

# General Health Effects of Marijuana Use: Short-Term

- Impaired short-term memory
- Temporary loss of coordination
  - Increase in motor vehicle accident risk when driving soon after using
  - THC levels of 2 to 5 ng/mL associated with impaired driving skills
- Altered judgment
- At high doses
  - Stimulation: agitation, paranoia, psychosis
  - Followed by sedation: can lead to respiratory insufficiency in children
  - No specific antidote for marijuana toxicity

Volkow ND, et al. *N Engl J Med* 2014; 370:2219-27

Hurley W, Mazor S. *JAMA Pediatr* 2013; 167:602-3

# General Health Effects of Marijuana Use: Long-Term

- Increased symptoms of chronic bronchitis in persons who regularly smoke marijuana
- Dependence
  - ~1 in 10 who use marijuana will become addicted
  - Risk increases with
    - Earlier age of initiation
    - Daily use (25% to 50%)
  - Cannabis withdrawal syndrome: craving, irritability, sleep difficulties, anxiety, and depression
- Association with use of other substances
- Psychiatric symptoms
  - Associated with anxiety and depression
  - Unmasking of schizophrenia (genetic predisposition)

# Cannabis Hyperemesis Syndrome

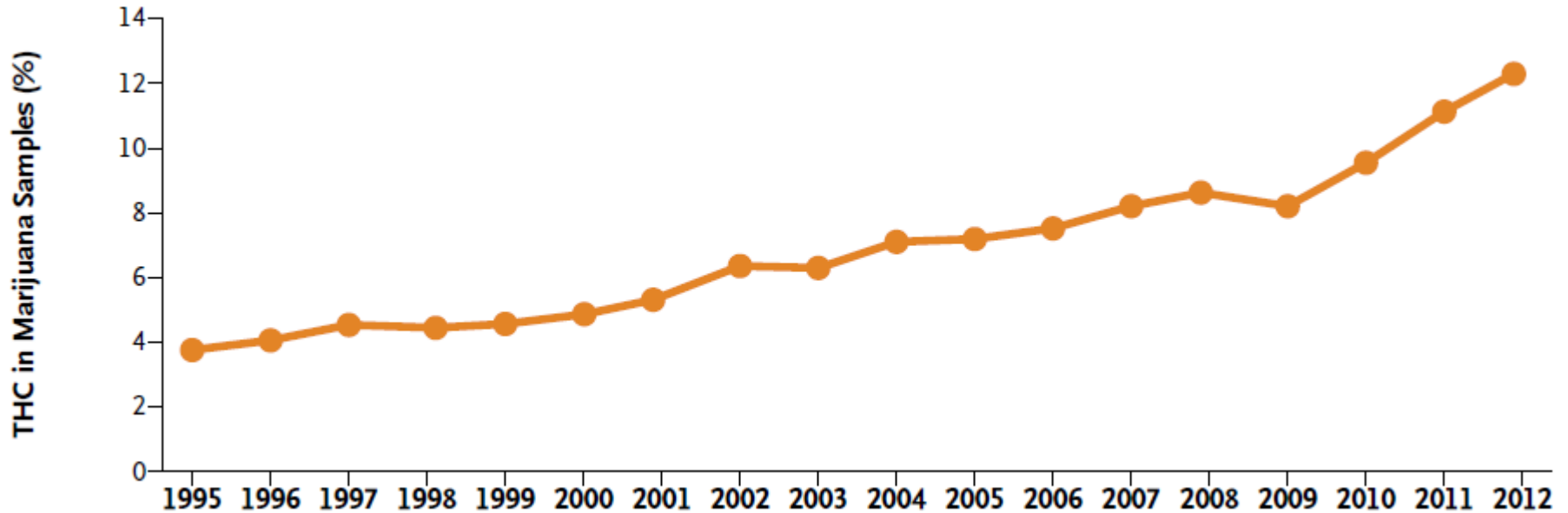
- AKA:
  - Cyclic vomiting syndrome
  - “Greening out”
- Paradoxical severe nausea and recurrent vomiting
- Epigastric abdominal pain
- Most common with heavy, long-term use
- Associated with personal or family history of migraines
- Unknown mechanism of pathology
- Treatment
  - Hot baths (diagnostic clue)
  - Haloperidol (resistant to standard antiemetics)
  - Fluids
- Self-limited, resolves with 48 hours
- Episodes end with cessation of cannabis use



# Challenges to Assessing the Health Risks of Marijuana Use

- Health effects may not manifest for years
- Confounding from other substance use:
  - Tobacco
  - Alcohol
  - Other drug use
- Confounding from social determinants
  - Low income
  - Low educational attainment
  - Later prenatal care, lower use of folate
- Most studies do not address timing of exposure during gestation
- Increase in non-smoking utilization: edibles, vaping, dabbing
- Poor control for multiple comparisons
- Increasing THC concentration in smoked marijuana

# Percent THC in Marijuana Seized by DEA, 1995-2012



Volkow ND, et al. *N Engl J Med* 2014; 370:2219-27

Policy note: THC concentration often perceived as measure of quality

# Health Effects of Legalization

- Depends on legalization's effects on:
  - Prevalence of use and age-specific prevalence of use
  - Frequency and duration of use
  - Modalities of use
  - Regulation, taxation, market forces

# Effects of Legalization on the Health System: Experience in Colorado

- Increased admissions to burn center
  - Butane used as solvent to extract THC
- Cyclic vomiting syndrome/marijuana hyperemesis syndrome ER visits
- THC intoxication from edible products
  - THC blood levels begin to rise ~30 minutes after consumption, peak at ~3 hours, and are cleared ~12 after ingestion
  - 10-30 mg THC for intoxication