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Marijuana

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apnea and seizures, and its use is contraindicated in infants younger than 6 months.

Complementary interventions are receiving more attention for the treatment of colic. These therapies include natural and botanical products, probiotics, and manipulative therapies. A systematic review of these modalities was published in 2011 and found that, with the exception of a few limited studies, available data do not yet support the routine use of any of these therapies.

Although the etiology and thus effective treatment for colic remains elusive, it is a self-limited process with no long-term adverse effects. Parents need to be reassured that they have normal, healthy infants. Presenting parents with simple strategies to calm and soothe their infants, and themselves, until this common but difficult time in their child's life passes is key.

Comment: If you have ever been in the presence of an infant with colic, you know how difficult it can be. The heart-wrenching cries instill in all of us—parents, family members, and pediatricians alike—the impulse to want to comfort and make the infant feel better. No wonder everyone seeks a cure. But this search can lead to a never-ending cycle of trying medications, dietary manipulations, behavioral strategies, and nutritional and complementary supplements. Helping parents to understand that colic is a self-limited condition and developing strategies to enhance their self-esteem in parenting are critical; however, the more severe the symptoms, the more intense must be the support.

Isn't it amazing to know that colic has been described since biblical times, but we still do not truly understand its etiology or effective treatments?

Systematic reviews on the topic reveal >1700 articles and abstracts about colic that have been published, yet there are few randomized trials, and those that have been published span multiple treatment options of pharmaceutical, dietary, behavioral, and complementary interventions. Significant methodologic flaws have hampered research in this area, and future studies need to focus on a research agenda to ensure the use of a consistent definition of colic (Wessel criteria), objective outcome measures, and sufficient sample size and power to determine differences. Time will tell, but perhaps colic will be one entity that will remain elusive, and our current strategies of support and reassurance may be the best.

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Marijuana

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Marijuana (cannabis), the illicit drug used most frequently in the United States,

may be smoked in cigarettes (joints, nails, reefers), pipes (bongs, bowls), or cigars (blunts); mixed with food; or brewed as a tea. Hashish (hash), a potent resin of cannabis, also may be used as a sticky black liquid (hash oil). Other street terms are pot, herb, weed, grass, widow, and ganja.

The 2010 Monitoring the Future study, which assesses adolescent substance use patterns, revealed that admitted lifetime marijuana use among eighth, 10th, and 12th graders in the United States was 17.3%, 33.4%, and 43.8%, respectively; daily use was 1.2%, 3.3%, and 6.1%, respectively. Trends in use have varied in recent decades.

The primary active chemical in marijuana is THC (delta-9-tetrahydrocannabinol). Increased cultivation of sinsemilla made from buds of female cannabis plants has raised mean THC content from 0.7% in the 1970s to 8.5% in 2008, with wide variability in dose. Street marijuana

also may be contaminated with a variety of other drugs, toxins, and infectious agents.

After smoking marijuana, THC rapidly passes from the lungs to the bloodstream and brain, where it binds to cannabinoid receptors. Euphoria and other brain effects occur within seconds of smoking, peak in 15 to 30 minutes, and taper over 2 to 3 hours. The onset of action after oral ingestion is 30 to 90 minutes, with peak effect in 2 to 3 hours and a duration of 4 to 12 hours. THC is highly lipid-soluble and has a serum half-life of ~19 hours.

Physiologic effects include transient tachycardia for up to 3 hours, increased sitting blood pressure with abnormal orthostatic responses, and peripheral vasodilation. Regular marijuana smoking may cause respiratory effects similar to those caused by tobacco, including daily cough, more frequent lung infections, exacerbation of asthma, decreased pulmonary function, and increased risk of respiratory tract cancer. Marijuana smoke contains 50% to 70% more carcinogenic hydrocarbons than tobacco smoke, and marijuana users typically inhale more deeply and longer, increasing carcinogen exposure. Cannabis may reduce immune function, and heavy use causes reversible decreases in sperm count and motility in animals. Irregular ovulation also has been noted. Short-term behavioral effects include memory and learning deficits, distorted sensory and time perception, problem-solving difficulties, and impaired coordination. Heavy marijuana use may exacerbate depression, anxiety, personality disorders, and sleep disturbance. There may be negative effects on intellectual, employment, and social skills. Memory impairment may last up to 1 month after last use. Students using marijuana have lower high school grades and graduation rates than do nonusing peers.

Marijuana increases the risk of injury, unwanted and unprotected sex, and other drug use. Recreational doses impair driving as much as blood alcohol

concentrations of 0.07% to 0.1%. No deleterious effects of marijuana use on the fetus have been confirmed.

Long-term marijuana use may lead to addiction, with use continuing despite interference with family life, school, work, and recreation. Tolerance may occur after several days of regular use. Withdrawal symptoms after heavy use peak by day 4 and resolve by 2 weeks. These symptoms include irritability, insomnia, malaise, drug craving, diaphoresis, night sweats, gastrointestinal disturbances, and agitation.

Screening for drug use and addictive symptoms is part of comprehensive adolescent care. Anticipatory guidance should include information about marijuana's addictive potential; injury risk; and possible impairment of learning, socialization, and sexual function. Parents should be encouraged to rehearse strategies to help teenagers avoid drug-using settings. Skills-based interventions in schools have helped increase drug knowledge, decision-making, self-esteem, and peer pressure resistance and have led to reduced marijuana use. Interventions in nonschool settings, motivational interviewing, and some family interventions also may help prevent marijuana use.

Marijuana and its metabolites are detectable in urine by enzyme-multiplied immunoassay technique starting 1 hour after smoking. The urine assay usually remains positive up to 10 days after infrequent use and up to 30 days in heavy users. Some urine tests may detect passive inhalation of second-hand marijuana smoke. False-positive results may occur from ingestion of nonsteroidal anti-inflammatory drugs; false-negative results may follow urine dilution or adulteration. Various urine and saliva tests as well as adulterants to modify the tests are available on the Internet. Care must be taken to avoid contamination, dilution, or substitution when obtaining urine samples for testing.

The American Academy of Pediatrics (AAP) supports voluntary confidential

drug testing to ensure that adolescents seek care. Although parents may ask a physician to test their teenagers for evidence of drug use, the AAP states: "Testing adolescents requires their consent unless (1) a patient lacks decision-making capacity; or (2) there are strong medical indications or legal requirements to do so." Although recent court decisions allow schools to perform random drug tests on middle and high school students participating in extracurricular activities, the AAP has opposed school-based testing unless part of a funded, comprehensive approach to addressing substance abuse.

Comment: Some of the most challenging encounters I have experienced have involved parents asking for drug testing for their adolescent children. Working toward a trusting relationship between the adolescent and parent is critical, and negotiating these situations has been enhanced by the AAP statement on this topic: that the drug-testing procedure should be done with the adolescent's consent, and positive results should be used as a mechanism to get treatment for the patient, not punishment. Facilitating this dialogue and helping the adolescent patient know that both family and pediatrician have his or her best interests in mind are essential.

Much controversy has arisen over legalizing marijuana use. Those who are opposed worry that access will be easier for children and adolescents and enhance unwanted drug use. Those who are in favor think that the therapeutic potential of pain relief, increase in appetite, and nausea control could be beneficial for select patients with AIDS, cancer, and multiple sclerosis. More research is needed to determine the best way to approach this public health issue in controlling distribution to those who would benefit medically while minimizing risk from recreational use.

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