


JOINT WEBINAR PRESENTATION

CBD and Cannabis Use at the End of Life

Evolution and Evidence

Wednesday, June 3, 2020
2-3:30 PM EDT

PRESENTED BY
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Learning Objectives

1. Identify the major components of cannabis and hemp and explain how they may promote healing and relief.
2. List the top three reasons clients may, at the end of life, turn to medical cannabis or CBD.
3. Discuss the different methods of cannabis or CBD administration, including why some methods might work better for individual clients than others, considering potential drug interactions and medical conditions.
4. Recognize the pros and cons of cannabis/CBD use as it relates to nutrition and dietetics and end of life situations.

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My Story

From culinary nutritionist to holistic cannabis practitioner



David E. Newell 1931-2017

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Why Should YOU Care?

- >122 million US adults have tried cannabis¹
- 35 million use cannabis > 1/mo²
- 53% 65yo+ experienced pain in last month³
- Tenfold increase in cannabis use over 65yo⁴
- 2025 sales estimated to be 23B¹
- Sanjay Gupta, MD – “Weed” documentary⁵

More importantly...someone you love may need this medicine some day.

1. AmericanMarijuana.org 2020; 2. Marist Poll 2017; 3. Reid 2015; 4. Walter 2020; 5. Gupta 2016

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Stereotypical View of a Cannabis User



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Who is Using Cannabis?

18-29 year-olds	38%
30-49 year-olds	51%
50-64 year-olds	49%
65+ years-old	23%

AmericanMarijuana.org 2020

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Reasons for Cannabis Use


Relaxation	55%
Anxiety	30%
Sleep	29%
Pain management	26%
Medical conditions	15%
Appetite stimulation/nausea suppression	13%/10%

AmericanMarijuana.org 2020

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History of Cannabis: A Medicinal Herb

- 4000 BC Chinese medicine¹
- 1840s Queen Victoria used tincture¹
- 1937 "Marihuana Tax Act"²
- 1942 Removed from Pharmacopeia²
- 1970 CSA Schedule I classification³
- 1996 CA first to approve med cannabis²
- 1997 NEJM calls for cannabis rescheduling²
- 1999 IOM report on medical use²
 - For nausea, pain, anxiety, appetite loss
- 2003 US govt patent: "Cannabinoids as Antioxidants and Neuroprotectants"⁴




Hanf. Cannabis generalis.

1. Holistic Cannabis Academy; 2. MedicalMarijuana.org; 3. US DEA website; 4. NIH Patent US6630507

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Cannabis vs Hemp

- Both from cannabis sativa L plant
- Hemp contains < 0.3% THC
- Cannabis contains up to 30% THC
- Cannabis federally illegal
- 33 states + DC allow medical use
- 11 states allow "recreational" use
- Hemp production legalized in 2018 but no FDA decision on Generally Recognized as Safe (GRAS) status



FDA.gov 2020

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Active Components of Cannabis^{1,2}

- Cannabinoids
 - THC (psychotropic)
 - CBD (non-intoxicating)
 - CBG, THCa, CBDa, CBN, CBC, THCV
- Terpenes
 - Myrcene, linalool, limonene,
 - beta caryophyllene, pinene
- Flavonoids
 - Catechins, quercetin, cannflavin-A

1. Atakan 2012; 2. Jacobs 2019

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Cannabidiol (CBD)

- Pain relief
- Anti-inflammatory¹
- Anti-bacterial¹
- Anti-seizure²
- Anti-nausea
- Anti-depressant
- Anti-anxiety
- Neuroprotective^{3,4}
- Bone health^{5,6}

CC1=C(C(=O)O)C=CC2=C1C=CC(=C2)O

1. Esposito 2013; 2. Gupta 2016; 3. National Academies of Sciences 2017; 4. NIH 2003; 5. Kogan 2015; 6. Idro 2009

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Tetrahydrocannabinol (THC)


- Psychotropic
- Pain relief
- Anti-inflammatory
- Anti-spasm
- Appetite stimulant
- Muscle relaxant¹
- Bronchodilator²

1. IOM Report: 1999 2. Gang 1984

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Entourage/Ensemble Effect

- Whole plant is greater than the sum of its parts
- Cannabinoids and terpenes work together synergistically
- BBC Documentary - THC alone vs. with CBD

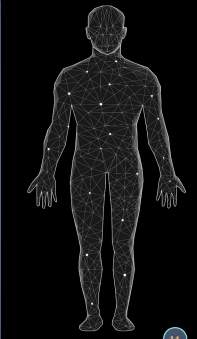


Russo 2011

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Endocannabinoid System

- Endocannabinoids:
 - Anandamide ("bliss molecule")
 - 2-AG (neuroprotective)
- Receptors:
 - CB1 (brain, spinal cord, CNS)
 - CB2 (immune cells, organs)
- Enzymes:
 - FAAH breaks down anandamide
 - MAGL breaks down 2-AG

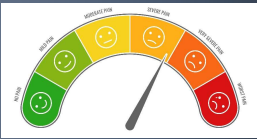


Sellaberry 2018

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How Cannabis & CBD Relieve Pain

- NAS 2017 report- conclusive evidence for ↓ pain
- Inhibits release of pro-inflammatory molecules¹
- Cannabis activates CB1 & CB2 receptors to ↓ pain signals²
- CBD
 - Inhibits FAAH ↑ anandamide → CB1 activation
 - ↓ transmission of pain signals
 - Activates serotonin receptors to ↓ pain perception




1. Manzanares 2006; 2. Turcotte 2016

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Cannabis vs Opioids

- Not a gateway drug – rather an exit herb
- 2016 study – giving cannabis to opioid addicts decreased opioid use by 44%
- Legal marijuana states have a 25% decrease in opioid mortality
- 3 ways to use
 - For pain control – to decrease opioid dosage
 - Use during withdrawal to manage symptoms
 - Preventative – to avoid addiction – in place of opioids




Wiese 2018

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CBD/Cannabis and Mental Health

- CBD reduces fear and drug memory processes in PTSD, phobias, addiction¹
- Anxiety and depression^{2,3}
 - ↑ anandamide
 - ↑ serotonin
 - ↑ GABA inhibitory neurotransmitter
 - ↓ cortisol stress hormone
 - ↑ hippocampal neurogenesis
- Synergy with SSRIs




1. Lee 2017; 2. Preibisch 2019; 3. Beale 2018

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Sleep Issues

- Common causes:
 - pain, anxiety, sleep apnea, hypersensitivity to light and sound, alcohol/caffeine, increased urination, hormonal issues
- Management strategies:
 - CBD/CBN, warm milk with cloves, deep breathing, white noise, darkened room, myrcene and linalool terpenes, hydration, forward fold, Mg, melatonin, valerian, chamomile




Babson 2017

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Appetite/Weight Loss/Anorexia

- “Munchies”
- Ghrelin hormone increases appetite
- POMC (feeling of fullness) neurons in hypothalamus blunted by THC
- Hippocampus/olfactory bulb - ↑pleasure
- Less anxiety and pain




Ward 2019 19

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CBD/Cannabis and GI issues^{1,2}

- Decrease inflammation
- Reduce hypermotility
- Anti-bacterial action
- Stimulate cells in the GI lining
- Calm anxiety
- Decrease GERD³



1. DiPatrizio 2016; 2. Esposito 2013; 3. Horriby 2004 20

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Skin Conditions¹ and Osteoporosis²

Skin:

- Cannabinoids possess anti-inflammatory, anti-microbial, anti-itch properties
- 60% improvement in itch and loss of sleep in atopic dermatitis sufferers
- Topical CBD may reduce oil production and inflammation in acne sufferers

Bones:

- CB1 receptors decrease age-related bone loss
- CBD helps bones heal - better than CBD+THC

1. Olat 2014 2. Idris 2009 21

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Alzheimer's and Memory Issues

- Neuroprotectant
- CBD protects myelin insulation of nerve fibers
- THC decreases beta-amyloid development
- Vasorelaxant - ↓ damage after stroke
- Alzheimer's patients given small dose of THC gained weight, 65% ↓ in agitation

1. NIH Patent US6630507 2. Ahmed 2015 3. Patel 2003

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Cannabinoids in Stroke & TBI/Concussion

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    graph TD
      BI[Brain Injury] --> 2AG[2-AG]
      2AG --> GCR[Glutamate cytokines, ROS]
      2AG --> VC[Vasoconstrictors eg, ET-1, Thromboxane]
      2AG --> CP[Cerebroprotection]
      GCR --> NCD[Neuronal & glial cell death]
      VC --> CI[Cerebral ischemia]
  
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- Reduce oxidative injury
- Normalize glutamate homeostasis
- Decrease inflammation

Fernandez-Ruiz 2015; Graphic adapted from Raphael Mechoulam, PhD

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Diabetes

- Endocannabinoid system involved in lipid and glucose metabolism^{1,2}
- CBD significantly reduced incidence of diabetes in non-obese diabetic mice (86% vs. 30%)³
 - Also ↓ cytokine release
- NHANES: Cannabis use associated with 16% lower levels of fasting insulin and 17% lower insulin resistance⁴

1. NIH Patent US6630507 2. Ahmed 2015 3. Patel 2003

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Modes of Administration

- Sublingual tinctures
- Capsules
- Inhalation
- Edibles
- Topical Creams
- Transdermal
- Suppositories
- Raw juice



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Onset and Duration


Format/Method	Onset (minutes)	Duration (hours)
Ingested (capsules, edibles, drinks)	30-120	6-12
Inhaled (vapor or smoke)	1-3	1-3
Sublingual (drops, lozenges, spray)	15-30	2-4
Topical (salves, roll-ons, creams)	30-60	2-4
Transdermal (patch, gels)	15-30	6-12
Suppositories	15-30	6-8

Montemayor, M. Holistic Cannabis Academy 2016

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Dosing: Start Low and Go Slow

- Therapeutic ranges of CBD and THC are large
- 2 to 50+mg dose range!
- Self titrate, keep journal to find minimum effective dose
- Hyper responders – alcohol use, meds, chemotherapy
- May take two weeks to see effect
- THC tolerance – take a break!



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Finding a Quality CBD Product

A study by the FDA found that nearly 70% of CBD products were mislabeled with some containing zero CBD!

- What to look for:
 - Independent lab testing
 - Pesticides/solvents (hexane, butane), heavy metals
 - Full / broad spectrum
 - Organically grown
 - Country of origin




Bonn-Miller 2017

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Potential Downside of Cannabis Use

- Short term effects¹
 - Increased heart rate, distorted perception, loss of coordination, issues with memory and learning
- Cannabis Use Disorder (CUD)²
 - 8 to 12% of heavy users
 - More common with early age onset of use
 - Impairment affecting behavior, health, relationships
 - 4.2M in U.S. w CUD & 14.4M w alcohol use disorder³
 - Cannabinoid hyperemesis syndrome/cyclical vomiting
- Long term effect on cognition? Twin study⁴
- Psychotic disorders^{5,6,7}
 - Adolescent/heavy use may be risk for earlier onset
 - Correlation = causation??




1. NIDA 2019 2. Brezing 2018 3. SAMHSA.gov 4. Ross 2019 5. Garey, Child Mind Institute 6. Gage 2016 7. DiForti 2019

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Drug Interactions

- May increase effect of some drugs
- Be cautious taking meds contraindicated with grapefruit when *ingesting* cannabis¹ - CYP450 enzyme
- Synergy with some meds (SSRIs)
- Tricyclics: possible enhanced sedation, hypotension, tachycardia²
- Alcohol- THC may increase CNS impairment³
- Check with cannabis practitioner




1. Grimspon 2018 2. ProjectCBD.org 3. Kossen 2017

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Potential Side Effects of CBD

- Vivid dreams
- Fatigue
- Low blood pressure
- Dry mouth



2018 WHO Report on CBD:
"Across a number of controlled and open label trials of the potential therapeutic effects of CBD it is generally well tolerated, with a good safety profile."


1. Grimspeen 2018 2. ProjectCBD.org 3. Kossen 2017

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Pharmaceutical Cannabinoids

- THC: Marinol/Dronabinol, Syndros (liquid dronabinol), Cesamet/Nabilone
- THC + CBD: Sativex
- CBD: Epidiolex

- Single molecule versus whole plant
- Lack of terpenes, flavonoids, etc.
- No entourage/ensemble effect



Bonn-Miller 2018

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Cannabis in Palliative Care

- 2007 Israel Ministry of Health approved medical cannabis for palliation of cancer symptoms
- Study of 2,970 cancer patients treated with cannabis
- Main symptoms: insomnia, pain, weakness, nausea, lack of appetite
- Of those who continued treatment for 6 months, 96% of respondents reported an improvement in condition
- 25% died, 19% stopped treatment




Bar-Lev, Schlieder 2018

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Safety and Efficacy of Cannabis in the Elderly

- Study of 2,936 patients over 65yo in a medical cannabis clinic
- Pain decreased from level 8 to 4
- 18% stopped or decreased use of opioids
- Adverse effects: 9.7% dizziness, 7.1% dry mouth




Abuhaira 2018

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CBD and Cannabis Use in Hospice Setting

- Survey of 310 hospice professionals
- 91% support use of cannabis in hospice
- Reported success with nausea/vomiting, pain, anxiety
- Most discussed cannabis only if asked by patient or family
- Barriers: legal status, stigma, lack of knowledge




Costantino 2019

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Case Study: 95-Year-Old with Anxiety/Depression

“...More consistent improved mood, decreased anxiety and improved memory. He’s back to his good-natured self.”



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Case Study: 48-Year-Old with Anxiety/Depression, Constipation

"I've seen a big improvement in my sleep – haven't taken a Tylenol PM since I started, and I have more energy. I'm less anxious and depressed and I've found relief from constipation and the discomfort in my stomach from my surgeries. You have changed my life."




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Case Study: 75-Year-Old with Parkinson's

"My PT asked me what I had done different... I explained that I had started taking 25mg CBD soft gels after consulting with you.

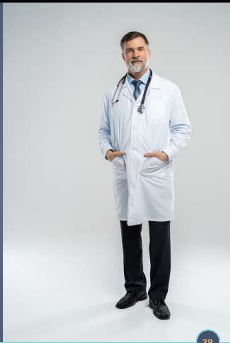
Then, at massage therapy, my LMT asked me the same question. She was watching me get out of my car and noticed that my gait and swagger in my step had improved ...I told her about you.... She said she could not recall the last time she felt so excited about a client's progress."



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Why Don't More MDs and RDNs Recommend Cannabis or CBD?

- 2013 survey by NEJM: four of five doctors approve of medical cannabis¹
- 90 percent of MDs do not feel confident prescribing cannabis²
- Only 10 to 15% of medical schools include cannabis in curriculum²
- What about RDNs?!



1. N Engl J Med 2013 2. ExanoFF 2017

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In a Perfect World...

- Health professionals are open to suggesting CBD/cannabis for health and wellness
- Everyone has easy access to affordable, high quality CBD/cannabis products
- CBD/cannabis become the FIRST option to treat pain, anxiety, depression, insomnia, and more
- No one experiences unnecessary pain and suffering at the end of their life



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Questions?

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