

SUMMARY OF RESEARCH ARTICLES BY JOHNNY'S AMBASSADORS

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WHAT ARE THE EFFECTS OF MARIJUANA ON YOUTH?

2026

[Cannabinoid Hyperemesis Syndrome-A Survey-Based Approach to Understanding Symptoms and Cannabis Use Patterns](#)

– March 2026. Our findings suggest that CHS is most associated with long-term, frequent use of inhaled delta-9-tetrahydrocannabinol (Δ 9-THC) dominant cannabis. The acquisition source of cannabis products did not affect the syndrome presentation. Although many different cannabis consumption methods were represented, smoking and vape cartridges were the most commonly reported. The use of vape cartridges was associated with a shorter time to the development of CHS symptoms. Increased awareness of these patterns could improve the early recognition and management of CHS.

[Effects of Legalizing Recreational Cannabis Sales on Cannabis Use and Cannabis-Related Disorder Among Presentations to a Psychiatric Emergency Service](#)

– Jan. 2026. Commercialization of recreational cannabis sales may disproportionately affect adolescents with psychiatric illnesses or vulnerabilities, resulting in an increased need for psychiatric emergency care.

2025

[An Update on the Behavioral and Neurobiological Effects of Cannabis Use in Adolescents: A Translational Perspective](#)

– July 2025 by Yasmin Hurd. The convergence of early initiation, high-potency products, and widespread availability of today's cannabis landscape has created an environment ripe for mental health challenges. Translational research combining longitudinal human neuroimaging and animal models provides compelling evidence that cannabis use—particularly with high-tetrahydrocannabinol (THC) products and frequent use—can disrupt adolescent brain development and behavior. This vulnerability is especially relevant to trajectories leading to psychosis, schizophrenia, and cannabis use disorder, while also elevating risks for anxiety and depression.

[Are reasons for first using cannabis associated with subsequent cannabis consumption \(standard THC units\) and psychopathology?](#) – June 2025. Initiating cannabis use for self-medication is associated with higher average THC consumption, and increased anxiety, depression and paranoia.



[Association of cigarette and e-cigarette use with cannabis-related risk perceptions and intentions](#) – May 2025. Among adolescents, the use of cannabis is strongly associated with the use of combustible cigarettes and e-cigarettes. This association not only can be examined for co-use of cannabis and combustible/e-cigarette products but also for perceived harm of cannabis use and intention to use cannabis in the immediate future.

[Cannabis Use Among US Adolescents](#) – Dec. 2025. In this nationally representative sample, dose-dependent associations of frequency of cannabis use with adverse academic and emotional functioning were observed, even among monthly users, underscoring the importance of routinely inquiring about cannabis use in adolescents.

[Cannabis Use Cessation and the Risk of Psychotic Disorders: A Case–Control Analysis from the First Episode Case](#) – Jan. 2025. Risk of psychotic disorder appears to decline with time following cannabis cessation, receding to that of those who have never used cannabis after 37 weeks or more of abstinence.

[Cannabis Use Disorder Emergency Department Visits and Hospitalizations and 5-Year Mortality](#) – Feb. 2025. The results of this cohort study suggest that individuals who require hospital-based care for a CUD are at an elevated risk of premature death. Increases in mortality risk relative to the general population were greatest in individuals aged 25 to 44 years.

[Cannabis use may quadruple diabetes risk](#) – Sept. 2025. A massive study of over 4 million adults has revealed that cannabis use may nearly quadruple the risk of developing diabetes. Despite some earlier suggestions that cannabis might have metabolic benefits, this large analysis found significantly higher diabetes rates among users, even after adjusting for other health factors.

[Chronic Health Effects of Cannabis Use in Childhood and Adolescence](#) – June 2025. The rise in availability and potency of cannabis products with increasing legalization presents a growing challenge in the pediatric population, as adolescent perception of the risk of harm from use is on the decline. The well-established negative impact on learning, memory, executive function, and the increased risk for the development of psychosis and schizophrenia later in life are most alarming, as evidence has emerged that these effects are not fully reversible even with cessation.

[Health Service Use Among Young Adults With a History of Adolescent Cannabis Use](#) – Oct. 2025. Findings of this birth cohort study indicated that early-onset and frequent cannabis use was associated with greater medical care utilization for both mental and physical health conditions in young adulthood. These findings support the relevance of delaying initiation and reducing intensity of cannabis use during adolescence.

[Substance Use Disorder for Specific Substances in Past Year](#) – June 2025. According to SAMHSA data, Table 5.19A, in 2024, marijuana was the number one substance that 12-17 year olds AND 18-25 year olds received in-patient treatment in the US.

[The impact of childhood trauma and cannabis use on paranoia: a structural equation model approach](#) – June 2025. These findings highlight childhood trauma as a primary driver of paranoia, with cannabis use amplifying its effects. While trauma had a strong direct impact, cannabis played a significant mediating role. Integrating standard THC units into psychiatric research and clinical assessments may enhance risk detection and refine intervention strategies, particularly for childhood trauma-exposed individuals.

[Trends in cannabis-attributable hospitalizations and emergency department visits: data from the Canadian Substance Use Costs and Harms Study \(2007–2020\)](#) – June 2025. Between 2007 and 2020, the overall rate of cannabis-attributable inpatient hospitalizations increased by 120%, from 6.4 in 2007 to 14.0 per 100 000 in 2020. Cannabis-attributable ED visits increased by 113%, from 52.1 per 100 000 in 2007 to 111.0 per 100 000 in 2019, and then decreased by 12% in 2020. This study found that the increases in hospitalizations and ED visits were partly attributed to neuropsychiatric conditions, particularly hospitalizations due to psychotic disorders and ED visits due to acute intoxication among children and youth.

2024

[Assessment of frontal lobe functions in a sample of male cannabis users currently in abstinence: correlations with duration of use and their functional outcomes](#) – Aug. 2024. Data analysis showed that cannabis users experienced general functional disturbances that encompass impairments in social and occupational life aspects. These impairments in function are correlated with the presence of neurocognitive deficits even after a period of abstinence. Both having significant positive correlation with longer duration of cannabis use.

[Association of Local Cannabis Policy and Retail Availability With Cannabis Use and Problematic Cannabis Use Among Adolescents in Northern California](#) – Oct 2024. More protective cannabis policies and less retail availability were associated with a lower prevalence of adolescent cannabis use and problematic cannabis use.

Association of State Cannabis Legalization With Cannabis Use Disorder and Cannabis Poisoning — Dec. 2024. States with legalized medical cannabis experienced 42.7% and 88.6% increases in CUD and cannabis poisoning, respectively, compared to states without legalized medical cannabis. States with legalized recreational cannabis experienced a 31.6% increase in cannabis poisoning compared to states without legalized recreational cannabis.

[Cannabis use and neurocognitive performance at 13-14 Years-Old: Optimizing assessment with hair toxicology in the Adolescent brain cognitive development \(ABCD\) study](#) – March 2024. Youth who had used cannabis showed lower scores on an episodic memory task, and more cannabis use was linked to poorer performances on verbal, inhibitory, working memory, and episodic memory tasks. Combining hair toxicology with self-report revealed more brain-behavior relationships than self-report data alone. These youth will be followed to determine long-term substance use and neurocognition trajectories.

[Cannabis Use During Adolescence and Young Adulthood and Academic Achievement: A Systematic Review and Meta-Analysis](#) – Oct. 2024. In this meta-analysis of 63 studies including 438 329 individuals, moderate-certainty evidence showed cannabis use during adolescence and young adulthood is probably associated with lower school grades; less likelihood of high school completion, university enrollment, and postsecondary degree attainment; and increased school dropout rate and school absenteeism.

[Comparing the medication costs of treating patients with schizophrenia who use cannabis with those who do not](#) – Apr 2024. This study contributes to findings that it is more expensive to treat patients

with schizophrenia who have relapsed, if they are using cannabis. This finding has future cost implications when budgeting for pharmacotherapeutic treatment.

[The Developmental Trajectory to Cannabis Use Disorder](#) – May 2024. The increase of cannabis use, particularly with the evolution of high potency products, and of cannabis use disorder (CUD) are a growing health care concern. While the harms of adult use and potential medicinal properties of cannabis continue to be debated, it is becoming evident that adolescent cannabis use is a critical window for CUD risk with potential lifelong mental health implications. Herein, we discuss mental health consequences of adolescent cannabis use, factors that contribute to the risk of developing CUD, and what remains unclear in the changing legal landscape of cannabis use. We also discuss the importance of preclinical models to provide translational insight about the causal relationship of cannabis to CUD-related phenotypes and conclude by highlighting opportunities for clinicians and allied professionals to engage in addressing adolescent cannabis use.

[Factors associated with the use of cannabis for self-medication by adults: data from the French TEMPO cohort study](#) – April 2024. Engaging in cannabis use during adolescence or early adulthood may increase the likelihood of resorting to self-medication in adulthood. Due to the propensity of individuals with cannabis use during adolescence to resort to uncontrolled products for self-medication, this population should be more systematically targeted and screened for symptoms and comorbidities that may be associated with cannabis use.

[How Legalization Has Made Pot A Lot More Potent — And Dangerous](#) – May 2024. There are arguments for and against increasing the legalization of cannabis for adult use in the U.S., but expanded access to legal cannabis may also have unintended consequences for adolescents. These consequences are compounded by the increasing potency of some cannabis products.

[Investigating sex differences and age of onset in emotion regulation, executive functioning, and cannabis use in adolescents and young adults](#) – April 2024. Here we investigated past 6-month cannabis use in relation to emotional and executive functioning. Greater past 6-month cannabis use were related to reductions in cannabis-related performance in processing speed during emotional Stroop and working memory tasks. Age of onset was also related to Stroop performance.

[Mapping the Delta-8, Delta-9, or any THC-Related Emergency Department Visits and Hospitalizations through News Reports](#) – March 2024. This interactive map visualizes locations where individuals have been hospitalized or went to the emergency department due to Delta-8, Delta-9, or any THC-Related consumption, drawing from news stories. It serves as a valuable tool for tracking and analyzing trends in THC-related incidents, particularly among pediatric populations, aiding in public health monitoring and policymaking efforts.

[Marijuana Laws and Suicide Among 12- to 25-Year-Olds in the United States From 2000 to 2019](#) – March 2024. medical marijuana legalization (MML) and recreational marijuana legalization (RML) were associated with increased suicide-related mortality in female youth and 14- to 16-year-old individuals of both sexes. Mechanisms through which cannabis policies are related to increased youth suicide warrant further study and should inform legislative reform.

[Should recreational cannabis be legalised in the UK?](#) – October 2024. Co-authored by Laura Stack and Sir Robin Murray in the British Medical Journal. Demonising cannabis has not reduced harms and has kept the drug from patients who might benefit from it, say David Nutt and Lucy Stafford in this 2024

Maudsley debate. But Laura Stack and Robin Murray argue that legalisation in other countries has opened people up to more harms and that scientific evidence is still accumulating

[Systematic Review and Meta-Analysis: Medical and Recreational Cannabis Legalization and Cannabis Use Among Youth in the United States](#) – November 2024. Dramatic changes in state-level cannabis laws (CL) over the past 25 years have shifted societal beliefs throughout the United States, with unknown implications for youth. In the present study, we conducted an updated systematic review and meta-analysis examining estimated effects of medical cannabis legalization (MCL) and recreational cannabis legalization (RCL) on past-month cannabis use among US youth.

[The teen brain is especially susceptible to the harms of THC](#) – Jan. 2024. Good summary article with several studies and the impacts of THC on the developing brain.

2023

[Characteristics Associated With Cannabis Use Initiation by Late Childhood and Early Adolescence in the Adolescent Brain Cognitive Development \(ABCD\) Study](#) – August 2023. Cannabis-specific factors at 1-year follow-up (mean [SD] age, 10.92 [0.64] years), including ease of obtaining, positive expectancies, number of friends using, and greater peer tolerance, were associated with greater odds of early initiation of cannabis use. Greater externalizing symptomatology, depressed mood, and anhedonia at baseline were also significantly prospectively associated with cannabis use initiation.\

[Nicotine Vaping and Co-occurring Substance Use Among Adolescents in the United States from 2017–2019](#) – May 2023. The use of electronic cigarettes (or “vaping”) among adolescents remains a public health concern given exposure to harmful substances, plus potential association with cannabis and alcohol. Understanding vaping as it intersects with combustible cigarette use and other substance use can inform nicotine prevention efforts.

[Nondisordered Cannabis Use Among US Adolescents](#) – Even teens who use marijuana casually still have problems! Compared with nonusers, individuals with NDCU (non-disordered cannabis use – recreational) had approximately 2 to 4 times greater odds of all adverse psychosocial events examined, including major depression, suicidal ideation, slower thoughts, difficulty concentrating, truancy, low grade point average, arrest, fighting, and aggression. Prevalence of adverse psychosocial events was greatest for adolescents with CUD (cannabis use disorder – daily, heavy use), followed by NDCU, then nonuse.

[Pro-cannabis social media linked to youths’ intentions to use](#) – Feb. 2023. Despite laws against advertising cannabis to teens, young people reported in surveys that they still see a lot of positive cannabis messages through social media posts. Anti-cannabis messages also had an effect in lessening use-intentions, but young people saw less of those types of messages.

[Prevalence of cannabis use disorder among individuals using medical cannabis at admission to inpatient treatment for substance use disorders](#) – Feb. 2023. Among 125 inpatients, 42% reported medical use only, and 58% reported medical and recreational use (dual motives). For CUD, 28% of Medical-Only and 51% of Dual-Use motives patients met the diagnostic criteria for CUD ($p = 0.016$).

High psychiatric comorbidities were present: 79% and 81% screened positive for an anxiety disorder, 60% and 61% screened positive for depression, and 66% and 57% screened positive for PTSD for the Medical-Only and Dual-Use inpatients, respectively.

[Recreational Cannabis Use By Teens Linked to Risk of Depression, Suicidality](#) – May 2023. A Columbia University study has found that teens who use cannabis recreationally are two to four times as likely to develop psychiatric disorders, such as depression and suicidality, than teens who don't use cannabis at all. The research also finds that casual cannabis use puts teens at risk for problem behaviors, including poor grades, truancy, and trouble with the law, which can have long-term negative consequences that may keep youth from developing their full potential in adulthood.

[The Impact of Cannabis Use on Adolescent Neurodevelopment and Clinical Outcomes Amidst Changing State Policies](#) – June 2023. Adolescent brain development is vulnerable to damage from exposure to cannabis. The current complicated landscape regarding the legalization of cannabis, with heterogeneous state-level policies and regulation, has allowed the cannabis marketplace to flourish. Simultaneously, the perceived risk associated with cannabis use has plummeted among adolescents and parents in association with legalization. The long-term impact of these trends is unknown. We recommend a research agenda that endeavors to track the impact of legalized cannabis products on individuals who initiate use as adolescents. In the interim, we recommend common sense policies such as limiting THC concentration in legal products and restricting products such as candies and chocolates that are most appealing to youth.

2022

[Cannabinoid hyperemesis syndrome in North America: evaluation of health burden and treatment prevalence](#) – Oct. 2022. Problematic cannabis use (defined as a CUDIT-R score ≥ 8) was universal among the survey cohort, and 59% and 68% screening for moderate or worse anxiety or depression, respectively. The overall treatment prevalence of CHS across all ages increased from 15 ED visits per 100,000 population (95% CI, 14-17) prior to legalisation, to 21 (95% CI, 20-23) after legalisation, to 32 (95% CI, 31-35) during the beginning of the Covid-19 pandemic ($p < 0.001$). Treatment prevalence amongst chronic cannabis users was as high as 6 per 1000 in the 16-24 age group.

[Cannabis use and risks of respiratory and all-cause morbidity and mortality: a population-based, data-linkage, cohort study](#) – June 2022. When compared with people who did not use marijuana, cannabis users were 22% more likely to visit an emergency department or be hospitalized, the study revealed.

[Driving Performance and Cannabis Users' Perception of Safety](#) – January 2022. Participants' increasing willingness to drive at 1 hour 30 minutes may indicate a false sense of driving safety. Worse driving performance is evident for several hours postsmoking in many users but appears to resolve by 4 hours 30 minutes in most individuals. Further research is needed on the impact of individual biologic differences, cannabis use history, and administration methods on driving performance.

[Effect of Medical Marijuana Card Ownership on Pain, Insomnia, and Affective Disorder Symptoms in Adults](#) – March 2022. People who obtained cards immediately were twice as likely to develop cannabis use disorder, the study found. Ten percent had developed the disorder by week 12, and that figure rose to 20% if they were using marijuana for anxiety or depression. Medical marijuana use may “pose a high risk or may even be contraindicated for people with affective disorders. This finding is

important to replicate because depression has been reported as the third most common reason that people seek a medical marijuana card.”

[“Evidence on the acute and residual neurocognitive effects of cannabis use in adolescents and adults: A systematic meta-review of meta-analyses”](#) - January 2022. The study found that cannabis intoxication leads to small to moderate cognitive impairments in areas including: making decisions, suppressing inappropriate responses, learning through reading and listening, the ability to remember what one reads or hears, and the time needed to complete a mental task.

[Evidence on the acute and residual neurocognitive effects of cannabis use in adolescents and adults: a systematic meta-review of meta-analyses](#) – January 2022. This meta-review measured the magnitude of acute and residual effects of cannabis on cognition in adolescents and adults provided by meta-analyses and evaluated quality of evidence. Meta-analytical data on the acute effects of cannabis use on neurocognitive function have shown that cannabis intoxication leads to small to moderate deficits in several cognitive domains. These acute impairments accord with documented residual effects, suggesting that the detrimental effects of cannabis persist beyond acute intake. “Cannabis use in youth may consequently lead to reduced educational attainment, and, in adults, to poor work performance and dangerous driving. These consequences may be worse in regular and heavy users,” Dumais said. “Thus far, the most consistent alterations produced by cannabis use, mostly its chronic use, during youth have been observed in the prefrontal cortex,” Dumais said. “Such alterations may potentially lead to a long-term disruption of cognitive and executive functions.”

[Houston, We Have a Problem: It’s time to respond to our next major drug epidemic](#) – September 2022. There’s a huge gap between the perceived dangerousness of cannabis use and its actual dangerousness. Cannabis use is now a major driver of mental health problems, especially among the young. Political and commercial pressures are actively suppressing the mounting research on cannabis harms.

[Impacts of recreational cannabis legalization on cannabis use: a longitudinal discordant twin study](#) – Aug. 2022. People living in states where recreational cannabis is legal use marijuana 20% more often than people in states where it’s illegal. In the United States, there appears to be a ~ 20% average increase in cannabis use frequency attributable to recreational legalization, consistent across increasingly rigorous designs. In addition, the heritability of cannabis use frequency appears to be moderated by legalization.

[Long-Term Cannabis Use and Cognitive Reserves and Hippocampal Volume in Midlife](#) – June 2022. Long-term cannabis users showed IQ decline from childhood to midlife (mean=-5.5 IQ points), poorer learning and processing speed relative to their childhood IQ, and informant-reported memory and attention problems. These deficits were specific to long-term cannabis users because they were either not present or were smaller among long-term tobacco users, long-term alcohol users, midlife recreational cannabis users, and cannabis quitters. Cognitive deficits among long-term cannabis users could not be explained by persistent tobacco, alcohol, or other illicit drug use, childhood socioeconomic status, low childhood self-control, or family history of substance dependence.

[Marijuana Legalization and Opioid Deaths](#) – Feb. 2022. Legal medical marijuana, particularly when available through retail dispensaries, is associated with higher opioid mortality. The results for recreational marijuana, while less reliable, also suggest that retail sales through dispensaries are associated with greater death rates relative to the counterfactual of no legal cannabis.

[Physicians Warn Cannabis Can Cause Serious Health Hazards](#) – May 2022. Thousands of peer-reviewed medical articles have been published on the harms of cannabis and marijuana. Reviews of medical benefits of cannabis published in highly ranked journals reveal only limited benefits for rare conditions, and generally do not consider long term consequences.

[Recreational cannabis legalization and transitions in cannabis use: findings from a nationally representative longitudinal cohort in the United States](#) – May 2022. There appears to be some evidence that recreational cannabis legalization in the U.S. is associated with elevated odds of transition to cannabis use among both youths and adults.

[Trends and characteristics of cannabis-associated emergency department visits in the United States](#) – January 2022. Cannabis-associated ED visits are on the rise and subgroups are at increased risk. Some potential explanations for increases in cannabis-associated ED visits include increased availability of cannabis products, increased use, and diversity of products available in marketplaces. Strategies are needed to prevent youth initiation, limit potentially harmful use among adults, and ensure safe storage where cannabis use is legal.

[United States marijuana legalization and opioid mortality epidemic during 2010–2020 and pandemic implications](#) – April 2022. Instead of supporting the marijuana protection hypothesis, ecologic associations at the national level suggest that marijuana legalization has contributed to the U.S.'s opioid epidemic in all major races/ethnicities, and especially in blacks. If so, the increased use of marijuana during the 2020–2022 pandemic may thereby worsen the country's opioid crisis. Between 2010 and 2012, the opioid mortality rate was similar between states that had legalized marijuana and those that had not and then drastically diverged with a more rapid increase seen in states with legalization (227% increase compared to 160%).[Variations of cannabis-related adverse mental health and addiction outcomes across adolescence and](#)

[adulthood: A scoping review](#) – Oct. 2022. We included 140 studies. Cannabis effects on mental health and addiction-related outcomes were worse in adolescents, early cannabis initiators and cannabis users who consumed for longest periods. Evidence of worse long-term adverse effects in adolescents was substantial for psychosis, cannabis, and nicotine use disorders; mixed for depression, suicidality, other substance use and disorders; and limited for anxiety.

[Young marijuana smokers may be](#) at greater risk of recurrent stroke – February 2023. Among hospitalized adults, ages 18-44 who had a history of stroke or transient ischemic attack (TIA), the cause of another hospitalization was 48% more likely to be another stroke if they were habitual marijuana smokers. According to previous research, problematic marijuana use has already been associated with an increased risk of an initial stroke, however, this is the first study to suggest that recurrent stroke may also be more likely.

2021

[A longitudinal study of the impact of marijuana on adult memory function: Prenatal, adolescent, and young adult exposures](#) – January 2021. Early initiation of marijuana use is associated with deficits in auditory-verbal memory in young adults.

[Cannabis and the Gateway Drug Theory](#) – Drug use, be it licit or illicit, and the developing brain is always a complex issue, with absolutely no doubt that any amount of drug use detrimentally impacts the developing brain, even if ever so minutely.

[Cannabis and tobacco use prior to pregnancy and subsequent offspring birth outcomes: a 20-year intergenerational prospective cohort study](#) – August 2021. Daily marijuana use at ages 15-17 by people who later became mothers and fathers is associated with a sixfold increase in having babies born pre-term and with low birth weights. This result did not hold for marijuana use at other ages or for tobacco use at all.

[Cannabinoid exposure as a major driver of pediatric acute lymphoid Leukaemia rates across the USA: combined geospatial, multiple imputation and causal inference study](#) – Sept. 2021. Data show that ALLR is associated with cannabis consumption across space-time, is associated with the cannabinoids, THC, cannabigerol, cannabinal, cannabichromene, and cannabidiol, contributes to ethnic differentials, demonstrates prominent quintile effects, satisfies criteria for causality and is exacerbated by cannabis legalization.

[Cannabis use among military veterans with PTSD: A great deal to gain or lose?](#) January 2021. Veterans are disproportionately affected by conditions for which medical cannabis is often pursued, making an evidence-based perspective on risks versus benefits of high priority. The balance of the evidence associated cannabis use with negative health outcomes, with consistent positive associations with other substance use, psychiatric disorders, and self-harm/suicidality.

[Cannabis Use Disorder – A Summary](#) – July 2021. Cannabis use can cause intoxication, withdrawal, and biopsychosocial issues. This activity describes the evaluation and management of cannabis use disorder and highlights the role of the interprofessional team in improving care for patients with this condition. Objectives: Summarize the epidemiology of cannabis use; Review the presentation of a patient with cannabis intoxication; Review the diagnostic criteria for cannabis use disorder, as defined by the Diagnostic and Statistical Manual of Mental Disorders; and Explain the importance of enhancing care coordination amongst the interprofessional team to optimize care for patients affected by cannabis use disorder.

[Cannabis use disorder may be linked to growing number of heart attacks in younger adults](#) – Nov. 2021. At a time of increasing legalization of marijuana, a growing number of people under 50 diagnosed with cannabis use disorder were later hospitalized for a heart attack, new research has found.

[Cannabis, Vaping, and Respiratory Symptoms in a Probability Sample of U.S. Youth](#) – July 2021. Results: The odds of indicating “wheezing or whistling” in the chest were roughly two times higher among those who had used cannabis in ENDS (adjusted odds ratio 1.81, 95% confidence interval 1.47-2.22); neither e-cigarettes nor cigarettes had a significant association with all five respiratory symptoms in the fully adjusted models.

[Case Reports on the Failure of Smoking Marijuana to Prevent Relapse to Use of Opiates in Adolescents/Young Adults With Opiate Use Disorder](#) – June 2021. Adolescents/young adults with opioid use disorder who tried to smoke marijuana as a harm reduction strategy to not return to opioid use were not successful. [Smoking marijuana](#) appeared to enhance cravings and urges for opiates and promoted relapse to opiate use.

[Clinical management of cannabis withdrawal](#) – Nov. 2021. Article on the clinical management of cannabis withdrawal. Highlights how many withdrawal symptoms (e.g., depression, anxiety, poor sleep) are things many users think cannabis treats, rather than being consequences of dependence. The clinical significance of cannabis withdrawal is that its symptoms may precipitate relapse to cannabis use. Complicated withdrawal may occur in people with concurrent mental health and polysubstance use.

[The “Colorado Experiment”: Legalized Marijuana’s Impact in Colorado](#) – June 28 by the Hudson Institute. It should be clear that not all is well in the relationship between Colorado citizens and the state marijuana industry, in spite of the money the marijuana lobby has invested in protecting itself politically among state power brokers. We have enough accumulated data in 2020 to see the actual effects of this experiment in drug policy. And they are not comforting. Not only did the promised benefits, both financial and on behalf of public safety, not come to pass, but in multiples areas of daily life the metrics have worsened.

[Drinking, smoking, and drug use linked to premature heart disease in the young](#) – February 2021. Recreational drinking, smoking, and drug use is linked to premature heart disease in young people, particularly younger women, finds research published online in the journal Heart. Those who regularly use 4 or more substances are 9 times as likely to be affected, the findings indicate.

[The Effects of Cannabis Use on the Development of Adolescents and Young Adults – Annual Review of Developmental Psychology](#). This review summarizes evidence on the effects of cannabis use on the development of adolescents and young adults. It draws on epidemiological studies, neuroimaging studies, case-control studies, and twin and Mendelian randomization studies. The acute risks include psychiatric symptoms associated with the use of high THC (tetrahydrocannabinol) products and motor vehicle accidents. Daily cannabis use during adolescence is associated with cannabis dependence and poor cognitive function, which may affect educational attainment and occupational choice.

[Epidemiological overview of multidimensional chromosomal and genome toxicity of cannabis exposure in congenital anomalies and cancer development](#) – July 2021. Cannabis and cannabinoids are implicated in multiple genotoxic, epigenotoxic and chromosomal-toxic mechanisms and interact with several morphogenic pathways, likely underpinning previous reports of links between cannabis and congenital anomalies and heritable tumours. However the effects of cannabinoid genotoxicity have not been assessed on whole populations and formal consideration of effects as a broadly acting genotoxin remain unexplored. Our study addressed these knowledge gaps in USA datasets. Cancer data from CDC, drug exposure data from National Survey of Drug Use and Health 2003-2017 and congenital anomaly data from National Birth Defects Prevention Network were used. We show that cannabis, THC cannabigerol and cannabichromene exposure fulfill causal criteria towards first Principal Components of both: (A) Down syndrome, Trisomies 18 and 13, Turner syndrome, Deletion 22q11.2, and (B) thyroid, liver, breast and pancreatic cancers and acute myeloid leukaemia, have mostly medium to large effect sizes, are robust to adjustment for ethnicity, other drugs and income in inverse probability-weighted models, show prominent non-linear effects, have 55/56 e-Values > 1.25, and are exacerbated by cannabis liberalization ($P = 9.67 \times 10^{-43}$, 2.66×10^{-15}). The results confirm experimental studies showing that cannabinoids are an important cause of community-wide genotoxicity impacting both birth defect and cancer epidemiology at the chromosomal hundred-megabase level.

[Frequent Cannabis Use by Young People Linked to Decline in IQ](#) – January 2021. A study has found that adolescents who frequently use cannabis may experience a decline in Intelligence Quotient (IQ) over time. The results revealed that there were declines of approximately 2 IQ points over time in those who use cannabis frequently compared to those who didn't use cannabis. Further analysis suggested that this decline in IQ points was primarily related to reduction in verbal IQ.

[Frequent teenage cannabis use: Prevalence across adolescence and associations with young adult psychopathology and functional well-being in an urban cohort](#) – October 2021. Almost one in five adolescents had used cannabis frequently between ages 13 and 17 (26.6% of males, 9.8% of females). Adjusting nearly 20 potential confounders, frequent teenage cannabis use was associated with age 20 problematic substance use and poorer functional well-being compared to the no cannabis use and the occasional use groups. Frequent teenage cannabis use was more consistently associated with age 20 functional outcomes compared to frequent teenage nicotine or alcohol use. Accordingly, frequent teenage cannabis users could experience increased difficulties in mastering the transitions of young adulthood.

[General risks of harm with cannabinoids, cannabis, and cannabis-based medicine possibly relevant to patients receiving these for pain management: an overview of systematic reviews](#) – July 2021. Studied harms were categorized as psychiatric, behavioral, and psychosocial harms, neurocognitive harms, motor vehicle accidents, cardiovascular, respiratory, cancer-related, maternal/fetal, and general harms

[Joint effects of perceived risk and availability on cannabis use](#) – July 2021. Individuals who perceived cannabis as low-risk were six times more likely to have used cannabis in the past-year than individuals who perceived the drug as high-risk. Similarly, individuals who perceived cannabis as available were five times more likely to have used cannabis in the past year than individuals who perceived it as unavailable. However, individuals who perceived marijuana as both low-risk and available were 22 times more likely to have used the drug in the past year than those who perceived cannabis as high-risk and unavailable.

[Marijuana: A systems-based primer of adverse effects associated with use and an overview of its therapeutic utility](#) – March 2021. A systematic review of systematic reviews performed in 2020 has found there to be an increased risk of lung cancer in inhalational marijuana users, ranging from 8% to 410% after controlling for confounding factors”

[Nicotine Inhalation and Suicide: Clinical Correlates and Behavioral Mechanisms](#) – January 2021. Extensive evidence links smoking and suicide independently of psychiatric diagnoses, but there are questions about the pathophysiology and specificity of this relationship. We examined characteristics of this linkage to identify potential transdiagnostic mechanisms in suicide and its prevention.

[Prevalence and Correlates of Driving Under the Influence of Cannabis in the U.S.](#) – March 2021. 57 percent of daily users and 63.8 percent of those with a cannabis use disorder drove under the influence of the drug. The latter also were more likely to be under the influence of other drugs, to take part in illegal behavior, and to suffer from mental distress.

[Prevalence of Medical Cannabis Use and Associated Health Conditions Documented in Electronic Health Records Among Primary Care Patients in Washington State](#) – May 2021. In this cross-sectional study, primary care patients with documented medical cannabis use had a high prevalence of health conditions for which cannabis use has potential benefits, yet a higher prevalence of conditions with

potential risks from cannabis use. These findings suggest that practitioners should be prepared to discuss potential risks and benefits of cannabis use with patients.

[Prevalence of Substance Use Disorders by Time Since First Substance Use Among Young People in the US](#) – March 2021. In the time after first trying cannabis or first misusing prescription drugs, the percentages of young people who develop the corresponding substance use disorder are higher among adolescents (ages 12-17) than young adults (ages 18-25). The researchers found that the prevalence of past-year cannabis use disorder was higher for adolescents than young adults at all examined time frames since first use of the drug. For example, within 12 months since first cannabis use, 10.7% of adolescents had cannabis use disorder versus 6.4% of young adults.

[Recent cannabis use and myocardial infarction in young adults: a cross-sectional study](#) – September 2021. Our study provides evidence supporting an association between recent cannabis use and history of MI in young adults. Increasing cannabis use in an at-risk population could have negative implications for cardiovascular health.

[Self-Medication Nation Survey](#) – Nov. 2021. A staggering one in five (21%) U.S. employees admit they've used alcohol, marijuana, or other recreational drugs while employed remotely this year. Of those who used, three out of four (73%) state that if their employer insists that they return to the office, they'll miss the opportunity to use marijuana, alcohol, and other recreational drugs during their workday. And twenty-two percent of employees surveyed said they had participated in a virtual work call while under the influence of marijuana, alcohol or other recreational drugs.

[Trends in Cannabis Involvement and Risk of Alcohol Involvement in Motor Vehicle Crash Fatalities in the United States, 2000-2018](#) – Nov. 2021. The percentage of fatalities involving cannabis and coinvolving cannabis and alcohol doubled from 2000 to 2018, and cannabis was associated with alcohol coinvolvement. Further research is warranted to understand cannabis- and alcohol-involved MVC fatalities.

[Trends in cannabis use among adults with children in the home in the United States, 2004-2017: Impact of state-level legalization for recreational and medical use](#) – March 2017. Among adults with children living in the home, cannabis use appears to be more common in US states with legalized cannabis use compared with states with no legal cannabis use. Recreational legalization appears to increase use among adults with children in the home broadly across nearly all sociodemographic groups, whereas the effect of legalization for medical use is heterogeneous by age and socioeconomic status.

[Weeding out the truth: a systematic review and meta-analysis on the transition from cannabis use to opioid use and opioid use disorders, abuse or dependence](#) – July 2021. People who use cannabis are disproportionately more likely to initiate opioid use and engage in problematic patterns of use than people who do not use cannabis. Marijuana users were 2.76 times more likely to initiate opioid use and 2.52 times more likely to develop opioid use disorders than non-marijuana users.

[Young-adult compared to adolescent onset of regular cannabis use: A 20-year prospective cohort study of later consequences](#) – Jan. 2021. Cannabis users who began regular use in their teens had poorer later life outcomes than non-using peers. The larger group who began regular cannabis use after leaving high school accounted for most cannabis-related harms in adulthood. Given the

legalisation of cannabis use in an increasing number of jurisdictions, we should increasingly expect harms from cannabis use to lie in those commencing use in young adulthood.

2020

[Associations Between Prenatal Cannabis Exposure and Childhood Outcomes](#) – Sept. 2020. This study suggests that prenatal cannabis exposure and its correlated factors are associated with greater risk for psychopathology during middle childhood. Cannabis use during pregnancy should be discouraged.

[E-cigarette use among young adults: A latent class analysis examining co-use and correlates of nicotine vaping and marijuana](#) – November 2020. The most pervasive co-occurring substance use was observed among the e-cigarette Users class. Young adults reporting moderate or greater levels of nicotine vaping tended to engage in binge drinking and cannabis use, which may ultimately increase risk of deleterious health outcomes. Public health efforts may benefit from increased selectivity in targeting young adults for e-cigarette prevention and intervention services.

[Even occasional marijuana use raises risk of coronavirus complications, doctors say](#) – April 2020. Many believe that when marijuana use is limited, the risks and adverse symptoms often associated with heavy use of marijuana are not present. This article discusses how even occasional marijuana use can exacerbate the symptoms of coronavirus, bringing to bear doctors' research and observations.

[Even when sober, frequent marijuana users are dangerous drivers](#) – January 2020. The number of fatal vehicle crashes in which drivers tested positive for cannabis more than doubled from 2007 to 2016, rising from 8 percent to 18 percent, according to the National Highway Traffic Safety Administration. As states legalize recreational use of marijuana, more research is needed on how consumption affects driving safety.

[EVAIL: adolescents more likely to obtain vaping products through informal sources](#) – May 2020. A total of 2155 patients were included in this cross-sectional study. Based on national surveillance data, adolescents were more likely to report obtaining nicotine-containing and THC (tetrahydrocannabinol)-containing e-cigarette or vaping products through informal sources than young adults or adults with EVALI.

[Informed Consent: A Policy Prescription for Communicating Benefit and Risk in State Medical Marijuana Programs](#) – 2020. Surveys suggest that the U.S. public has an overly optimistic view of marijuana's health effects. Aside from legal problems or the possibility of addiction, the majority of adults believe that marijuana has no significant risks, and 9% of adults believe that it has no risks at all. Among youths between ages 16 and 19, survey data demonstrate that almost two-thirds of them are not worried at all that marijuana use will damage their health. Meanwhile, a third of adults believe that eating, smoking, or vaping marijuana products will actually prevent health problems.

[Is Marijuana Addictive?](#) National Institute on Drug Abuse – July 2020. Marijuana dependence occurs when the brain adapts to large amounts of the drug by reducing production of and sensitivity to its own endocannabinoid neurotransmitters. Marijuana use disorder becomes addiction when the person cannot stop using the drug even though it interferes with many aspects of his or her life. Studies suggest that 9% of people who use marijuana will become dependent on it rising to about 17% in those who start using in their teens.

[Marijuana Concentrates Spike THC Levels But Don't Boost Impairment](#) – CU June 2020. Regular users of marijuana concentrates develop a tolerance over time. There may be genetic or biological

differences that make some people metabolize THC more quickly. Cannabinoid receptors may become saturated with THC at higher levels, beyond which there is a diminishing effect of additional THC. The study examined regular users who have learned to meter their use based on the desired effect and does not apply to inexperienced users. Those users should still be extremely cautious with concentrates.

[Marijuana Impairs Female Fertility](#) – April 2020. Female eggs exposed to THC, the psychoactive ingredient in marijuana, have an impaired ability to produce viable embryos, and are significantly less likely to result in a viable pregnancy, according to an animal study.

[Marijuana Legalization and Youth Marijuana, Alcohol, and Cigarette Use and Norms](#) – July 2020. It is important to consider recent broad declines in youth substance use when evaluating the impact of nonmedical marijuana legalization. States that legalize nonmedical marijuana for adults should increase resources for the prevention of underage marijuana and alcohol use.

[Marijuana Withdrawal is Real, Study Shows](#) – April 2020. Experts have long argued that marijuana withdrawal is a real phenomenon, but these concerns received a new legitimacy with the 2013 publication of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5). The DSM-5, considered the standard for psychiatric diagnoses, recognized cannabis withdrawal syndrome as a bona fide disorder.

[News Stories About Adolescents Using Marijuana with Poor Outcomes](#) – updated 2020. George F. Spicka, a former addict, shares evidence, research, and studies, and also first-hand accounts of marijuana's adverse effects on children and youth. While he concedes there may be some legitimate uses for marijuana in medical applications, he is concerned by the belief, perpetuated by NORML, Marijuana Policy Project, and similar organizations, that marijuana poses no danger.

[Prevalence and Correlates of Medicinal Cannabis Use Among Adolescents](#) – Aug. 2020. An estimated 6.89% of students reported Medicinal Cannabis Use (MCU), representing one quarter of the students reporting current cannabis use. Relative to the Recreational Cannabis Use (RCU)-only group, the MCU group reported using cannabis more frequently, were more likely to report vaping and eating cannabis, had greater risk for cannabis dependence, perceived cannabis as less harmful, were more likely to report tobacco use, recreational use of other drugs, and medicinal use of sedatives or tranquilizers, and were less likely to report good health and sleeping for seven or more hours per night.

[Prevalence of Cannabis Withdrawal Symptoms Among People With Regular or Dependent Use of Cannabinoids](#) – April 2020. Cannabis withdrawal syndrome appears to be common among people with regular or dependent use of cannabinoids, with an overall pooled prevalence of 47% in this meta-analysis. Cannabis withdrawal syndrome was more common in men, participants from clinical samples, individuals with comorbid drug or tobacco use, and those with a higher level of cannabis use. Clinicians should be aware of the high prevalence of CWS and should consider screening for CWS, particularly among those who are at greater risk, in order to counsel patients and support individuals who are reducing their use of cannabis.

[Researchers identify more than 100 toxic chemicals in cannabis smoke](#) – June 2020. Among the billions of particles found in a single puff of cannabis smoke, Nishida's team observed 2,575 chemical compounds and was able to identify 536. Of those, 110 are known to be toxic, whether they be carcinogenic, mutagenic or teratogenic, which are chemicals that can interfere with the development of the embryo or fetus. And while they found more toxic chemicals in tobacco (173), Nishida's team

found the particles in cannabis smoke were about 29 percent larger. In all, researchers found 3.4 times more mass from the total particulate matter in a typical cannabis joint than a cigarette.

[The Truth about Gateway Drugs and Addiction](#) – February 2020. There is evidence that using some substances early in development does result in a greater probability that an individual will abuse other substances; however, the reason for this is not well understood. This condition may represent some combination of inherent factors (e.g., genetic) and the interaction of environmental factors (e.g., peers, learning, stress, etc.).

[Weed Is Not Good for Your Heart, Studies Say – AHA August 2020](#). The American Heart Association recommends that people not smoke or vape any substance, including cannabis products, because of the potential harm to the heart, lungs and blood vessels. Weed has the potential to interfere with prescribed medications as well as trigger cardiovascular conditions or events, such as heart attacks and strokes.

[What is the prevalence and risk of cannabis use disorders among people who use cannabis?](#) A systematic review and meta-analysis – November 2020. This review provides prevalence and risks estimates for CUDs from using cannabis in developed countries. People who use cannabis have 1 in 5 risks of having CUD (abuse or dependence) and 1 in 8 risk of having CA or CD. The risk of developing CD increases to 1 in 3 among people who use cannabis weekly or more often. These risks may increase in the future if cannabis users more often and use more potent cannabis products after cannabis legalisation.

2019

[Acute Illness Associated With Cannabis Use, by Route of Exposure](#) – Monte Oct. 2019. Clinical symptoms for cannabis-attributable hospital visits varied between the inhaled and edible exposure groups. Gastrointestinal symptoms were more common in patients exposed to inhalable compared with edible cannabis; had cannabinoid hyperemesis syndrome. Although there was no difference in the frequency of overall psychiatric-related visits between groups, visits related to acute psychiatric symptoms were more common in patients with edible exposures. Visits due to cardiovascular symptoms were also more common in patients exposed to edible products. Severe adverse cardiovascular events, including myocardial infarction and ventricular dysrhythmia, occurred in both groups.

[Association Between Recreational Marijuana Legalization in the United States and Changes in Marijuana Use and Cannabis Use Disorder From 2008 to 2016](#) – Nov. 2019. Cannabis use, especially of high potency greater than 15% THC, is associated with increased urgent and emergency department psychiatric visits and increased mental health disorders including psychosis.

[Emergency Department and Radiological Cost of Delayed Diagnosis of Cannabinoid Hyperemesis](#) – January 2019. Cannabinoid Hyperemesis (CH) has become a much more commonly recognized disease process as cannabis use has become much more transparent with the decriminalization and legalization of cannabis in numerous US states. An increase in patients presenting with CH, coupled with its under recognition in the Emergency Department (ED), is costly and leads to wasted resources and unnecessary radiation exposure, evidenced by the average CH evaluation cost prior to diagnosis of \$76,290.92 per patient in these three hospitals under study.

[Grey Matter Volume Differences Associated with Extremely Low Levels of Cannabis Use in Adolescence](#) – March 2019. Cannabis use has been associated with reduced brain volumes, but studies typically report on adults with heavy substance use histories. Studies on young adults have reported gray-matter density increases in the amygdala and nucleus accumbens of young adult recreational users and observed hippocampal enlargement in cannabis-using adolescents. This study shows greater cortical thickness in male adolescents with <5 instances of cannabis use relative to THC-naïve control.

[Higher average potency across the United States is associated with progression to first cannabis use disorder symptom](#) – Feb. 2019. Cox regression showed an increased risk of progression from cannabis initiation to cannabis use disorder symptom onset by 1.41 times ($p < .001$) for each unit increase in national average delta-9-tetrahydrocannabinol as compared to those not endorsing CUD symptom onset, adjusting for sex, regular use, and cohort effects. Accounting for regular use, individuals initiating cannabis at national average 4.9% delta-9-tetrahydrocannabinol were at 1.88 times ($p = .012$) higher risk for cannabis use disorder symptom onset within one year compared to those who did not endorse CUD symptom onset, while those initiating cannabis at national average 12.3% delta-9-tetrahydrocannabinol were at 4.85 times ($p = .012$) higher risk within one year.

[Legalized Cannabis in Colorado Emergency Departments: A Cautionary Review of Negative Health and Safety Effects](#) – June 2019. Cannabis legalization has led to significant health consequences, particularly to EDs and hospitals in Colorado. The most concerning include psychosis, suicide, and other substance abuse. There are deleterious effects on the brain and some of these may not be reversible with abstinence. Other significant health effects include increases in fatal motor vehicle collisions, adverse effects on cardiovascular and pulmonary systems, inadvertent pediatric exposures, cannabis contaminants exposing users to infectious agents, heavy metals, and pesticides, and hash-oil burn injuries due to preparation of concentrates. Finally, cannabis dispensary workers not trained in medicine are giving medical advice that could be harmful to patients.

[National Institute on Drug Abuse – Is Marijuana a Gateway Drug?](#) – December 2019. Early exposure to cannabinoids in adolescent rodents decreases the reactivity of brain dopamine reward centers later in adulthood.¹ To the extent that these findings generalize to humans, this could help explain the increased vulnerability for addiction to other substances of misuse later in life. These findings are consistent with the idea of marijuana as a “gateway drug.” However, the majority of people who use marijuana do not go on to use other, “harder” substances. An alternative to the gateway-drug hypothesis is that people who are more vulnerable to drug-taking are simply more likely to start with readily available substances such as marijuana, tobacco, or alcohol, and their subsequent social interactions with others who use drugs increases their chances of trying other drugs.

[Prescription Opioid Misuse and Use of Alcohol and Other Substances Among High School Students](#) — Jones, Youth Risk Behavior Survey YRBS, United States, 2019. This report provides key insights into substance use behaviors of U.S. high school students during 2009–2019. Encouraging findings include decreasing prevalence of current alcohol use and decreases in the prevalence of lifetime use of marijuana, cocaine, methamphetamine, heroin, synthetic marijuana, and injection drug use. However, the findings in this report underscore that substance use among high school students remains common, with approximately one in three students reporting current alcohol use, one in five reporting current marijuana use, and one in seven reporting current binge drinking. Because of the ongoing U.S.

opioid crisis, of particular concern are the high rates of lifetime (one in seven students) and current prescription opioid misuse (one in 14 students).

[Relationship Between Recency and Frequency of Youth Cannabis Use on Other Substance Use](#) – March 2019. Cannabis use is prevalent among youth and associated with other substance use. Efforts to scale up prevention programming and science-based messaging on risks of substance use are needed.

[What to Know About Marijuana Withdrawal](#) – Jan. 2019. There are many misconceptions about whether people can become addicted to marijuana. The truth is that it is possible to become dependent on, or even addicted to, marijuana with regular use. Over 300,000 people begin treatment for marijuana use disorders in the U.S. each year. Research from 2012 suggests that 30.6 percent of those who use marijuana had marijuana use disorder in 2012–2013.

2018

[Economic and Social Costs of Legalized Marijuana](#) – Nov. 2018. The Centennial Institute at Colorado Christian University commissioned this study to better understand the economic and social costs of legalized marijuana. While much has been written about the tax revenue and total sales generated from commercial marijuana, there has been little research to understand how Coloradans are paying to mitigate the consequences of commercial marijuana. For every dollar gained in tax revenue, Coloradans spent approximately \$4.50 to mitigate the effects of legalization

[Impact of Marijuana Legalization in Colorado on Adolescent Emergency and Urgent Care Visits](#) – Aug. 2018. From 2005 to 2015, 4,202 marijuana-related visits were identified. Behavioral health evaluation was obtained for 2,813 (67%); a psychiatric diagnosis was made for the majority of these visits. Coingestants were common; the most common was ethanol (12%). Marijuana-related visits increased from 1.8 per 1,000 visits in 2009 to 4.9 in 2015. Despite national survey data suggesting no appreciable difference in adolescent marijuana use, our data demonstrate a significant increase in adolescent marijuana-associated emergency department and urgent cares visits in Colorado.

[The adverse health effects and harms related to marijuana use: an overview review](#) – Aug. 2018. The final analysis included 68 reviews. Evidence of harm was reported in 62 reviews for several mental health disorders, brain changes, cognitive outcomes, pregnancy outcomes and testicular cancer. Inconclusive evidence was found for 20 outcomes (some mental health outcomes, other types of cancers and all-cause mortality). No evidence of harm was reported for 6 outcomes. Harm was associated with most outcomes assessed. These results should be viewed with concern by physicians and policy-makers given the prevalence of use, the persistent reporting of a lack of recognition of marijuana as a possibly harmful substance and the emerging context of legalization for recreational use.

2017 and later

[Adverse Health Effects of Marijuana Use](#) – April 2016. The regular use of marijuana during adolescence is of particular concern, since use by this age group is associated with an increased likelihood of deleterious consequences. Although multiple studies have reported detrimental effects, others have not, and the question of whether marijuana is harmful remains the subject of heated debate. Here we

review the current state of the science related to the adverse health effects of the recreational use of marijuana, focusing on those areas for which the evidence is strongest.

[Cannabis Withdrawal Syndrome: Current Insights](#) – April 2017. Several lines of evidence from human studies indicate that cessation from long-term and regular cannabis use precipitates a specific withdrawal syndrome with mainly mood and behavioral symptoms of light to moderate intensity, which can usually be treated in an outpatient setting. However, comorbidity with mental or somatic disorders, severe CUD, and low social functioning may require an inpatient treatment (preferably a qualified detox) and post-acute rehabilitation or long-term outpatient care.

[Is cannabis use associated with an increased risk of onset and persistence of alcohol use disorders?](#) A three-year prospective study among adults in the United States – Feb. 2016. Cannabis use is associated with increased risk of Alcohol Use Disorder (AUD) onset and persistence over the course of three years among U.S. adults.

[Frequent marijuana use, binge drinking and mental health problems among undergraduates](#) – May 2015. These findings, indicating that frequent use is related to depression, other substance use and negative outcomes, contribute to our understanding of marijuana use among undergraduates.

[Marijuana Dependence and Its Treatment](#) – Dec. 2007. Some 4.3 percent of Americans have been dependent on marijuana, as defined in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000), at some time in their lives. Marijuana produces dependence less readily than most other illicit drugs. Some 9 percent of those who try marijuana develop dependence compared to, for example, 15 percent of people who try cocaine and 24 percent of those who try heroin. However, because so many people use marijuana, cannabis dependence is twice as prevalent as dependence on any other illicit psychoactive substance.

[Marijuana Intoxication Blamed In More Deaths, Injuries](#). Both immediate exposure and long-term exposure to marijuana impair driving ability; marijuana is the illicit drug most frequently reported in connection with impaired driving and accidents, including fatal accidents. There is a relationship between the blood THC concentration and performance in controlled driving-simulation studies.

[Persistent cannabis users show neuropsychological decline from childhood to midlife](#) – April 2012. Study members with more persistent cannabis dependence showed greater IQ decline.

[Prior use of alcohol, cigarettes, and marijuana and subsequent abuse of prescription opioids in young adults](#) – Feb. 2013. These findings demonstrate that reported antecedent alcohol, cigarette, and marijuana use are all associated in bivariate analysis with a two to three times greater likelihood of subsequent abuse of prescription opioids in this sample of 18 to 25 year olds. When adjusting for other variables and stratifying by gender, this relationship persists for young men but is only found with marijuana use in young women.

[Probability and Predictors of the Cannabis Gateway Effect: A National Study](#) – Feb. 2015. The cumulative probability of transition from cannabis use to other illicit drug use was 44.7%. Several socio-demographic and psychiatric variables and indicators of substance use severity predicted progression, including being male, urban residence, being never married, separated or divorced,

having a broad range of psychiatric disorders or a family history of SUD, and early onset of cannabis use. Our results, in line with previous findings suggest that a large proportion, but not all, of individuals who use cannabis go on to use other illegal drugs.

[Review of the validity and significance of cannabis withdrawal syndrome](#) – Nov. 2004. Converging evidence from basic laboratory and clinical studies indicates that a withdrawal syndrome reliably follows discontinuation of chronic heavy use of cannabis or tetrahydrocannabinol. Common symptoms are primarily emotional and behavioral, although appetite change, weight loss, and physical discomfort are also frequently reported. The magnitude and severity of these symptoms appear substantial, and these findings suggest that the syndrome has clinical importance.

[Rates and Predictors of Conversion to Schizophrenia or Bipolar Disorder Following Substance-Induced Psychosis](#) – Nov. 2017. Between LSD and cannabis, it is cannabis that is the recreational drug most likely to result in conversion to a permanent psychotic disorder. The highest conversion rate was found for cannabis-induced psychosis, with 47.4% (95% CI=42.7–52.3) converting to either schizophrenia or bipolar disorder. Young age was associated with a higher risk of converting to schizophrenia. Self-harm after a substance-induced psychosis was significantly linked to a higher risk of converting to both schizophrenia and bipolar disorder.

[Teen Cannabis Use and Illicit Drug Use in Early Adulthood Linked](#) – Science Daily June 2017. Researchers have found regular and occasional cannabis use as a teen is associated with a greater risk of other illicit drug taking in early adulthood. The study also found cannabis use was associated with harmful drinking and smoking.

[TEN MYTHS MARIJUANA ADVOCATES WANT YOU TO BELIEVE](#) – November 2014. About 15% of all users and a much higher percentage of heavy users will experience psychotic symptoms. Half of those individuals will become chronically schizophrenic if they don't stop using. Fortunately, some do stop using because psychosis is not pleasant and they wisely recognize that pot caused their problems.