

Medical Cannabis use in the Older Patient

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Audience Poll

- ❖ What is the fastest-growing demographic of cannabis users?
 - a) Ages 14-23
 - b) Ages 25-35
 - c) Ages 35-45
 - d) Ages 40-55
 - e) Ages 55 and older

Disclosure

- ❖ Relationships with commercial interests:
 - ❖ Grants/Research Support: none
 - ❖ Speakers Bureau/Honoraria: none
 - ❖ Consulting fees: none
 - ❖ Other: none

Disclosure of Commercial Support

- ❖ **This program has received financial support from: None**
- ❖ **This program has received in-kind support from: None**
- ❖ **No other potential for conflict(s) of interest:**

Objectives

- ❖ Describe the pathophysiology of how cannabis works, the types and strains
- ❖ Discuss the indications for use and identify eligible patients
- ❖ Review the formulations that are senior friendly and how to prescribe and monitor patients that are on cannabis therapy

Clinical Case

- ❖ Mr. Payne, 82 year old man, history of chronic low back pain, and OA
- ❖ He is diagnosed with degenerative disc disease and spinal stenosis (L4/L5) and underwent laminectomy August 2016
- ❖ Complains of ongoing back pain, and is on multiple pain medications including:
 - ❖ Hydromorphone Contin 24 mg po BID
 - ❖ Hydromorphone 2 mg po QID
 - ❖ Hydromorphone 1 mg po q6h PRN
 - ❖ Duloxetine 90 mg po daily
 - ❖ Gabapentin 300 mg po QID
 - ❖ Nortriptyline 10 mg po QHS



Clinical Case

- ❖ Despite this regimen, pain is not controlled and has been to ER three times since laminectomy for falls and/or for early medication refills
- ❖ He has heard that medical marijuana can help his pain and even help him get off his other pain medications



Cannabis plant

- ❖ Origin in Central Asia
- ❖ Annual herb
- ❖ Dried female flowers (“buds”) are used as male species of the plant contain pollen



Cannabis subspecies

- ❖ Indica
 - ❖ Short plant with broad leaves
 - ❖ Sedative and muscle relaxation

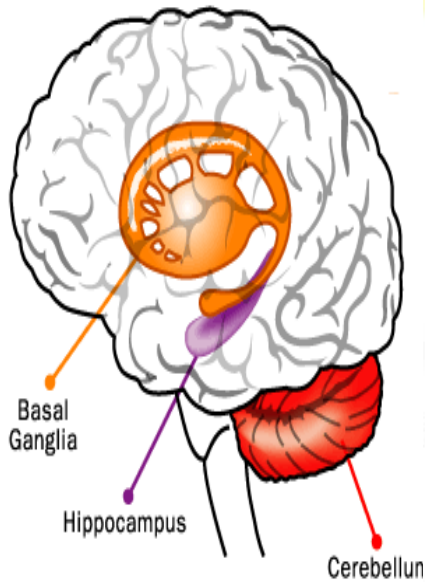
- ❖ Sativa
 - ❖ Tall plant with narrow leaves
 - ❖ Stimulating and perhaps more psychoactive



Pathophysiology of Cannabis

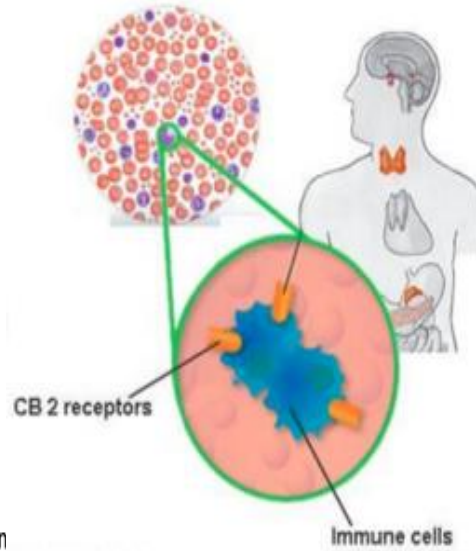
- ❖ Cannabis plant contains over 500 compounds of which 85 of those compounds act on cannabinoid receptors
- ❖ Cannabinoids comprise the endocannabinoid system which is a neurotransmitter system
- ❖ 2 notable cannabinoids in cannabis:
 - ❖ Tetrahydrocannabinol (THC) – psychoactive
 - ❖ Cannabidiol (CBD) – non-psychoactive

Cannabinoid Receptor Sites

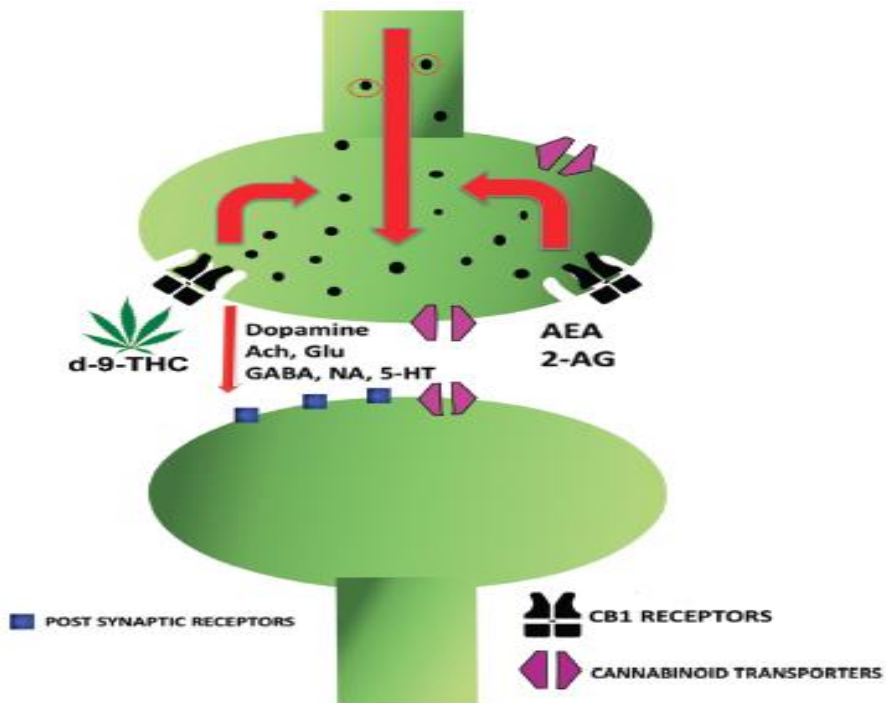


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CB2 receptors
mainly situated in the periphery
(spleen, tonsillar and immune cells)



in: *Anatomie des Menschen*
| & Fischer Verlag München



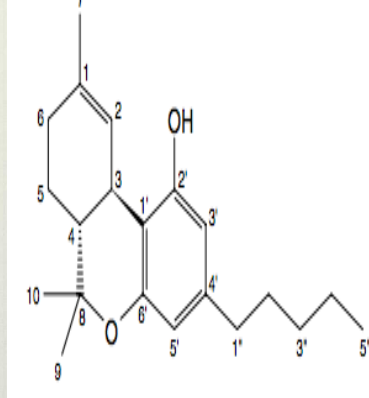
THC

❖ Potential therapeutic use as an: The 4 A's

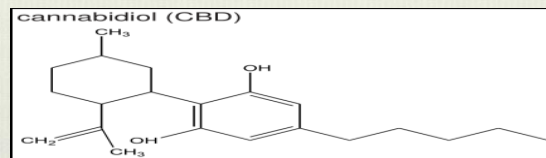
- Antiemetic
- Antispasmodic
- Analgesic
- Appetite stimulant

DON'T FORGET....

❖ **PSYCHOACTIVE!**



Cannabinoids - CBD



- ❖ CBD mechanism unclear, and has little binding affinity to CB1 or CB2 receptors
- ❖ CBD has been shown to:
 - ❖ Inhibit adenosine uptake → Anti-inflammatory
 - ❖ Antagonist at GPR55 → Anti-epileptic
 - ❖ Activate 5-HT1A receptors → Anxiolytic
 - ❖ Inhibits FAAH → Anti-psychotic

CBD

Advantages

- ❖ Lack of psychoactivity
- ❖ Can be administered in higher doses
- ❖ Not toxic even when administered chronically

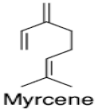


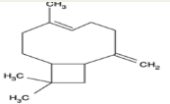
Disadvantages

- ❖ Low bioavailability
- ❖ Low solubility leading to incomplete absorption

THC vs. CBD

	THC	CBD
Anti-emetic	✓	✓
Analgesic	✓	✓
Anxiolytic		✓
Antispasmodic	✓	✓
Anti-inflammatory		✓
Antipsychotic		✓
Appetite	✓	

Bioactive terpenoids in cannabis

Compound	Structure	Activities
Myrcene	 Myrcene	Sedative Anti-inflammatory Analgesic
Limonene		Anxiolytic
D-Linalool	 Linalool	Anxiolytic Sedative Analgesic
B-Caryophyllene		Anti-inflammatory CB2 agonist

Indications for use



Medical marijuana helps senior sleep, contend with other problems of aging

A Solution to the Opioid Crisis?

CTV National News: Easing end of life pain

Cannabis and Alzheimer's Disease

HEALTH NEWS | Wed Jul 6, 2016 | 11:09pm EDT

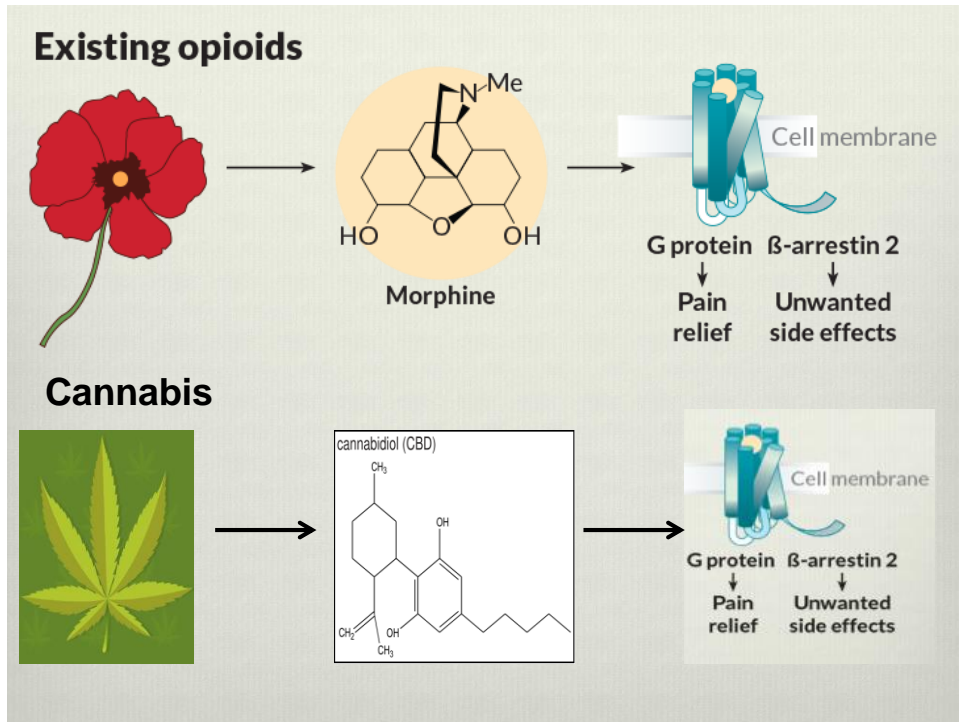
Seniors with access to medical marijuana use fewer prescription drugs



New Study: CBG Cannabinoid Works As Appetite Stimulant

Marijuana.com (blog) - Aug 11, 2016

New Study: CBG Cannabinoid Works As Appetite Stimulant ... Found to work synergistically with CBDA and THC, the CBG compound has ...



Sleep

- ❖ No RCTs comparing cannabis to pharmaceutical sleep aid medications
- ❖ A number of clinical trials point to potential benefit of cannabis in the treatment of sleep difficulties associated with chronic pain
- ❖ 2015 study by Belendiuk et al. - 163 adults purchasing cannabis at a dispensary for management of insomnia and reduction of nightmares
- ❖ 2017 Systematic review by Walsh et al – Medical Cannabis and Mental Health, looked at cannabis and PTSD and associated symptoms

Cannabis in Alzheimer's

- ❖ Molecular linkage between THC and Alzheimer's disease pathology
- ❖ THC competitively inhibits the enzyme acetylcholinesterase, as well as prevent AChE-induced amyloid B-peptide aggregation

Identifying suitable patients

- ❖ Screening Questionnaire
 - ❖ Clinical history of presenting problem
 - ❖ Previous medications tried
 - ❖ Psychiatric history
 - ❖ PMHx/Medication history
 - ❖ Cannabis history
 - ❖ Social history
 - ❖ Functional history/Cognition
 - ❖ Drug and alcohol history

Who NOT to prescribe to:

- ❖ Systolic blood pressure <100 as cannabis may lower blood pressure by as much as 40 points
- ❖ Contraindicated in active ischemic heart disease, monitored case by case for patients with CAD that is medically managed
- ❖ Atrial fibrillation with unstable INR and rapid heart rate as cannabis can worsen

Back to Mr. Payne...

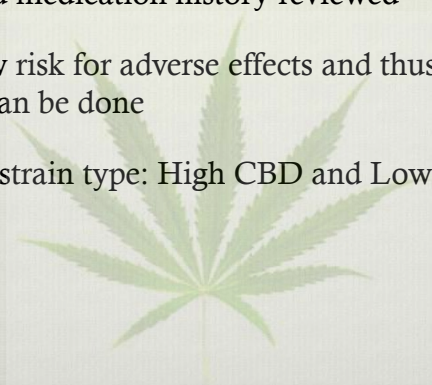
- ❖ Living independently in the community with once weekly PSW services to assist with bathing
- ❖ No history of active heart disease, atrial fibrillation, and SBP range (130-140)
- ❖ Cognition is intact at baseline but has had episodes of delirium during previous hospitalizations
- ❖ History of previous falls
- ❖ Relies on public transportation

Mr. Payne's Med List

1. Hydromorphone Contin 24 mg po q12 hr
2. Hydromorphone 2 mg po QID
3. Hydromorphone 1 mg po q6 hr prn
4. Duloxetine 90 mg po daily
5. Gabapentin 300 mg po qam, noon and 600 mg po qhs
6. Nortriptyline 10 mg po qhs

Mr. Payne

- ❖ Mr. Payne has tried conservative measures as well as surgical intervention for his degenerative disc disease
- ❖ PMHx and medication history reviewed
- ❖ He has low risk for adverse effects and thus a trial of cannabis can be done
- ❖ Suggested strain type: High CBD and Low THC



Routes of Administration

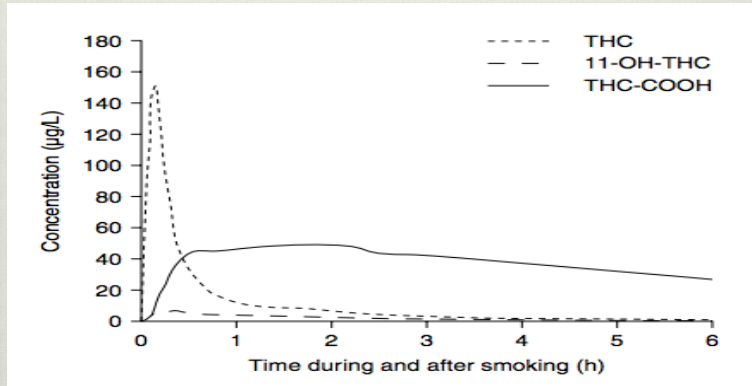
- ❖ Inhalation
 - ❖ Smoking
 - ❖ Vaporization
- ❖ Ingestion
 - ❖ Oils
 - ❖ Edible products
 - ❖ Sublingual sprays
- ❖ Transdermal/topical

Different Tokes for Different Folks

- ❖ No set guidelines for dosing or choosing formulations
 - ❖ Start low and go slow
- ❖ For management of acute symptoms and symptoms during the day consider vaporized cannabis
- ❖ For chronic symptoms or evening/nighttime dominant symptoms consider cannabis oils
- ❖ LPs currently offer dried product and ingestible oils

Inhalation

- ❖ THC is detectable in plasma seconds after inhalation with peak plasma concentrations being measured 3-10 minutes after onset of smoking



Clin Pharmacokinet 2003; 42 (4)

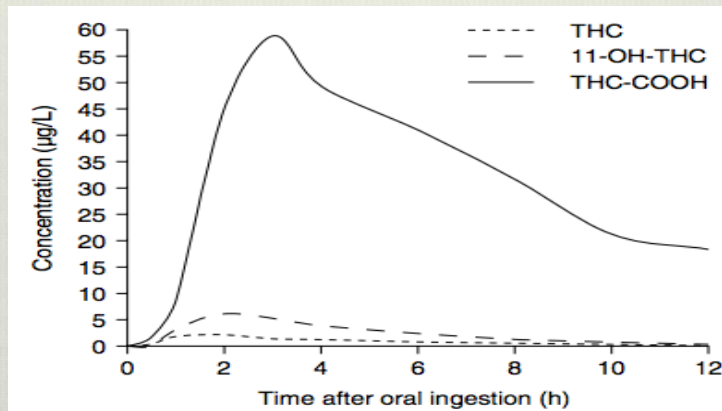
Vaporization

- ❖ Cost: \$100-600 for a vaporizer
- ❖ Must pre-heat between 200-250 degrees F
- ❖ Grind cannabis (0.1 g – 1g) until very fine and place into the vaporizer
- ❖ 1-2 inhalations



Ingestion

- ❖ With oral use absorption is slow and erratic resulting in maximal plasma concentration after 60-120 mins



Clin Pharmacokinet 2003; 42 (4)

Cannabis oils

- ❖ Convenient
- ❖ Start low at 0.2 ml and place directly on tongue
- ❖ Recommend initial use to be in the evening
- ❖ Increase dose by 0.1 ml every day or every other day



Cannabis capsules

- ❖ Licensed producers starting to carry cannabis capsules
- ❖ Nabilone
 - ❖ Synthetic cannabinoid (THC) agonist
 - ❖ Approved indication: Chemotherapy anti-emetic
 - ❖ Off label indications → chronic non-cancer pain, fibromyalgia, fatigue, and sleep
 - ❖ Start with doses of 0.25 mg po hs and titrate gradually

Adverse Effects

- ❖ 3 D's - dry mouth, dizziness, drowsiness
- ❖ Change in appetite
- ❖ Psychoactivity (THC)
- ❖ Perceptual alternations (eg. Depth)
- ❖ Headache, and changes in bowel habits
- ❖ Short-term memory and attention impairment (high THC)
- ❖ Palpitations and increase in heart rate by 20-50%
- ❖ Postural hypotension

Back to Mr. Payne...

- ❖ Strain type: high in CBD and low THC
- ❖ Oral cannabis oil
 - ❖ Cost-effective
 - ❖ Decreased fine motor dexterity
 - ❖ Convenient and easy to administer
 - ❖ Longer duration of action may lead to decrease use of PRN opiates
 - ❖ Sleep latency and staying asleep

The Medical Document

- ❖ The medical document is equivalent to a prescription and is required by the ACMPR
- ❖ Must include quantity of cannabis in grams used per day
- ❖ THC/CBD percentages are optional but recommended to guide dosing
- ❖ Must specify duration of use, cannot exceed 12 months
- ❖ Indication for use is optional
- ❖ Recommend to specify oil vs dried product


 Health Canada Santé Canada

Your health and safety... our priority. Votre santé et votre sécurité... notre priorité.

Medical Document Authorizing the use of Cannabis for Medical Purposes under the Access to Cannabis for Medical Purposes Regulations

Help on accessing alternative formats, such as Portable Document Format (PDF), Microsoft Word and PowerPoint (PPT) files, can be obtained in the [alternate format help section](#).

For related information, please see Health Canada's [Information for Health Care Practitioners](#).

This document may be completed by the applicant's health care practitioner as defined in the Access to Cannabis for Medical Purposes Regulations (ACMPR). A health care practitioner includes medical practitioners and nurse practitioners. In order to be eligible to provide a medical document, the health care practitioner must have the applicant for the medical document under their professional treatment. Regardless of whether or not this form is used, the medical document must contain all of the required information. (see in particular s. 8 of the ACMPR).

Your health care practitioner may use this form to provide you authorization to use cannabis for medical purposes. Your health care practitioner may use a different form, but the required information as per section 8 of the ACMPR (outlined below) must be included.

Access via Health Canada licensed producers: Should you choose to access cannabis from a licensed producer, this form must be sent directly to the licensed producer of your choice. You may choose any licensed producer who is authorized to sell to registered clients. Please see the Health Canada website for a list of licensed producers. Should you wish to switch from one Health Canada licensed producer to another a new medical document will be required as licensed producers are required to keep the original medical document on file.

Access via production for own medical purposes: Should you choose to produce your own cannabis, or designate someone to produce it for you, the original of this document must be sent to Health Canada with your Registration Application Form.

Patient's Given Name and Surname:

Patient's Date of Birth (DDMM/YYYY):

Daily quantity of dried marijuana to be used by the patient: grams / day

The period of use is day(s) or week(s) or month(s).

Note: The period of use cannot exceed one year

Health care practitioner's given name and surname:

Profession:

Health care practitioner's business address:



Monitoring

- ❖ It can take up to 3 weeks to obtain cannabis product and thus follow-up is recommended after using the product for 2-4 weeks
- ❖ Follow-up questions:
 - ❖ Quantity and strain type (% of THC/CBD)
 - ❖ Dose schedule
 - ❖ Therapeutic benefit
 - ❖ Adverse effects (falls?)
 - ❖ Cost
 - ❖ Effects on cognition**

Back to Mr. Payne...

- ❖ Mr. Payne returns for follow-up 3 weeks later and reports using cannabis oil daily in the evening
- ❖ Mr. Payne reports improvement in pain symptoms and in sleep quality
- ❖ He denies recent falls, changes in memory, and has not been to the ER since
- ❖ Reports dry mouth as a side effect

Mr. Payne's Med List

Before	After
1. Hydromorphone Contin 24 mg po BID	1. Hydromorphone Contin 24 mg po BID 1. Hydromorphone Contin 21 mg po BID
2. Hydromorphone 2mg po QID	2. Hydromorphone 2 mg po TID (from QID)
3. Hydromorphone 1mg po q6 hr prn	3. Hydromorphone 1mg po q6 hr prn
4. Duloxetine 90 mg po daily	4. Duloxetine 90 mg po daily
5. Gabapentin 300 mg po qam, noon and 600 mg po qhs	5. Gabapentin 300 mg po qam, noon and 600 mg po qhs
6. Nortriptyline 10 mg po qhs	6. Nortriptyline 10 mg po qhs

Take home points

- ❖ Cannabis can be a suitable option
- ❖ Compounds of cannabis: THC and CBD
- ❖ Several strain types with variable percentages of THC and CBD
- ❖ Dosing is individualized and patients/caregivers must be educated to self-titrate to find the lowest effective dose
- ❖ Cannabis is offered through Licensed Producers as dried product and ingestible oils

Take home points

- ❖ A medical document (prescription) is completed and sent to the Licensed Producer
- ❖ Most of the evidence surrounding cannabis is considered low quality
- ❖ Vast amount of anecdotal evidence to support its use
- ❖ More research needs to be conducted in order to better understand the therapeutic properties of cannabis in clinical practice.