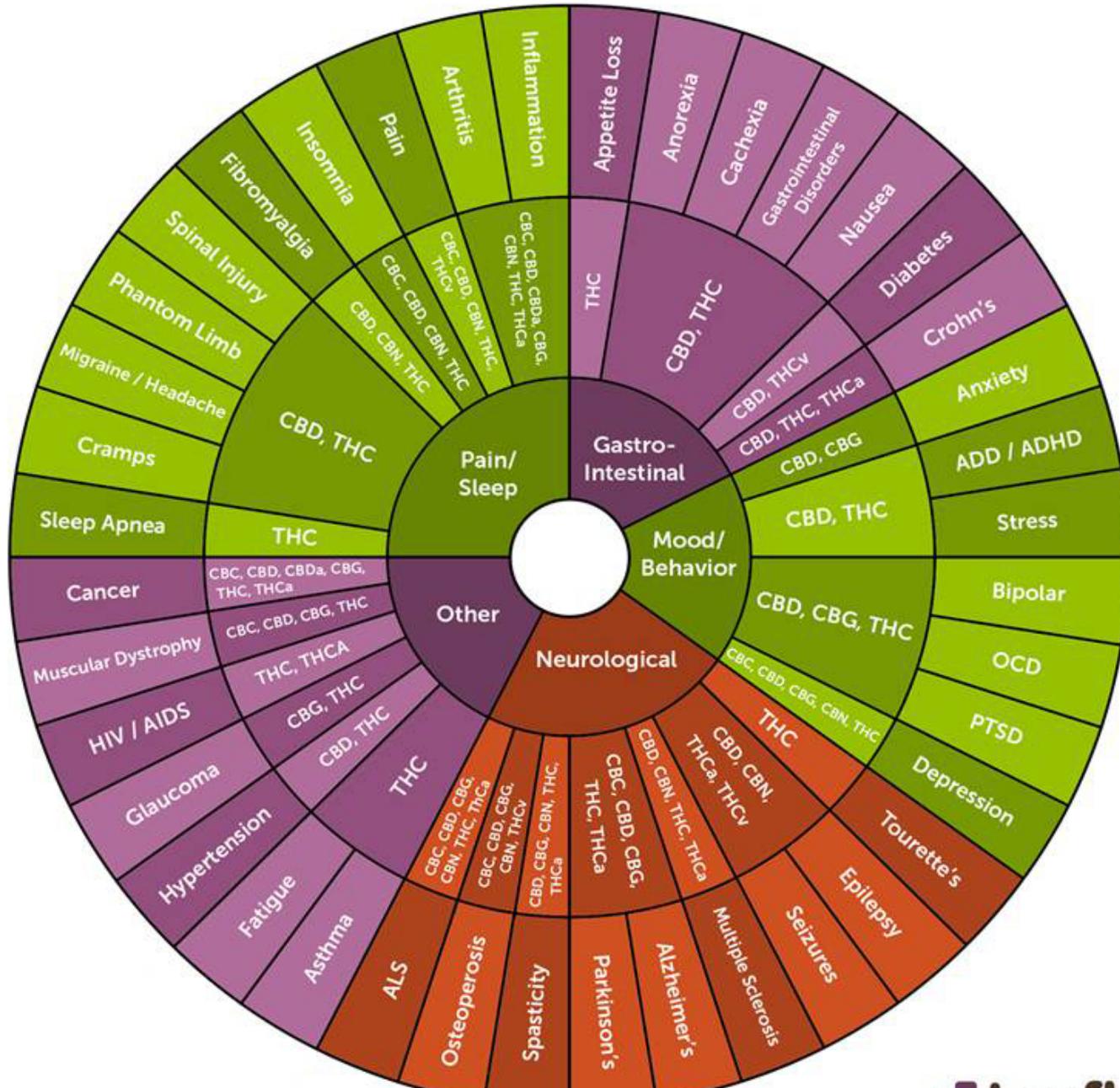


Medicinal Use of Marijuana

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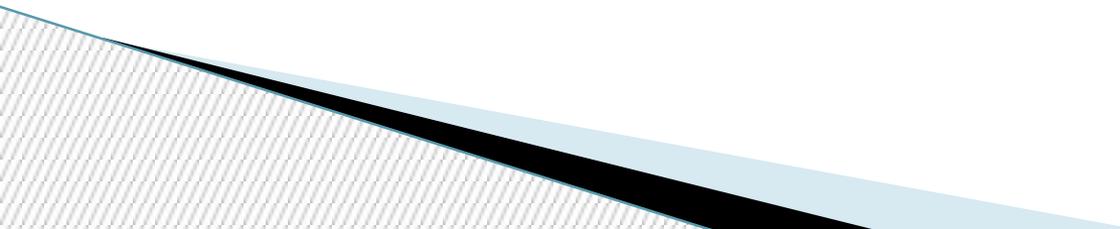


What is cannabis?

- Hemp plant *Cannabis sativa*.
- Active ingredient is delta-9-tetrahydrocannabinol(THC).
- Has many varying strengths on the market today depending on how it is gro
- Strengths from 10mg-300mg.
- Synthetic –Nabilone & Dronabinol



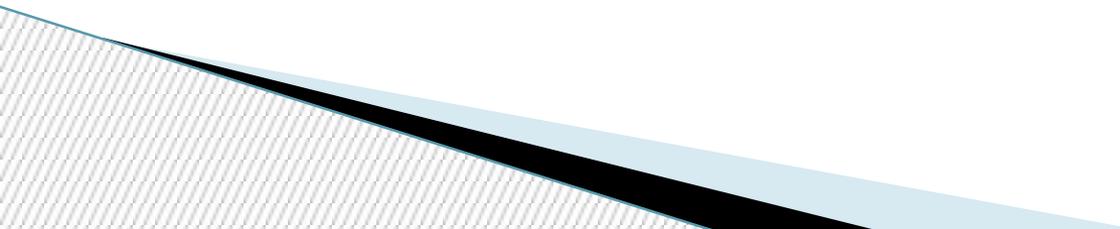
Where does it work?

- CB1 receptors in the: Hippocampus , Amygdala ,Basal ganglia , Cerebellum , Brain stem and Thalamus.
 - CB2 receptors in the macrophages of spleen and other immune cells.
 - Endogenous cannabinoids –Anandamide a naturally occurring neurotransmitter, with high affinity for CB1 receptors.
 - Anandamide has some of the same effects as THC. Anandamide plays a role in the regulation of feeding behaviour and the neural generation of motivation and pleasure.
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How does it work

- After a puff all the inhaled cannabis is absorbed in the lungs, then into the bloodstream and distributed to the rest of the body and it reaches the brain within minutes.
 - Oral ingestion has a slow onset of action (30 minutes) because of liver metabolism but duration much prolonged.
 - THC are lipid soluble and are absorbed in that tissue ,reaching peak concentration in 4-5 days.
 - This THC are released back into the body including the brain from day 7 up to 30 days .
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Effects on Mesolimbic Dopamine system

- This circuit (VTA-NAc) is a key detector of a rewarding stimulus.
 - The circuit controls an individual's responses to natural rewards, such as food, sex and social interactions.
 - It is an important determinant of motivation and incentive drive.
 - It also tells the memory centers in the brain to pay particular attention to all features of that rewarding experience, so it can be repeated in the future.
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cont

- The **VTA** is the site of dopaminergic neurons.
- The **Nac** is a principle target of VTA **dopamine neurons**. This region mediates the rewarding effects of natural rewards and drugs of abuse.
- The **Amygdala** is particularly important for conditioned forms of learning.
- The **hippocampus** is critical for declarative memory, the memory of persons, places or things. Along with the amygdala, it establishes memories of drug experiences which are important mediators of relapse.
- The **hypothalamus** is important for coordinating an individual's interest in rewards with the body's physiological state. This region integrates brain function with the physiological needs of the organism

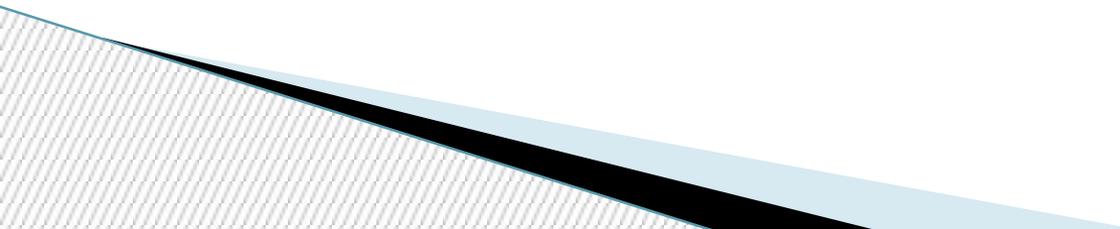
Cannabis

- For many, cannabis is a relaxant & anxiolytic
- For others:
 - Affective changes: anxiety, panic attacks, depression
 - Misperceptions, hallucinations
 - Thought disorder: paranoia, delusions
- ‘Cannabis induced psychosis’
 - Short-term, resolving within days / weeks of abstinence
 - Unmasks underlying functional psychosis - schizophrenia

Psychological effects of cannabis

- **Mood:** euphoric mood or high, depression ,decreased tension and increased sociability , increase risk of suicide.
 - **Perception:** colours are more clearer, music more vivid and emotions more meaningful, time is slowed.
 - **Cognitive and psychomotor:** poor concentration , slow reaction time , motor in co ordination , short term memory deficits.
 - The impairments in attention ,memory and understanding complex information is long lasting , with chronic use.
 - There is a drop in IQ that does not recover after cessation of use.
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cont

- Amotivational syndrome
 - Schizophrenia
 - Potential to cancer development (throat, lung etc.)
 - Compliance with other medications
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Implications to DSM 5 changes from DSMVTR

- **Cannabis withdrawal disorder symptoms:**

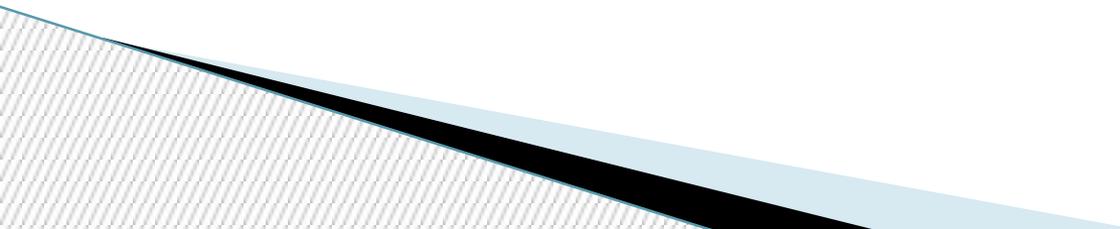
Three or more of the following symptoms would be required for a diagnosis of cannabis withdrawal syndrome:

- Irritability, anger or increased aggression
- Nervousness or anxiety
- Sleep difficulty (insomnia)
- Decreased appetite or weight loss
- Restlessness
- Depressed mood

cont

- At least 1 of the following physical symptoms causing significant discomfort: stomach pain , shakiness/tremors, sweating, fever, chills or headache.
 - the following symptoms as have been observed in studies, with more research needed to determine their validity or significance:
 - Fatigue
 - Yawning
 - Difficulty in concentrating
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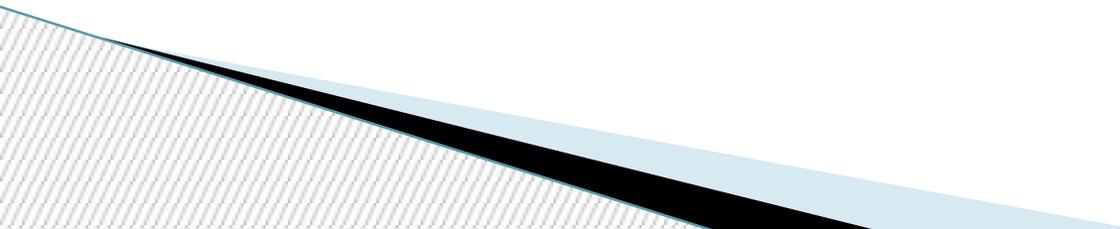
Cannabis Related disorders

- Cannabis use disorder
 - Induced anxiety disorder
 - Induced psychotic disorder, with delusions
 - Induced psychotic disorder, with hallucinations
 - Intoxication
 - Intoxication delirium
 - Sleep disorder
 - Unspecified cannabis related disorder NOS
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What is medical Marijuana

Medical marijuana is any part of the marijuana plant that you use to treat health problems. People use it to get relief from their symptoms, not to try to get high.

Most marijuana that's sold legally as medicine has the same ingredients as the kind that people use for pleasure. But some medical marijuana is specially grown to have less of the chemicals that cause feelings of euphoria.

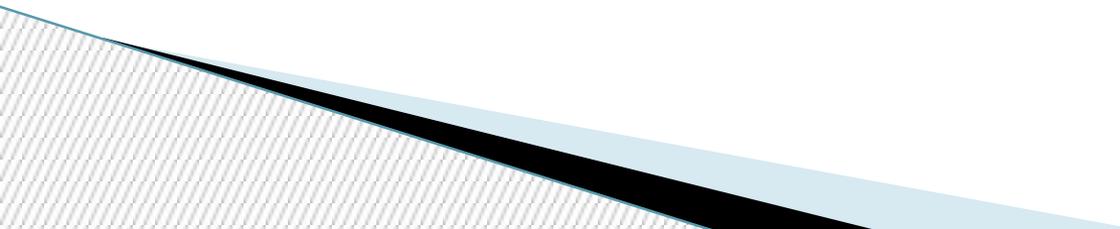


Ingredients of Medical Marijuana

- Marijuana plants have hundreds of chemicals, known as cannabinoids. The two main ones are THC and CBD. THC gives some of the pleasurable effects that pot smokers are looking for, but it also has some effects that may treat medical problems.
- Some research suggests that CBD may be helpful for some health issues, but it doesn't cause you to get high.

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How Marijuana Works on the Brain

- People who smoke marijuana begin to feel its effects almost immediately, while those who eat it may not feel it for up to an hour.
 - When you smoke pot, THC goes from your lungs to the bloodstream and causes your brain cells to release the chemical **dopamine**, leaving you feeling high.
 - Experts know less about how CBD works. They think it may work sometimes with THC, and sometimes on its own, to have an effect on the brain.
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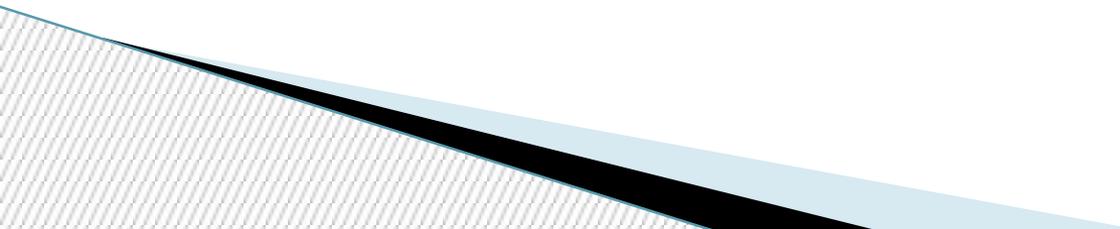
Uses for Medical Marijuana

- Medical marijuana may help ease pain, nausea, and loss of appetite in people who have cancer and HIV. There's not a lot of research on these areas yet, though.
 - Some research suggests medical marijuana may cut down seizures in people with epilepsy. Some studies show it also may ease multiple sclerosis symptoms like muscle stiffness and spasms, pain, and frequent urination.
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List of Conditions related to Medical Marijuana

- Headaches
 - Cancer (pain and chemotherapy nausea)
 - Glaucoma
 - Nerve Pain
 - Muscle spasms due to multiple sclerosis
 - Poor appetite and weight loss in HIV or Nerve pain
 - Seizure disorder (difficult to control seizures)
 - Crohn's disease
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Availability in the USA

- FDA Approved for some of the listed conditions
 - Only available by prescription as Marinol (dronabinol) and Cesamet (Nabilone)
 - Available products have low concentrations of THC
 - Concerns about long -term use potential to cancer and psychosis
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Short-term Side Effects

- Medical marijuana can change your mood, making you feel happy, relaxed, sleepy, or anxious. It can also disrupt your short-term memory and decision-making ability. These side effects can last 1 to 3 hours.
- Large doses of medical marijuana can make some people have hallucinations, delusions, and paranoia. Research suggests that smoking marijuana can make breathing problems, like bronchitis, worse.

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Long-Term Side Effects

- Regular smokers of medical marijuana may get respiratory problems, such as a daily cough and a higher risk of lung infections.
 - Studies also link routine use to mental illness, depression, anxiety, less motivation, and suicidal thoughts among young people. Marijuana use during pregnancy can raise the risk of health problems in babies. Marijuana use can result in addiction.
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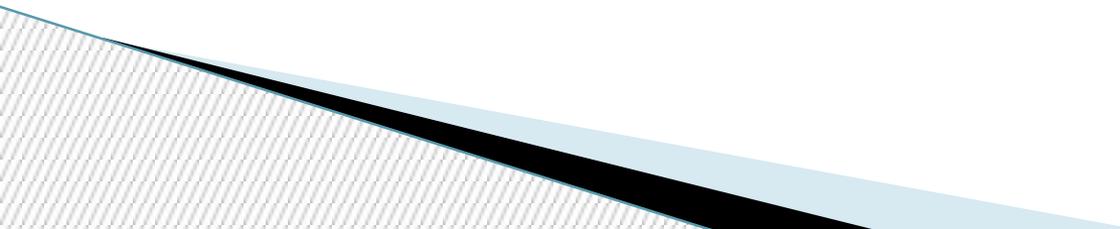
Drugs Made From Marijuana

- The FDA has approved two drugs that include ingredients also found in marijuana. Dronabinol has THC and is used to treat nausea from chemotherapy and extreme weight loss in AIDS patients.
- Nabilone is used for the same reasons, but it has a man-made chemical that's similar to THC.
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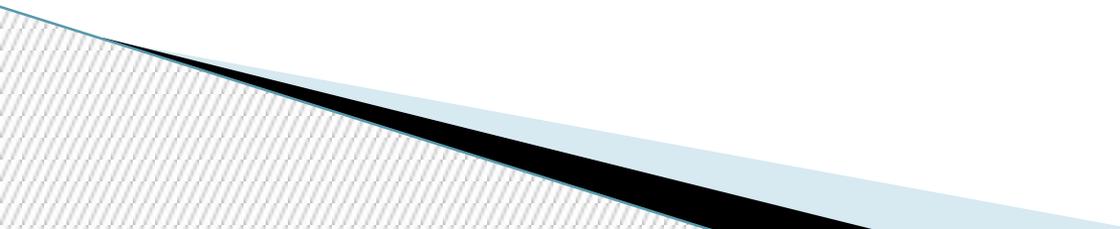
Forms of Medical Marijuana

- Users smoke medical marijuana in paper-rolled cigarettes or pipes.
- You can also brew it into a beverage, eat it in cooked foods, or take it in pill form. The effects of a marijuana pill can be strong and long-lasting. This makes it hard to predict how it will affect a person.
- You can also inhale it through vaporizers.
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Where Medical Marijuana is Legal

- California voters were the first to legalize medical marijuana, in 1996. It's now legal in almost half of U.S. states.
 - If you live in a state where it's legal and your doctor has OK'd it, you can buy it from an authorized seller known as a dispensary. Some people may legally grow their own medical marijuana.
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Medical Marijuana for Children

- Some studies suggest medical marijuana may help relieve seizures in children with hard-to-treat epilepsy.
 - A type of medical marijuana known as "Charlotte's Web" may help kids without getting them high, because the strain has very little THC.
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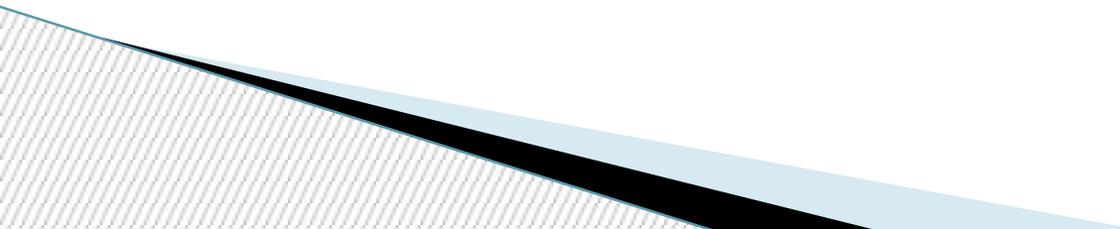
Epidemiology

- Worldwide cannabis is the most widely used illicit substance.
- the United Nations estimates that it is used by 3.9% of the world's adult population.
- Abuse and use starts mainly in the teenage years, more prevalent among males than females but trends start to show that this is equalising.
- With the youngest user being 2 1/2yrs .

In South Africa

- No formal studies done
 - self-reported cannabis use of 5 - 10% among adolescents and 2% among adults. Furthermore, it was higher among men than women, higher in urban than rural areas, higher in the urban provinces of Western Cape and Gauteng than the other provinces, and higher among coloureds and whites than other racial groups.
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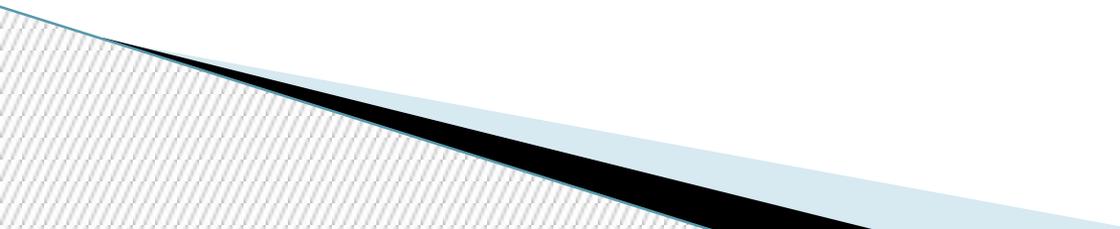
Controversy of cannabis

- Medical marijuana –terminally ill patients , AIDS , chemotherapy, cancer end stage. Having pain, loss of appetite , nausea and hiccups. Eighteen states and the District of Columbia have enacted laws legalizing medical marijuana in the USA .
 - Recreational marijuana -Colorado and Washington voted to legalize marijuana in 2012.
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cont

- Medical innovations bill was introduced in parliament Feb 2014.
- The objectives of the Bill are to establish one or more research hospitals where medical innovation can take place, especially with regard to the treatment and cure of cancer and to legalise the medical, commercial and industrial use of cannabis in accordance with emerging world standards. The Bill creates a special legal dispensation, which applies only in research pilot hospitals authorised by the Minister of Health where medical practitioners are granted greater professional discretion to administer innovative and alternative medical treatments on the basis of the patients' informed consent.

What will implementation mean?

- It will send a message that drugs are acceptable socially
 - Gateway theory
 - Increase in violence
 - Addictive
 - Produce new costumers
 - There are gains – employment, income , growth & pain relief . reduce law enforcement load can focus on other crimes.
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