Advanced Clinical Cannabis Considerations in Geriatric and Institutional Patients

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Prepcann

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Aged to Perfection
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#ASCP50

Advanced Clinical Cannabis Considerations in Geriatric and Institutional Patients

To enter the Q&A and polling questions for this activity, go to ascp.com/qa and click on the title of this activity, as seen below.
Speaker Information – Bio

- Doctor of Pharmacy at Philadelphia College of Pharmacy/University of the Sciences
- MTM pharmacist with Prime Therapeutics
- Former Cannabis Pharmacist with Minnesota Medical Solutions
- President of PrepCann
- President and Executive Director of the International Society of Cannabis Pharmacists

Disclosures – Disclaimers

- Former employee at Minnesota Medical Solutions
- Consultant for Iowa Cannabis Company
- Consultant for Mandala Wellness
- Consultant for StrainConnect

- Investigational use only - NOT FDA approved for any condition
Learning Objectives

• Compare formulations used in different senior care settings

• Recognize possible drug-drug and drug-disease interactions with Cannabis

• Develop Cannabis recommendations using best clinical and legal practice

Endocannabinoid System (ECS)

<table>
<thead>
<tr>
<th>Endocannabinoids</th>
<th>Receptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEA + 2-AG</td>
<td>CB1 + CB2</td>
</tr>
</tbody>
</table>

Modulate (increase or decrease):
Dopamine, Serotonin, Glutamate, Norepinephrine, GABA, Acetylcholine

Slide used with permission. Kane, M. Prepcann.com. 2018
I. THC Dominant
- Dronabinol - Marinol®
- Nabilone - Cesamet®

II. Balanced (1:1)
- Nabiximols - Sativex®

III. CBD Dominant
- Cannabidiol - Epidiolex®
THC: Tetrahydrocannabinol

Partial CB1 and CB2 agonist (CB1 >>> CB2)
Molecule that ‘*alters perception*’

- Used for pain, nausea, vomiting, appetite, spasms, and sleep
- Side effects include tachycardia, sleepiness, dizziness, difficulty focusing = *IMPAIRMENT/INTOXICATION*
- 11-OH-THC with 4-6x potency

CBD: Cannabidiol

Indirect antagonist of CB1 and CB2 agonists
Non-intoxicating = **Cushion**
  - Blocks THC oxidation to 11-OH-THC and related effects: hunger, anxiety, tachycardia, and sedation
- Recommended for seizures, anxiety, and depression
- Side effects include diarrhea, headache, somnolence/activation
- Poor oral absorption (12-18%)
CBD Oil Extractions

**CBD Isolate**
Isolated extraction
99.9% purity = “Only CBD”/no THC

**Broad Spectrum**
Isolate + other cannabinoids except THC = “Trace THC”

**Full Spectrum**
Full cannabinoid profile including THC “Whole plant”

Formulations

Image used with permission from @weedbehonored
**Visualization: Systemic Formulations**

- **Inhale**
  - Onset: 1-5 min
  - Duration: 2-6 hr

- **Sublingual**
  - Onset: 15-60 min
  - Duration: 2-12 hr

- **Swallow**
  - Onset: 1-3 hr
  - Duration: 4-24 hr

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**Flower (Buds)**

Dried cannabis flowers with delicate trichomes

- Proper storage is essential for safety and potency

- **Combusted** in glassware, paper or tobacco leaf
  - Carcinogens, irritating, and nonspecific dosing

- **Vaporized by convection** -
  - Gently heated (300-400°F) to release resins
  - Reduced carcinogens, and less irritating

*Courtesy of @weedbehonored*

Oil Extracts “Concentrates”

Vaporization

- Hash oil – convection
- Shatter/wax – conductive = combustion

Less irritation, carcinogens, and quick acting

Power required

- Portable – disposable or rechargeable batteries
- Big and bulky – wall outlets

Figure from: Huestis et al. J Anal Toxicol. 1992;16(5):276-82. Slide Used With Permission from Prepcann.com
Tablets and Capsules

Cannabis oil pressed into tablets or filled capsules

- Inactive ingredients: consider allergies and storage

Administer with at least a sip of water

Take after meals: delays absorption and increase Cmax (peak)

- Fats incr peak concentration as bile acids improve solubility
- Drug then food – accelerates cannabinoid absorption and side effects
Oral Liquids and Sublingual

Dosed with dropper, syringe, spray, sublingual tablet
  • Oil-based: coconut, olive, sesame oil, medium-chain triglycerides (MCT)

Sublingual absorption achieves faster onset

Tinctures (traditionally) have 10-40% alcohol
  • Administer supralingually to avoid ethanol burn

Suppositories

Vaginal or rectal administration
  • Cut in half length-wise to titrate doses
  • Insert 1-1.5 inches into rectum and squeeze closed

Enhanced bioavailability
  • Decreased first-pass hepatic metabolism

Coconut oil or cocoa butter
  • Store in fridge/freezer and ensure firm before insertion
Topical Preparations

Creams, lotions, gels, salves, patches (not transdermal)
  • Vehicles that aid absorption: shea butter, alcohol, coconut oil

Zero psychotoxicity or mind-altering effects
  • Applied directly to site of action; pain or spasms

Addition of fragrance and dyes can be irritating

Reference Ranges

<table>
<thead>
<tr>
<th></th>
<th>Onset</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhaled</td>
<td>1 to 5 min</td>
<td>2 to 6 hrs</td>
</tr>
<tr>
<td>Suppository</td>
<td>10 to 30 min</td>
<td>2 to 8 hrs</td>
</tr>
<tr>
<td>Topical</td>
<td>15 to 60 min</td>
<td>1 to 8 hrs</td>
</tr>
<tr>
<td>Sublingual</td>
<td>15 to 60 min</td>
<td>2 to 12 hrs</td>
</tr>
<tr>
<td>Swallowed</td>
<td>1 to 3 hrs</td>
<td>4 to 24 hrs</td>
</tr>
</tbody>
</table>
Formulation Specific ADEs

**Inhalation**
- Throat and lung irritation, cough
  = *assess vaporizer technique*

**Sublingual**
- Dysgeusia, taste disturbances, oral irritation and burning
  = *administer supralingually or remove ethanol component*

**Swallow**
- Nausea or abdominal discomfort
  = *take with food*

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Storage and Handling

Physical degradation: Delicate trichomes burst prematurely
Oxidation
Phytolysis

- **Air Tight**
- **Out of Light**
- **Out of Sight**
Institutional Policy

Acceptable Formulations
- Non-inhaled only/Oral only
- No limitations

Administration + Storage
- Charge nurses vs any nurse or patient-own-medicine
- Some states require caregiver registration ($)

Diversion
- Prevention
- Reporting

Patient Case #1: JJ

78 yo Male with metastatic lung cancer undergoing radiation
C/O pain, nausea, anorexia, and insomnia
Rx: oxycodone 20 mg Q6H, ondansetron 8 mg Q8H, dronabinol 5 mg Q12H, zolpidem 5 mg QHS

What are the goals of therapy?
Symptom duration and frequency – NOT SEVERITY
Previous cannabis use? Effectiveness or toxicity of dronabinol?
Patient Case #1: JJ

78 yo Male with metastatic lung cancer undergoing radiation
C/O pain, nausea, anorexia, and insomnia
Rx: oxycodone 20 mg Q6H, ondansetron 8 mg Q8H, dronabinol 5 mg Q12H, zolpidem 5 mg QHS

1. THC vaporizer for PRN relief of pain and nausea
2. Stop dronabinol and replaced with 1:1 (balanced) 5 mg tablets
3. Scheduled follow up in 2 weeks

To access the polling questions, go to this link: ascp.com/qa and select the “Advanced Clinical Cannabis Considerations in Geriatric and Institutional Patients” activity, as seen below.
Self-Assessment Question 1

Mary Jane is a resident at Rolling Oaks Retirement Community and using Cannabis capsules for cancer-related pain. She is seeking an alternative that provides relief throughout her body. Which of the following formulations would NOT be appropriate?

A. Vaporizer  
B. Tablet  
C. Tincture (oral liquid)  
D. Cream

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Poll: Which formulation is the easiest for patients to self-titrate?

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Self-Assessment Question 2

Which formulation is the easiest for patients to self-titrate?

A. Vaporizer
B. Patch
C. Capsules
D. None of the above

PK/PD

**Aging Bodies**

**Absorption**
- Impaired due to decr gastric motility

**Distribution**
- Adipose doubles - incr cannabinoid storage space
- Decr albumin; THC = 97% bound
  11-OH-THC = 99% bound

**Elimination**
- Renal or hepatic insufficiency reduces clearance and prolongs duration

Reduce dose and extend frequency

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Bressler, Rubin, et al., Principles of Drug Therapy for the Elderly  

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**Common ADE’s in the Elderly**

**THC**
- Sleepiness
- Confusion
- Weakness
- Tachycardia

**CBD**
- Dizziness
- Agitation
- Restlessness
- Palpitations
- Headache
- Decreased appetite
- Abdominal pain
- Diarrhea

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THC Pharmacogenomics

- CYP2C9 polymorphism of *1/*3 or *3/*3
  - More common in European descendants

Serum THC

<table>
<thead>
<tr>
<th></th>
<th>Inhibit</th>
<th>Substrate</th>
<th>Induce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoke</td>
<td>-</td>
<td>-</td>
<td>1A2</td>
</tr>
<tr>
<td>THC</td>
<td>3A4</td>
<td>2A6, 2C9, 3A4</td>
<td>-</td>
</tr>
<tr>
<td>CBD</td>
<td>1A, 1B, 2A6, 2B6, 2C8, 2C9, 2D6, 3A4</td>
<td>2C19, 3A4</td>
<td>-</td>
</tr>
</tbody>
</table>

Drug Interactions: Pharmacokinetic


### Drug Interactions: Pharmacodynamic

<table>
<thead>
<tr>
<th>Psychotropics</th>
<th>Impaired coordination and concentration, sedation, dizziness, and increased fall risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticholinergics</td>
<td>Dry mouth, sedation</td>
</tr>
<tr>
<td>Sympathomimetics</td>
<td>BP/HR changes</td>
</tr>
</tbody>
</table>

**Inhibit** | **Substrate** | **Induce**

<table>
<thead>
<tr>
<th>3A4</th>
<th>VPA, <strong>THC</strong>, <strong>CBD</strong></th>
<th>CBZ, diazepam, clobazam, ethosuximide, felbamate, zonisamide, <strong>THC</strong>, <strong>CBD</strong></th>
<th>CBZ, OXC, felbamate, PHT, PHB</th>
</tr>
</thead>
<tbody>
<tr>
<td>2C9</td>
<td>CBZ, VPA, PHT, <strong>CBD</strong></td>
<td>CBZ, VPA, PHT, PHB, <strong>THC</strong></td>
<td>CBZ, PHT, PHB</td>
</tr>
<tr>
<td>2C19</td>
<td>OXC, felbamate, topiramate</td>
<td>Diazepam, clobazam, VPA, PHT, PHB, <strong>CBD</strong></td>
<td>-</td>
</tr>
<tr>
<td>2D6</td>
<td><strong>CBD</strong></td>
<td>Slide Used With Permission from Prepcann.com</td>
<td>VPA</td>
</tr>
</tbody>
</table>

CBZ: carbamazepine  
OXC: oxcarbazepine  
VPA: valproic acid  
PHT: phenytoin  
PHB: phenobarbital

Patient Case 2: MM

82 yo Female with fibromyalgia, depression, and insomnia
Seeking additional pain relief
Rx: bupropion XL 300 mg Q24H, duloxetine 60 mg Q12H, tramadol 50 mg Q8H, trazodone 150 mg QHS

Reports: hot flashes, nausea, weakness, feeling jittery/wired and anxious
“Feels like when I was on bupropion 450 mg” (2D6)

Patient Case 3: LL

35 yo Female with refractory epilepsy (absence seizures)
Rx: levetiracetam 750 mg Q12H, diazepam 10 mg PRN seizure > 10 min
CBD 100 mg Q12H for the last 1 month

Nurse informs levetiracetam level has decr since 2 weeks ago and seizures returned

Using G-tube and administering levetiracetam with CBD, possibly binding and preventing absorption
Poll: Which of the following is TRUE?

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Self-Assessment Question 3

Which of the following is TRUE?

A. CBD is metabolized by 3A4 and 2C9
B. THC and CBD are both metabolized by 3A4
C. THC is a broad and potent enzyme inhibitor
D. CBD is a broad and potent enzyme inducer
Disease-State Interactions with THC

**PSYCHIATRIC**
- Bipolar mania
- Psychosis
- Hallucinations

**CARDIOVASCULAR**
- Unstable angina
- Acute decompensated heart failure

**RESPIRATORY**
- COPD flare
- Lung infection
- Sinus infection

**MISCELLANEOUS**
- Renal or hepatic insufficiency
- Surgery requiring general anesthesia

Start Low, Go Slow, and Stay Low

Dosage

SWEET SPOT

Side Effects

Benefit

Max Benefit

Sweet Spot

Low benefit

Low benefit

No Effect

Dosing in Cannabis Naïve

Low: Balanced (1:1 ratio)

THC: 1 to 2.5 mg PO QHS

CBD: 5 to 25 mg PO QD

Slow: adjust in PM over 2-4 days

Slower titrations may be necessary

Educate to Self-Medicate

- Experiment safely
- Identify onset and duration
- Keep a journal with dose + response
Dosing Considerations

Goals of therapy
• Symptom frequency and severity

Patient attitude
• Previous/current experience

Preferred route
• Systemic: swallowed, sublingual, inhaled
• Local: topical

Monitoring Parameters

Safety
- THC or CBD related ADEs
- Formulation-specific ADEs
- Worsening of symptoms

Efficacy
- Symptom/condition specific
- Formulation specific
Dose Adjustments

- **Dose**
- **Ratio**
- **Timing**
- **Formulation**

**ADE Management**

**Prevent:** Start Low, Go Slow

- **Dose**
- **Ratio**
- **Timing**
- **Formulation**

**THC/CBD specific**

**Symptom or THC/CBD specific**

**Route specific**
Patient Case 4: HH

34 year old male with severe autism and mental retardation
Rx: aripiprazole 30 mg QHS, buspirone 15 mg Q12H, clonazepam 2 mg Q8H as needed
Starts 10 mg CBD tablet Q12H for agitation
Effective dose found at 40 mg Q12H but causes insomnia
40 mg dose and route is effective = no change to dose or formulation
Timing: remove evening dose - monitor for continued efficacy
Ratio: add THC at bedtime – monitor for next day sedation

References

9. healer.com/cannabis-dosing-less-is-usually-more/
Social Q&A
To access Q&A, go to this link: ascp.cnf.io and select the “Advanced Clinical Cannabis Considerations in Geriatric and Institutional Patients” activity, as seen below.

**Advanced Clinical Cannabis Considerations in Geriatric and Institutional Patients**
4:15pm – 5:15pm
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