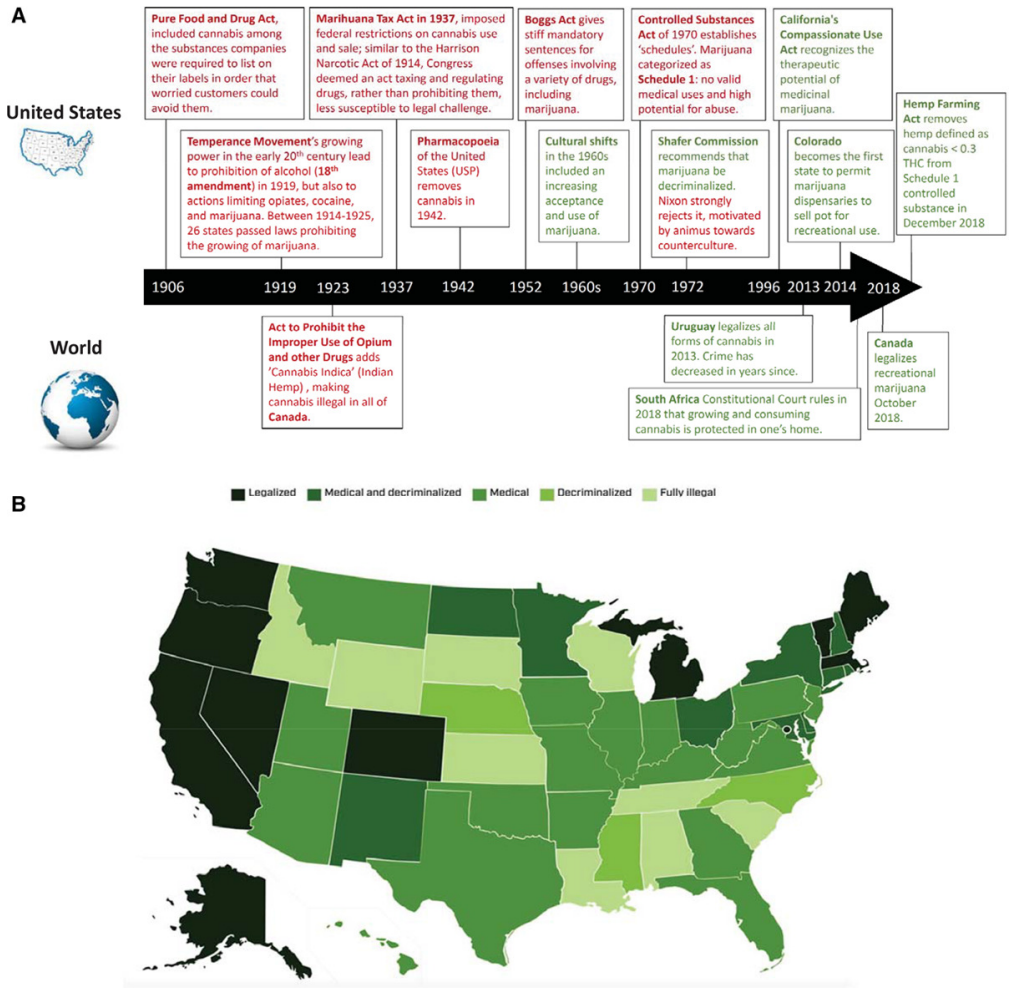
- Poor prognosis if continued use
- Mortality as high as 42% at 3 years

"Moderation. Small helpings. Sample a little bit of everything. These are the secrets of happiness and good health."

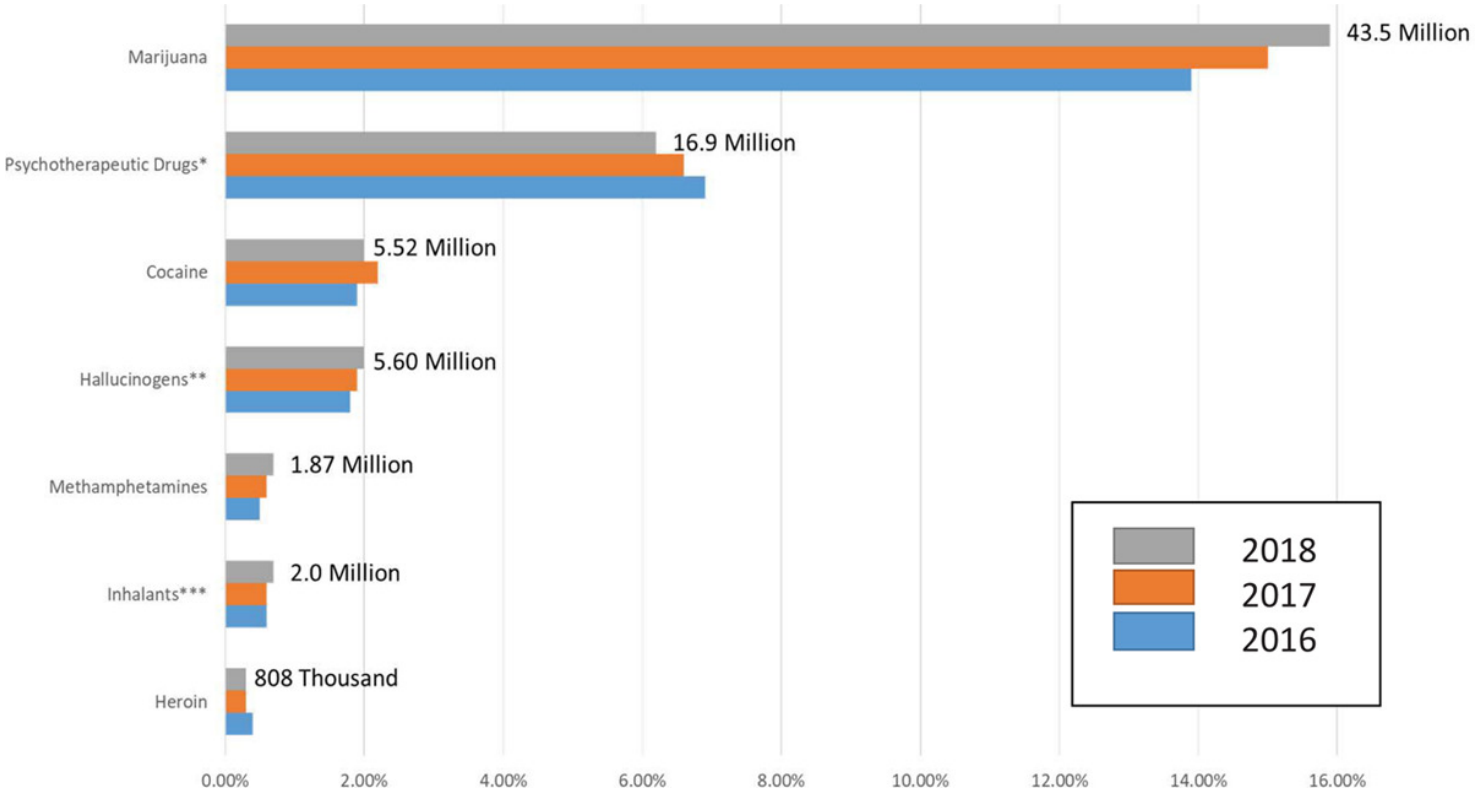
-Julia Child

Cannabis

- THC (tetrahydrocannabinolic acid): the component of the plant that induces a “high,” and
- CBD (cannabidiol): advertised as providing relief for anxiety, depression, insomnia, and post-traumatic stress disorder. “Nonpsychoactive,”
- Cannabis is classified as a Schedule I drug by the U.S. Drug Enforcement Agency (DEA), which severely limits scientists from studying it



Robert L. Page. Circulation. Medical Marijuana, Recreational Cannabis, and Cardiovascular Health: A Scientific Statement From the American Heart Association, Volume: 142, Issue: 10, Pages: e131-e152, DOI: (10.1161/CIR.0000000000000883)



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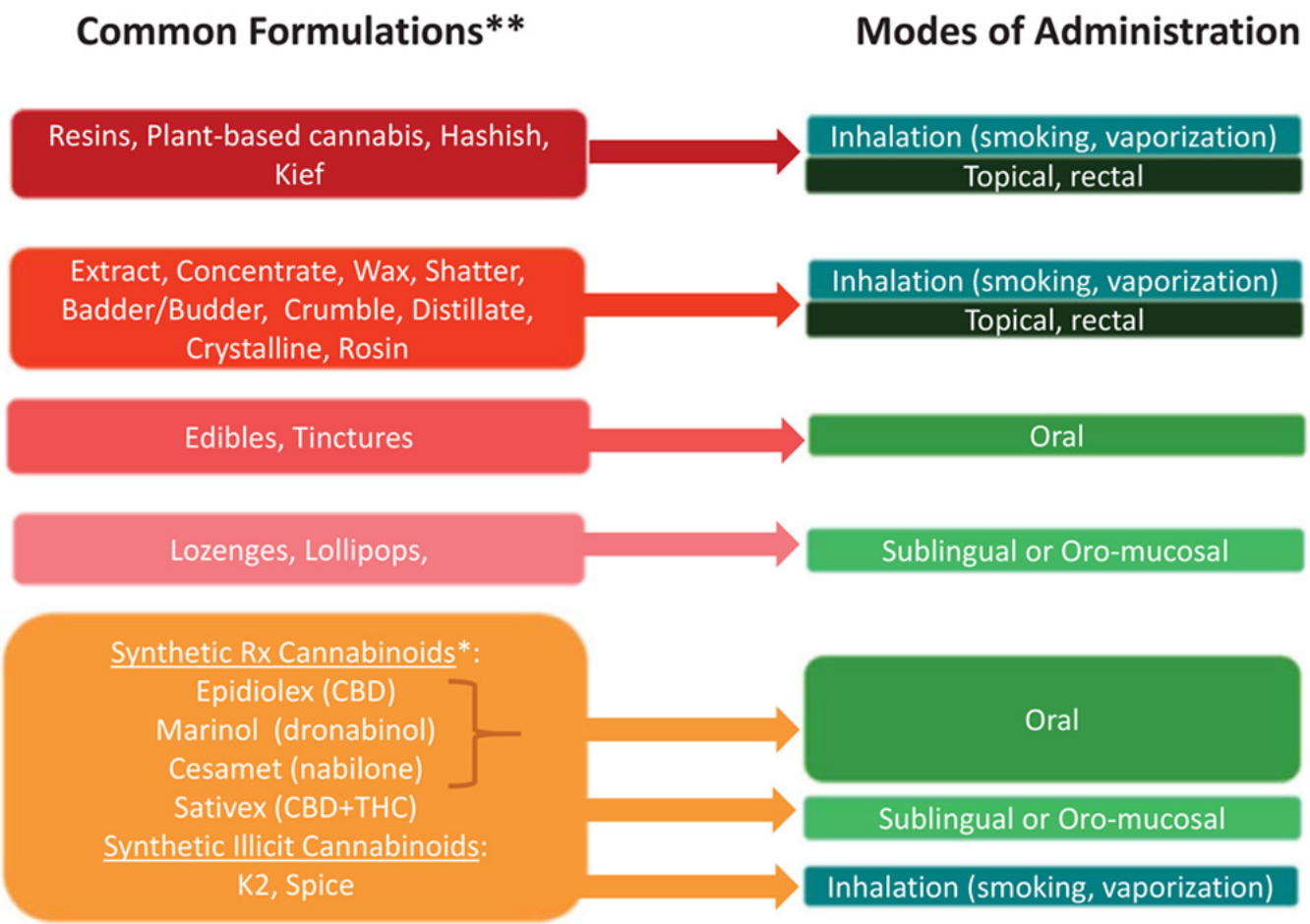

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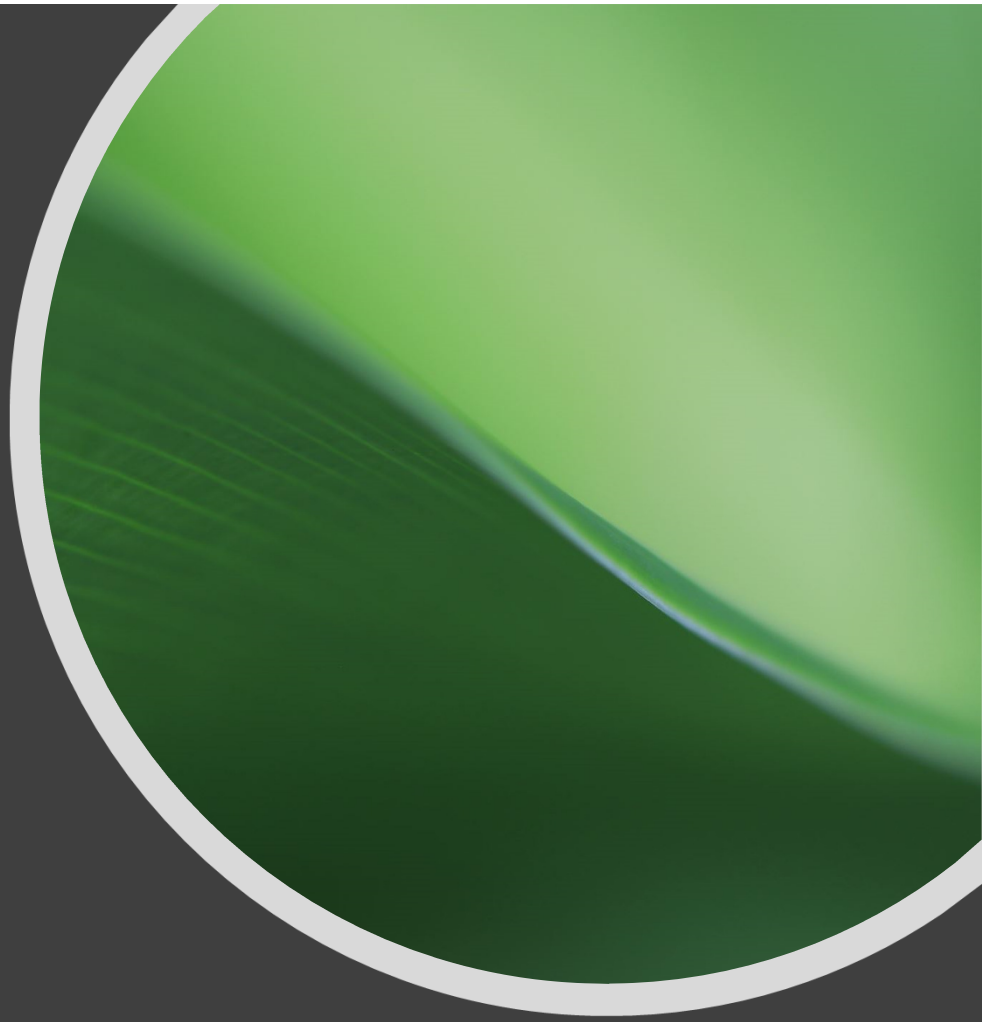
Cannabis

Observational studies have found no cardiovascular benefits associated with cannabis use.

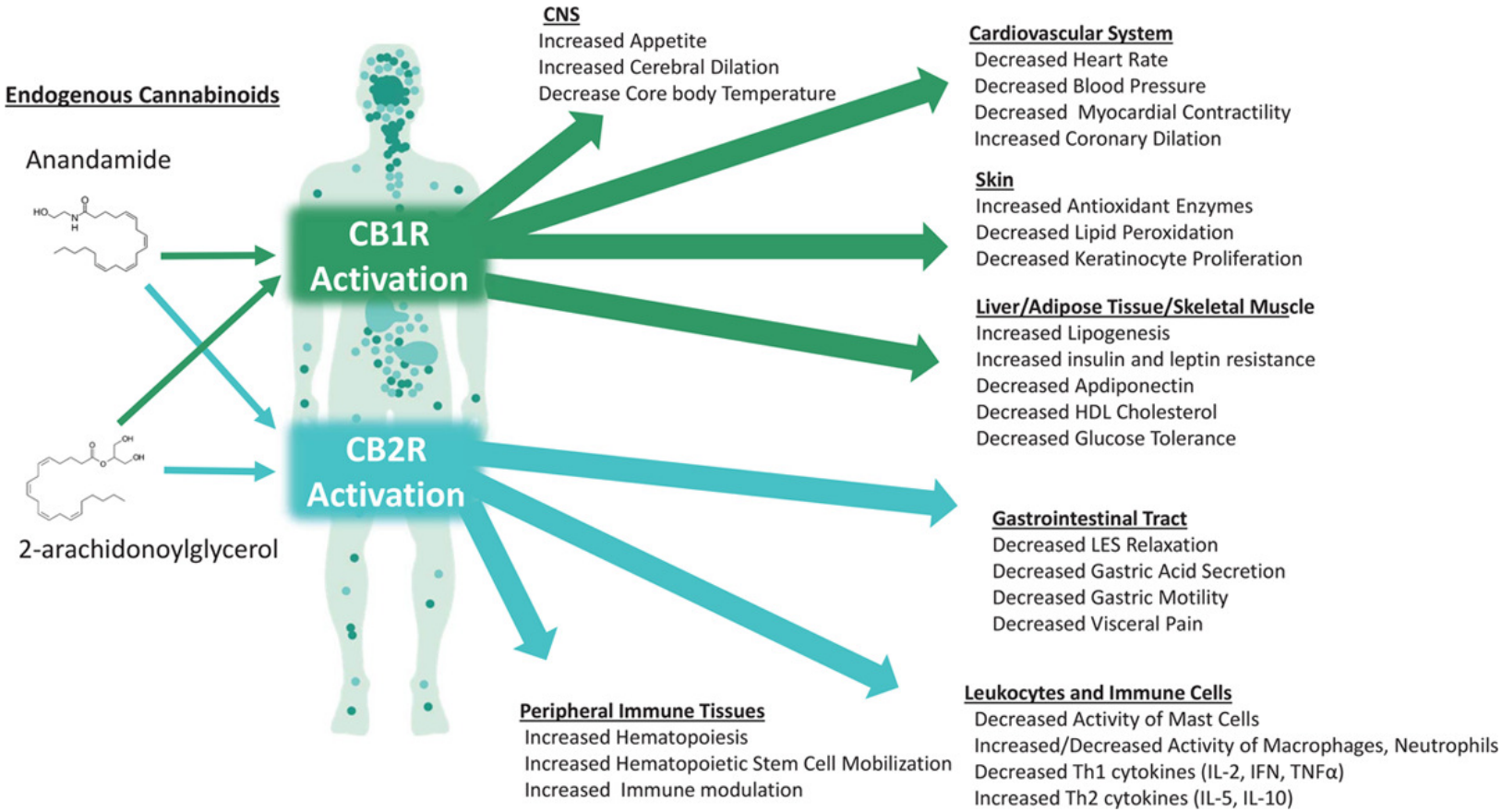
Cannabis use may be linked to an increased risk of heart attacks, atrial fibrillation and heart failure:



Cannabis

- THC:
  - Heart rhythm abnormalities
    - Tachycardia
    - PVCs
    - Atrial Fib
    - Ventricular arrhythmias
  - Stimulates SNS
    - Increase HR
    - Vasoconstriction
      - Intimal injury/ vascular dysfunction

- CBD
  - Reduced HR
  - Lower BP
  - Vasodilation
  - Possibly reduced inflammation



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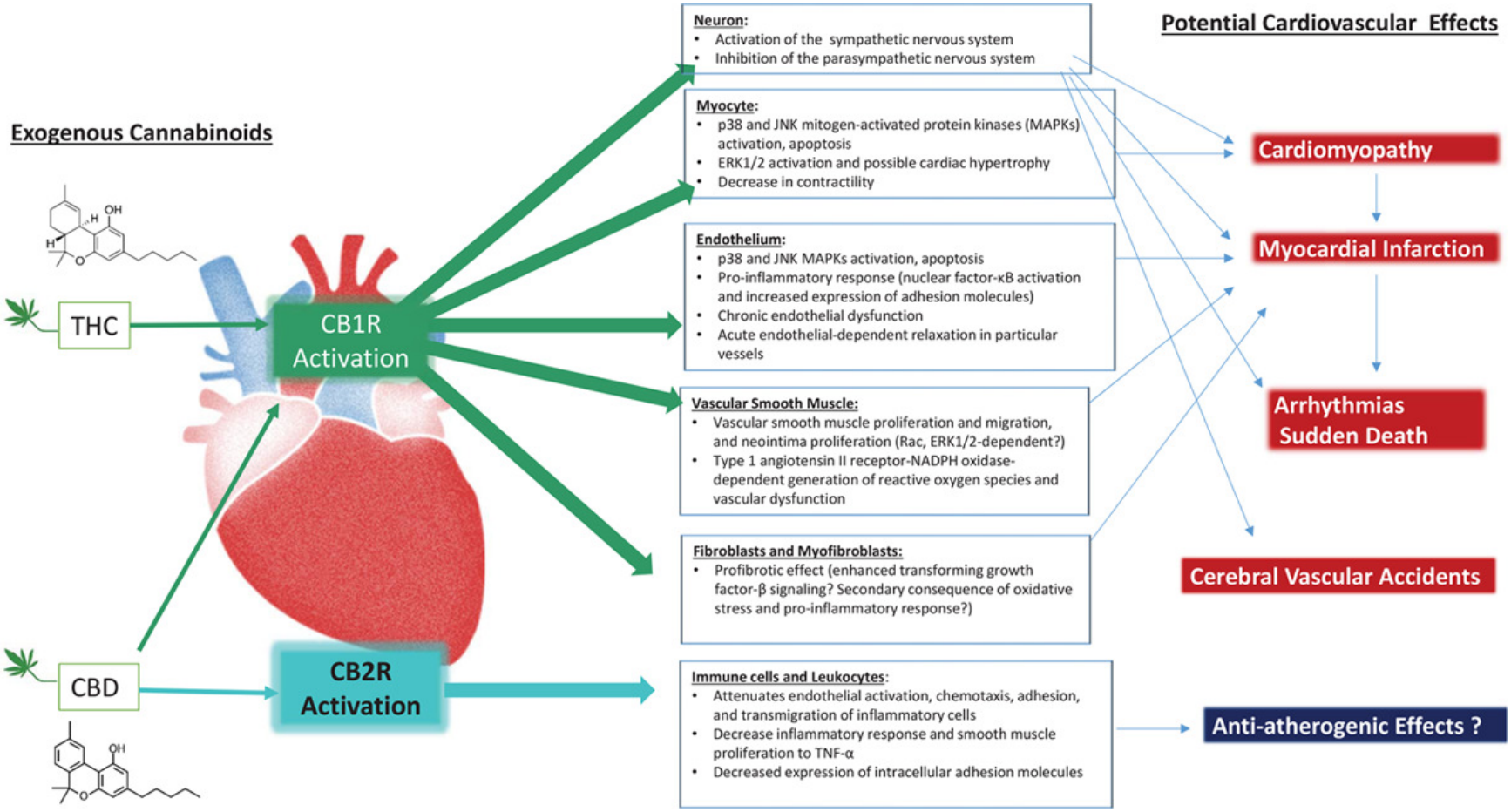

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Smoking Cannabis

- Associated with cardiomyopathy
- Angina
- Heart attacks
- Heart rhythm disturbances
- SCD
- Increased incidence of MI in states where cannabis is legal

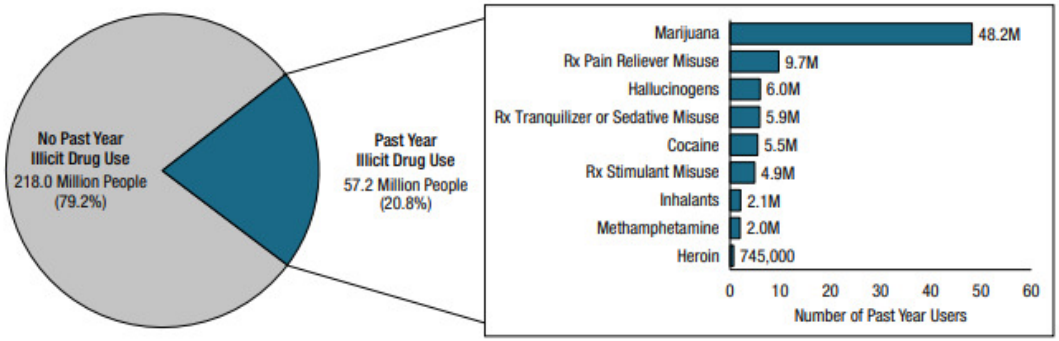
- *Smoking and inhaling cannabis, regardless of THC content, has been shown to increase the concentrations of blood carboxyhemoglobin (carbon monoxide, a poisonous gas) five-fold, and a three-fold increase in tar (partly burnt combustible matter), similar to the effects of inhaling a tobacco cigarette.*


Smokin'
is bad
for you

Illicit Substances

- SAMSHA definition includes sedatives, benzos (including those with Rx)
- Substance Use Disorder (illicit) diagnosed in 3% (8.3M)

Figure 10. Past Year Illicit Drug Use among People Aged 12 or Older: 2019



Rx = prescription.

Note: The estimated numbers of past year users of different illicit drugs are not mutually exclusive because people could have used more than one type of illicit drug in the past year.

SAMSHA, 2020

Heroin-Impact on Cardiovascular System

- QT prolongation→ ventricular arrhythmias
- Myocardial interstitial inflammation
- Pulmonary edema

- Demirkıran, et al., 2018; Gan, et al., 2021

Cocaine-Impact on Cardiovascular System

- Alters myocardial contractility
- Reduction in coronary artery caliber
  - Vasospasm and thrombosis vs atherosclerotic process
- Arrhythmias
- Tachycardia and hypertension
- Sudden death
- Myocarditis/cardiomyopathy

Egbuche, et al., 2018; Gan, et al., 2021; Kim, et al., 2019

Methamphetamine-Impact on Cardiovascular System

- Hypertension and tachycardia
- Coronary vasospasm and chronic vasoconstriction
- Atherosclerotic disease
  - Reduced traditional RF
- Arrhythmias
- Pulmonary Hypertension
- Cardiomyopathy

Gan, et al., 2021; Nishimura, et al., 2020; Reddy, et al., 2020

Treatment

- Best treatment is prevention
- Abstinence is key
- Degree of fibrosis directly related to “recovery” of cardiac function
- GDMT
  - BB with cocaine?

- Gan, et al., 2021; Reddy, et al., 2020

Possible Models

Substance use disorders are difficult to treat

Multimodal approach

Primary Care	Specialty Clinic

The End

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