

1

---

---

---

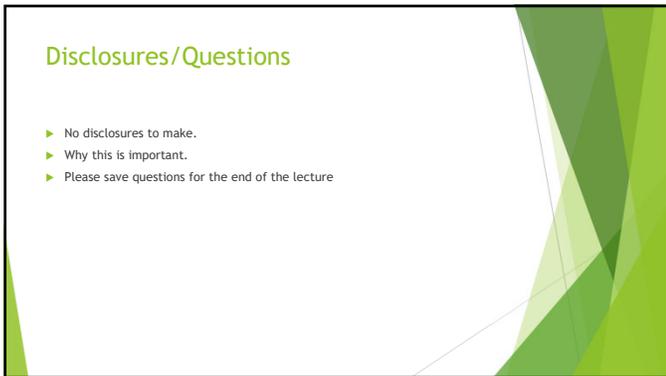
---

---

---

---

---



2

---

---

---

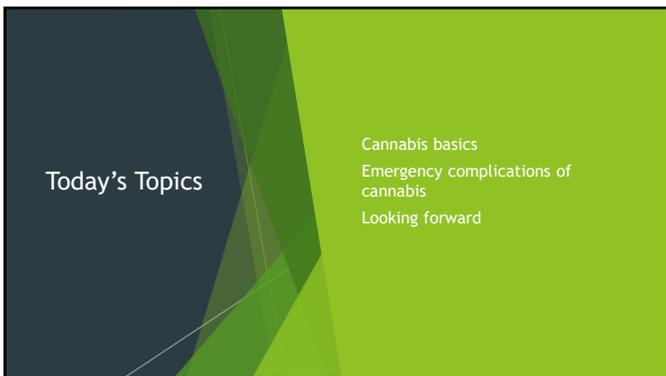
---

---

---

---

---



3

---

---

---

---

---

---

---

---

**The Basics**

All products come from the plant Cannabis sativa

Products include:

- Hemp
- CBD
- THC
- Hundreds of other chemicals

4

---

---

---

---

---

---

---

---

**Types Of Weed**



**SATIVA**  
Cannabis Sativa sativa is characterized by leaflets that are more narrow, branches that are farther apart, and coloration that tends more toward spring green. Sativa Sativa plants tend to be taller and produce fewer flowers.

**INDICA**  
Cannabis Sativa indica is characterized by broad leaflets that are narrow, branches that are closer together, and a coloration that tends more toward deep olive green. Sativa indica plants tend to be shorter and bushier, producing taller, denser flower buds.

**RUDERALIS**  
Cannabis Ruderalis is characterized by varied leaflets in the middle leaves, it shorter stems and generally small size. This subspecies is used to create S. Sativa or S. indica hybrids with varied stemed buds.

www.Types-of-Weed.ORG

5

---

---

---

---

---

---

---

---

**Products**

► There are now available a whole host of products available:

- Dab/wax/shatter - highly concentrated THC made by the process of extraction -
- Flower (typical smoked joint)
- Vaping - THC concentrates
- Edibles - candy, cookies, brownies, etc
- Topicals - creams and lotions
- Specialty products - chapstick, toothpicks, condoms, tampons, toothpaste.

6

---

---

---

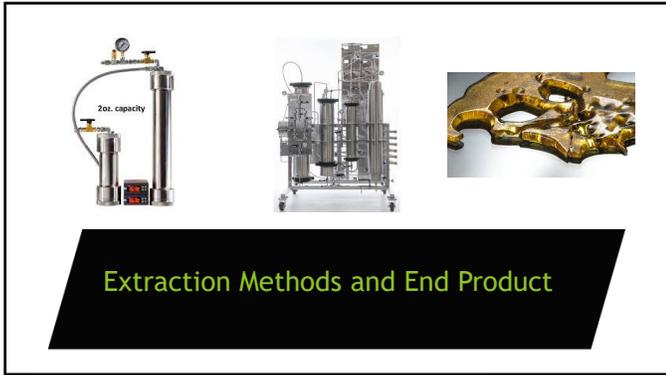
---

---

---

---

---



7

---

---

---

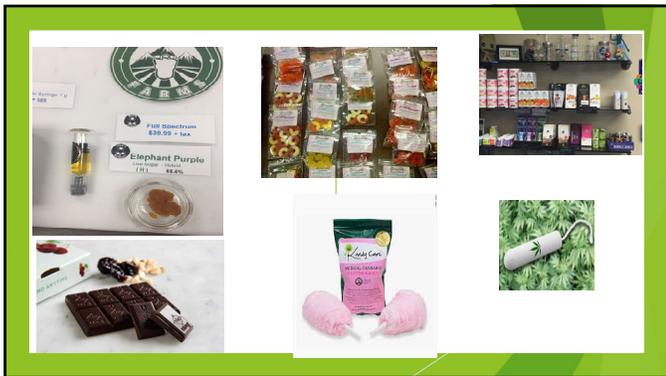
---

---

---

---

---



8

---

---

---

---

---

---

---

---



9

---

---

---

---

---

---

---

---

### Cannabis as "medicine"

- ▶ No other product was ever voted on to be called "medicine"
- ▶ No formal medicine (including FDA approved cannabis products) has the directions to use when/where and as much as you want.
- ▶ No medicine should be smoked

10

---

---

---

---

---

---

---

---

### Interactions

- ▶ The cannabinoids in marijuana are metabolized in the liver.
- ▶ Secondary to the metabolic pathway, there are many potential drug interactions with regards to regular medications.
- ▶ Some of the most common medications that may be altered:
  - ▶ Coumadin
  - ▶ Calcium channel blockers
  - ▶ Isosorbide
  - ▶ Nonsteroidal medications
  - ▶ HIV medications
  - ▶ Seizure medications.

11

---

---

---

---

---

---

---

---

### Cannabis and presentations in the emergency department

- ▶ Hyperemesis
- ▶ Acute ingestion - intentional or accidental
- ▶ Cardiovascular/stroke
- ▶ Vaping injuries
- ▶ Acute psychosis



12

---

---

---

---

---

---

---

---

### Cannabinoid Hyperemesis

- ▶ Unsure why a certain subset of people develop symptoms
- ▶ Most likely to occur with THC but has been shown to happen with CBD
- ▶ Happens with people who use cannabis products frequently.
- ▶ Also called scrotmitting:



13

---

---

---

---

---

---

---

---

### More on Hyperemesis

- ▶ Patients come to the ED repeatedly for “cyclic vomiting”
- ▶ Costs of care are extraordinary - due to the significant clinical presentation, these patients often get extensive testing
- ▶ Study from J of Addiction: The Emergency Department and Radiological Cost of Delayed Diagnosis of Cannabinoid Hyperemesis: 76,920 dollars
- ▶ Our ED - 1 visit/day. Each visit is about 5-6K.
- ▶ 1 visit/day x 365 x 5K = 1.8 million dollars for one institution
- ▶ 25 ED in Colorado

14

---

---

---

---

---

---

---

---

### A few cases

- ▶ A 40 y/o female from out of state stops at the first cannabis retail store as they cross the border.
- ▶ A 72 y/o female comes to the ED acutely screaming and agitated
- ▶ A 42 y/o female presents acutely altered and is brought to the ED for possible stroke.
- ▶ A 36 y/o male is found outside a motel breaking out windows of cars with a bat

15

---

---

---

---

---

---

---

---



### Cardiovascular and stroke

- ▶ Wide distribution of receptors leads to oxidative stress, inflammation and fibrosis. This increases the risk of MI and stroke.
- ▶ Peripheral vascular disease, arrhythmia and cardiomyopathy risks are also increased.
- ▶ DeFilippis EM, Bajaj NS, Singh A, et al. Marijuana use in patients with cardiovascular disease. *J Am Coll Cardiol* 2020;75:320-32.

19

---

---

---

---

---

---

---

---

### Cardiovascular and Stroke

- ▶ Cannabis serves as a contributing factor for MI in younger patients without risk factors.
- ▶ Stroke studies show that there is a 3.3 times higher risk of stroke in people who smoked marijuana in the past year.
- ▶ Up to 17% increased risk of stroke in those younger than 45 with recent use of marijuana.
- ▶ Wolff V, Zinchenko I, Quenardelle V, Rouyer O, Geny B. Characteristics and prognosis of ischemic stroke in young cannabis users compared with non-cannabis users. *J Am Coll Cardiol* 2015;66:2052-3.

20

---

---

---

---

---

---

---

---

### Vaping and Pulmonary Injury



- ▶ Just prior to the pandemic, vaping injuries were being talked about in the news
- ▶ A host of cases were occurring in younger people who ended up having extensive lung damage to the extent that many died and a few needed lung transplantation.

21

---

---

---

---

---

---

---

---



### VAPING - a look at the lungs

22

---

---

---

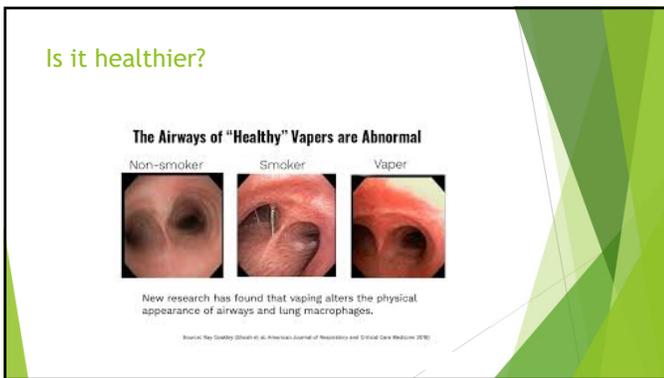
---

---

---

---

---



23

---

---

---

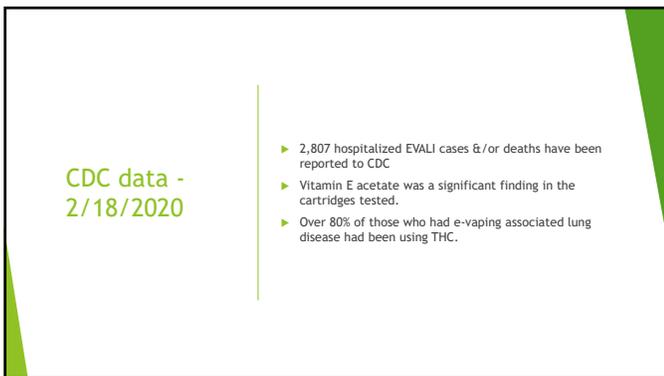
---

---

---

---

---



24

---

---

---

---

---

---

---

---

### Acute Psychosis

15 y/o who comes to the ED with police custody after becoming agitated and somewhat violent at home. She was caught smoking marijuana by her mother. She has had increased episodes of "outbreaks" at home. Her family notes she vapes daily.

Research by Dr. D D'Souza:

Mechanism by which cannabinoids produce transient psychotic symptoms is unclear.

Converging lines of evidence suggest that cannabinoids can produce a full range of transient schizophrenia like symptoms.

His research:

<https://link.springer.com/article/10.1007/s00406-009-0024-2>

25

---

---

---

---

---

---

---

---

### Looking forward:

- ▶ Associations between Prenatal Cannabis Exposure and Childhood Outcomes
- ▶ Jama Psychiatry 9/23
- ▶ 11,489 children enrolled across the country.
- ▶ Aged 9-11 - Enrollment dates 6/16 - 10/2018
- ▶ Exposure to cannabis after known pregnancy led to decreased birth weight and lower intra-cranial volume.
- ▶ Exposure after maternal knowledge of pregnancy remained associated with greater offspring psychopathology characteristics, increased problems with attention, thought and social issues.

26

---

---

---

---

---

---

---

---

### Looking forward - first a few cases

- ▶ 5 y/o female from the head start program
  - ▶ What head start is noticing.
- ▶ 11 y/o male - "explosive rage"
- ▶ Emergency department issues
  - ▶ Temporize problems
  - ▶ Have very little to no place for in patient treatment
  - ▶ Have ever narrowing places for outpatient care.
  - ▶ Long term prognosis for these children is very bleak.

27

---

---

---

---

---

---

---

---

### Looking forward - getting treatment

- ▶ Since 2013, many in-patient treatment programs have been closed.
- ▶ This is true for adults and children.
- ▶ Recommend you watch "A Dangerous Son"
- ▶ We are sending a dichotomous signal to our youth - we want people to buy more marijuana products so there is a bigger tax revenue and yet we don't want them to use.
- ▶ Our children are seeing adults in their household using on a regular basis.

28

---

---

---

---

---

---

---

---

### Questions?

- ▶ Feel free to ask.
- ▶ Laura has a lot of reference articles, more can be provided if needed.

29

---

---

---

---

---

---

---

---