Dosing Strategies

In Medical Cannabis Practice

COMPASSIONATE CANNABIS CLINIC

Patient Care, Education, Advocacy

Disclosures

- I have no actual or potential conflict of interest in relation to this presentation.
- This discussion will include practical dosing strategies in relation to medical cannabis used in the treatment of debilitating illness.

Barry Gordon, M.D.

- Akron Firestone High School, 1974
- Ohio State University, 1978
  B.A. in Communications
- Ohio State University, 1981
  Doctorate of Medicine
- 1982 - 1984
  Emergency Medicine Residency
  Mt. Sinai Medical Center, Cleveland
- 1984-1987
  Community Hospital of Bedford, Bedford, OH
- 1987-1990
  MedCenter Urgent Care, University Heights, OH
- 1990-1997
  St. Luke's Medical Center, Cleveland, OH
- 1997-2000
  University Hospitals, Cleveland, OH
- 1998-2004
  Barberton Citizens Hospital, Barberton, OH
- 2004-2015
  Alliance Community Hospital, Alliance, OH





- Located in Venice, Florida.
- Began seeing patients January 3, 2017.
- Average age is 54.95 years.
- Active Patient Count at 2020
- Three Tenets of Practice:
  - Patient Care
  - Education
  - Advocacy

- Patients have a variety of debilitations.
- Common desires:
  - To feel better.
  - A more natural treatment.
  - Legal status.
- We are a teaching practice.
- Experts in the field in Florida.

NORTH END DRUG STORE,

No. 139 NORTH GEORGE STREET, YORK, PENNA.

82207

Fl. Ext. Cannib. Ind. ℥ ss

Sig use as directed

Dr Berger

APR 15 1902

Pa. Apr. 10, 02.

The Human Endocannabinoid System

CBD, CBN and THC fit like a lock and key into existing human receptors. These receptors are part of the endocannabinoid system which impact physiological processes affecting pain modulation, memory, and appetite plus anti-inflammatory effects and other immune system responses. The endocannabinoid system comprises two types of receptors, CB1 and CB2, which serve distinct functions in human health and well-being.



THC

Tetrahydrocannabinol

CBD

Cannabidiol

CBN

Cannabinol

CB1 receptors are primarily found in the brain and central nervous system, and to a lesser extent in other tissues.

CB1

CBD does not directly "fit" CB1 or CB2 receptors but has powerful indirect effects still being studied.

CB2

CB2 receptors are mostly in the perepheral organs especially cells associated with the immune system.

Receptors are found on cell surfaces



source: www.the-human-solution.org

Brain Changes in the Endocannabinoid System With Aging

- A decrease in number of CB receptors in aged rats has been reported in motor areas, such as striatal efferent neurons, which may occur in parallel to the possible progressive degeneration of these neurons during normal senescence.
- The changes are complex because the components of the endocannabinoid system change at different rates and to different extents in various regions of brain.
- Changes in density and distribution of CB1 receptors in brain with age have also been described in humans.

Chronic Low Dose THC Reverses Markers of Aging in Mice

- Low dose THC reversed the age-related decline in cognitive performance of mice aged 12 and 18 months
- Dosing: 3 mg per kg bodyweight per day of THC or vehicle for 28 days via osmotic minipump in young and mature animals
- This behavioral effect was accompanied by enhanced expression of synaptic marker proteins and increased hippocampal spine density.
- THC treatment restored hippocampal gene transcription patterns such that the expression profiles of THC-treated mice aged 12 months closely resembled those of THC-free animals aged 2 months.

Conclusions

- The brain and endocannabinoid system change with normal aging
- Experimental manipulation of the endocannabinoid system in rodents impacts rate of aging, either increasing or decreasing age-dependent changes
- Endocannabinoid system also changes in neurodegenerative diseases
- The various components of the endocannabinoid system provide novel targets for medications designed to slow progression and/or to alleviate symptoms of these diseases

Cannabis Dosage and Delivery



- Cannabis has been used for millennia for spiritual, recreational, and medicinal purposes. The ancient literature speaks of smoke, vapor, oral, and topical applications. Resurgence in interest in cannabinoid medicines this past decade finds the same methods plus rectal and vaginal administration of cannabinoids.

- Though researchers have used cannabinoids by intramuscular, subcutaneous, and intravenous methods of administration, these have never been of interest to people using cannabinoids recreationally or medicinally.



Wide Range of Dose and Frequency

- **The greatest limitation to the use of cannabis as medicine is due to the psychotropic effects.**
- **This fact causes the plant to be either revered or avoided. The psychoactivity is mitigated in four ways:**
  - **Reduction in the dose of THC**
  - **Increasing the proportion of cannabidiol, CBD, or other non-psychotropic cannabinoid**
  - **Using cannabis by methods such as suppositories and topical uses to limit the first pass metabolism in the liver,**
  - **Development of tolerance to plant cannabinoids that occurs with regular use after several days.**

Endocannabinoid Activation and Metabolism



- Natural endocannabinoids are synthesized on demand as an adaptive response to cellular stress, aimed at re-establishing cellular homeostasis.
- Endocannabinoids are rapidly metabolized mostly near their site of action.
- Plant cannabinoids are broken down and excreted exclusively by hepatic metabolism (Cytochrome P-450 metabolic pathways)

Sites of the Cannabinoid Receptors



CB1:
Located in the Central Nervous system

- Adipose tissue
- Connective tissue
- Endocrine glands
- Exocrine glands
- GI tract
- Heart
- Leukocytes
- Liver
- Skin
- Spleen
- Testes, uterus

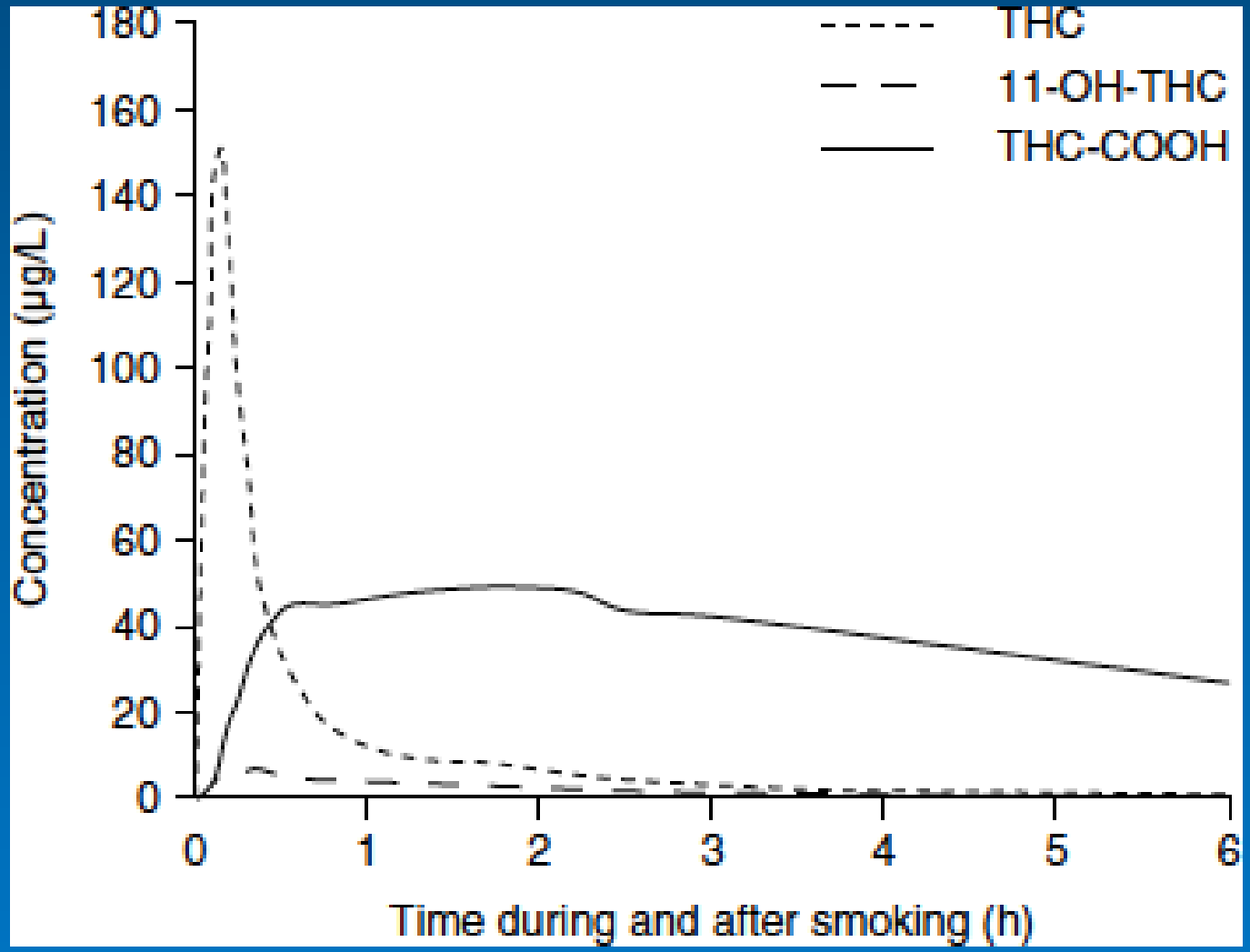
CB2:
Located in the Immune system

- Monocytes
- Macrophages
- B-cells
- T-cells
- Liver
- Spleen
- Tonsils
- CNS
- GI tract

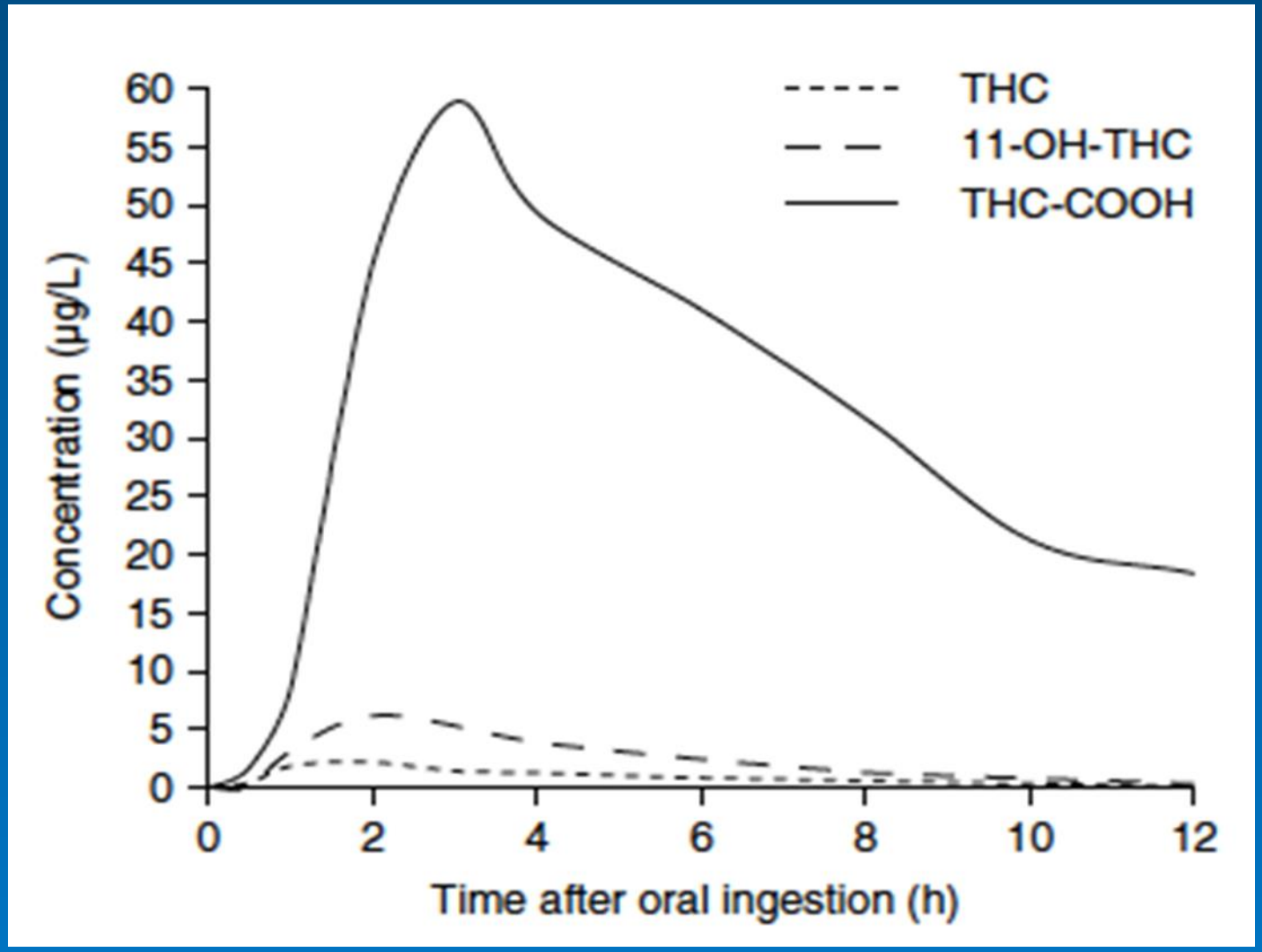
Pharmacologic Effects of Cannabinoids

- Analgesic
- Antispasmotic
- Anti-anorectic
- Antiemetic
- Neuroprotectant
- Anti-cancer
  - Antiproliferative
  - Anti-metastatic
  - Anti-angiogenesis
- Antioxidant
- Antibacterial (MRSA)
- Antifungal
- Antiparasitic
- Anti-inflammatory
- Immunosuppressive
- Anti-host vs graft
- Dermatologic
  - Anti-psoriatic
  - Anti-eczema
  - Anti-keratotic
  - Anti-pruritic
  - UV Light Reducing
- Bronchodilatory
- Anti-Glaucoma
- Anti-diabetic
- Bone Stimulant
- Antipsychotic
- Anxiolytic
- Antidepressant
- Vasorelaxant
- Anti-ischemic
- Anticonvulsant
- Lowered GI Motility
- Lowered GI Secretions
- Reduced Stomach Acid
- Reduced Acid Reflux
- Increased Sleep Induction

Metabolism of Smoked Cannabis



Metabolism of Ingested Cannabis





Control + Safety = Relief



The 5-D Teaching Method



1. Debilitating Condition

Cancer

Epilepsy

Glaucoma

HIV

AIDS

Post Traumatic Stress Disorder

ALS

Crohn's Disease

Parkinson's Disease

Multiple Sclerosis

Terminal Conditions

Chronic Pain*

Medical conditions of the same kind or class as or comparable to those enumerated within the law.



2. Determination of Past Use

D-I
No cannabis experience

D-II
Some past experience

D-III
Currently using

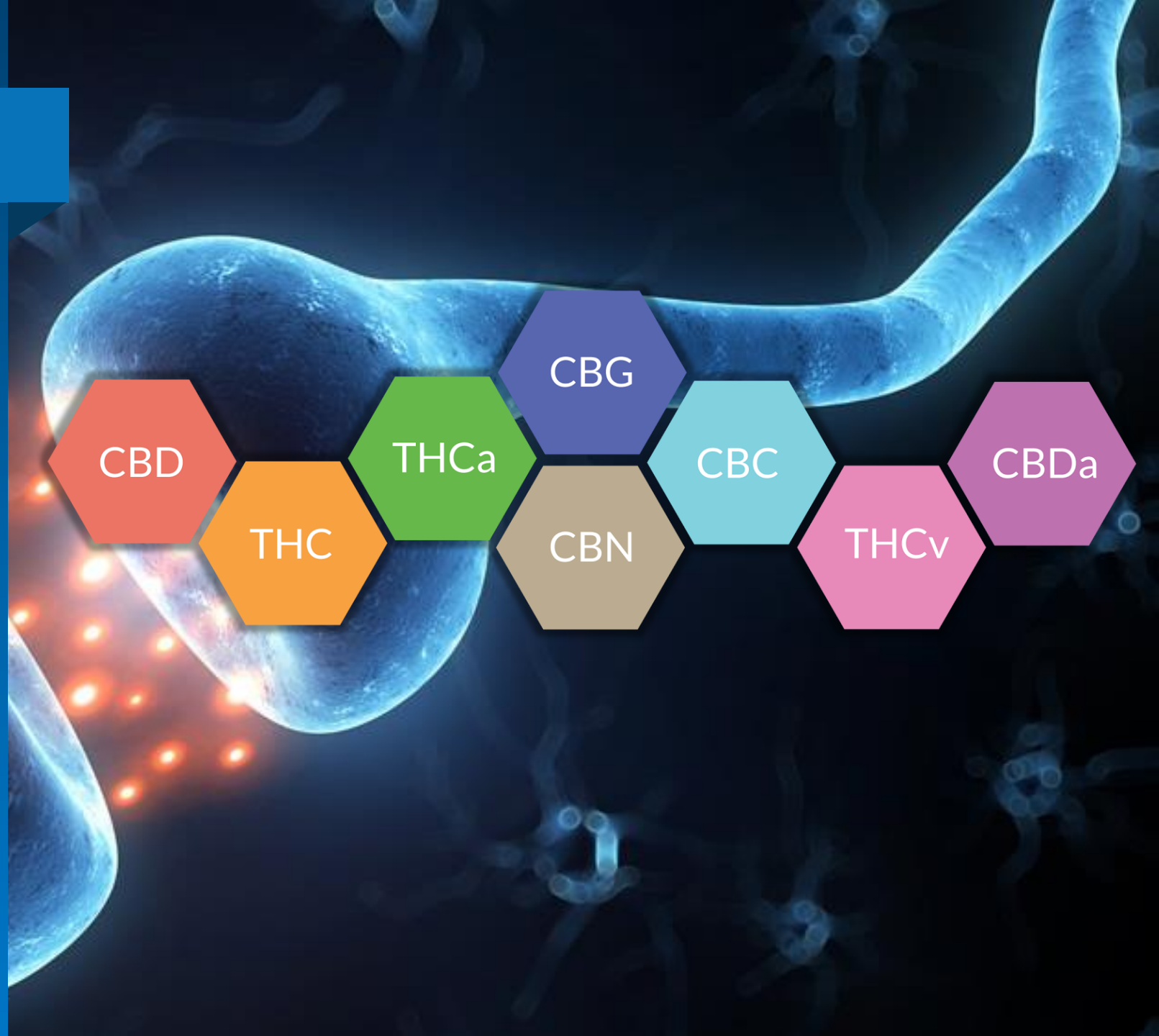


3. Duality of the Plant

THC gets you “high”

140+ other compounds in the plant have no psychoactive effect.

With the endocannabinoid system we are hard wired for cannabis.



4. Dispensary Experience

Dispensary employees act as classical pharmacists.

Patient’s take control of their treatment

Start low, go slow, don’t be afraid to try different products, maintain a journal when you begin treatment



Trulieve,
Tampa



Surterra,
Tampa



Knox,
Orlando

5. Delivery Methods

Inhalation

Sublingual

Oral

Suppositories

Topical



Tips for Patients

Do Your Research

Find a responsive, advocative physician. Don’t be fooled by scams.

Stay Private

Don’t medicate with full THC unless you are in a private location and are not having to drive for several hours.

Keep Your Card Handy

Always have your patient ID card on you whenever you are using, carrying, or transporting your medicine or device.



Mind Your Meds

Keep your medicine secured and out of the reach of anyone else and don’t share it with anyone.

Keep Legal

Don’t use, purchase, or possess black market cannabis and products

Keep Learning

Check sites like leafly.com and search Google for continuing education on how to best utilize cannabis to treat your particular condition.



Compassionate Cannabis Clinic

425 Commercial Court
Suite C
Venice, FL 34292

www.venicecare.com