

The Perinatal Gazette

Newsletter of the Regional Perinatal Center Maria Fareri Children's Hospital at Westchester Medical Center

WMC Health | Maria Fareri Children's Hospital
Westchester Medical Center Health Network



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Marijuana – the Mother, the Child and the State

Public attitude towards marijuana and the pertaining laws in United States are undergoing historical shift. The pediatric healthcare providers should be prepared to address the anticipated consequences for the mother-fetus dyad, the neonate and the growing child.

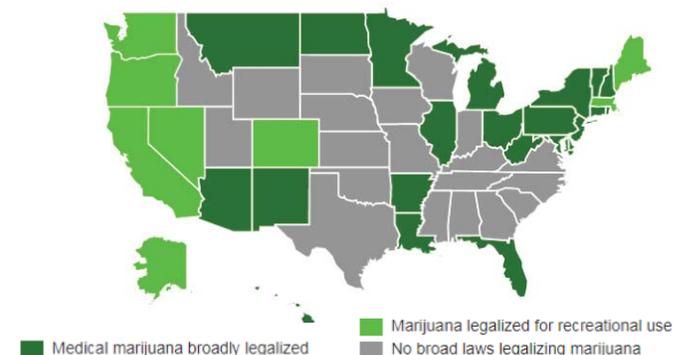
Political climates rather than scientific evidence of benefit or harm are at the crux of state regulations for access to marijuana. Since 2005, the perceived risk of regular marijuana use has declined from 40% to 20%¹ which is reflected in the sharp rise in the acceptance and use of marijuana products by not only adults but also adolescents. In this article we review the history, legal perspective and the effects of marijuana use on the mother, the fetus, the neonate and the child.

Marijuana & USA: Marijuana was brought to North America in the 1600s by the Jamestown settlers. Its cultivation for rope, navy sales and clothing was encouraged by special incentives. Marijuana was listed in the US pharmacopeia in 1850 and in 1889 The Lancet reported its use in opium withdrawal. In the 19th century hashish became popular in France and in USA. The large influx of immigrants in USA after the Mexican Revolution coincided with the expansion of recreational marijuana use however marijuana became associated with the fear and prejudice toward the Spanish-speaking newcomers. The Great Depression further increased the resentments. In 1930s the Federal Bureau of Narcotics and the Uniform State Narcotic Law were established. By 1931 the flurry of “research” associating marijuana with violence among immigrants lead to its ban by 29 states.² In 1937, Congress passed the Marijuana Tax Act effectively criminalizing marijuana with certain exemptions. During the WWII hemp growth of hemp was encouraged to meet the demand for fabric. Various Presidents, from Kennedy and Johnson to Nixon have attempted to loosen the restrictions and soften the penalties surrounding marijuana. In 1971 the “war on drugs” led to inclusion of marijuana in the list of most restricted category of drugs (Schedule I), thus precluding any research. The escalation of the war on drugs in the 1980s led to skyrocketing arrests and incarceration for marijuana. Public frustration with US Government stance on marijuana, the rising arrests along with reports of benefit in intractable seizures and wasting syndrome (anorexia) in cancer and HIV patients lead to the rise of advocacy groups and think-tanks promoting marijuana for a wide range of conditions. Further, the anti-tobacco campaign lead to sharp decline in tobacco (30% to 10%) but paralleled increases in marijuana use (3% to 10%).³

Legalization: In 1996 California became the first state to approve medical marijuana. In 2012, Colorado and Washington were the first to legalize recreational marijuana above 21 years of age. To date, 31 states and the District of Columbia have legalized medical marijuana and 8 of these states including District of Columbia have also legalized recreational use. As a result, a niche market for cannabis products was created with gradual increase in the potency. Oral preparations, such as

baked goods or chocolate bars contain variable THC amounts ranging from 1 mg to >1200 mg per item. Ingestion instead of inhalation results in slower absorption with delayed peak THC levels. The peak THC concentrations ranging from 4.4 to 11 ng/mL, occurred 1–5 h following ingestion of 20 mg of THC in a chocolate cookie.⁴ Ingestion is associated with increased frequency of overdosing, evidenced by the surge in ER visits in Colorado.⁵ Legalization has led to decrease in perceived risk of marijuana. Although FDA has approved 2 synthetic THC preparations, it has not extended this to marijuana products. (Fig. 1)

FIGURE 1. Marijuana Legalization Status



Marijuana & New York: In 2014 New York State became the 23rd state to approve medical marijuana prescribed only by certified registered practitioners for cancer, HIV/ AIDS, amyotrophic lateral sclerosis (ALS), Parkinson's disease, multiple sclerosis, inflammatory bowel disease, spinal cord injury with spasticity, epilepsy, neuropathies and advanced Huntington's disease.

Marijuana & the Body: The endogenous endocannabinoids: anandamide and 2-arachidonoylglycerol play a role in maintaining homeostasis through their ubiquitous receptors in the CNS, connective tissues, gonads, endocrine glands and organs (CB1) and immune system and associated structures (CB2). The cannabinoid receptors were not discovered until 1990. There are over 60 cannabinoids in marijuana with delta-9-tetrahydrocannabinol (THC), the primary psychoactive constituent and agonist to CB1, followed by cannabidiol (CBD), an antagonist to CB1 and CB2. THC is metabolized to over 100 active metabolites with 11-OH-TCH and THC-COOH being the most prevalent and excreted primarily via stool and then urine. There is very small evidence for the anti-anxiety effect of cannabidiol through 5-HT and GPR55 receptors.

The evidence of medical benefit of marijuana is very limited. Marijuana may be useful in glaucoma, nausea, AIDS-associated anorexia/wasting,

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Regional Perinatal Public Health Conference Summary



The 16th annual Hudson Valley Regional Perinatal Public Health Conference, “An Eco-Bio-Developmental Approach to Perinatal Health” was held November 15th, 2017 at the DoubleTree in Tarrytown, NY.

The conference was hosted by the Regional Perinatal Center at Maria Fareri Children’s Hospital/Westchester Medical Center Health Network (WMC), the Lower Hudson Valley Perinatal Network (LHVPN), and Maternal Infant Services Network of Orange, Ulster and Sullivan Counties, along with conference partners, Children’s Health & Research Foundation, Inc. and Student Assistance Services Corporation. Over 150 health, medical, and human services professionals from the seven counties of the Lower Hudson Valley were in attendance for the full day event.

The first speaker of the day was Dr. Camille Clare, MD, MPH, CPE, FACOG, Associate Professor of Obstetrics and Gynecology, New York Medical College, who presented “Postpartum Depression in Special Populations.” The talk focused on the identifying the most at-risk groups for postpartum depression, and associated health outcomes. Dr. Clare explained how low-income families, racial/ethnic minorities, and mothers with a history of mental illness are especially susceptible to experiencing postpartum depression.

The second morning speaker was Dr. Aletha Maybank, MD, MPH, Founding Director and Deputy Commissioner, Center for Health Equity, NYC Department of Health and Mental Hygiene, presenting “A Commitment to Advance Racial Equity and Social Justice in Health.” Dr. Maybank spoke on the history of institutional and structural discrimination in the United States, and its legacy on economic and health disparities. She highlighted methodologies of how NYC

Department of Health is working to improve health equity in NYC citizens and increase diversity within the NYC Department of Health itself.

The afternoon session began with a presentation delivered by David Murphey, PhD, Research Fellow and Director, DataBank, Child Trends. Dr. Murphey presented “Parents Behind Bars: What Happens to Their Children,” a talk focused on the impact of mass incarceration on the children growing up without one or both parents. The session touched on the spike of incarceration during the 1980’s war on drugs, and the subsequent cradle to prison pipeline, both of which disproportionately affect racial/ethnic minorities. Mr. Murphey’s research suggests that children with an incarcerated parent are more likely to be black, poor, live in a rural setting, and have issues in school.

A panel entitled “Helping Families at Discharge and Beyond – Preparing for Transition, Community, and Insurance Challenges Ongoing,” was held by former NICU parents Jennifer Degl, MA, Deborah Discenza, MA, and Jenne Johns, MPH as well as former NICU patient Patrick Moran. The members of the panel discussed their experiences as NICU parents of preterm babies born 23-30 weeks, and Patrick’s experience as a former 23 week baby, now 30 years of age. The panel presented survey data from NICU families on the challenges of transitioning from NICU to home and experiences with rehospitalization.

Dr. Edmund F. La Gamma, FAAP, Chief, Division of Newborn Medicine, Professor of Pediatrics, Biochemistry and Molecular Biology, NY Medical College; Chief, Regional Neonatal Center, Maria Fareri Children’s Hospital at WMC presented “State of the Region.” Dr. La Gamma discussed trends in infant and maternal mortality on the local, state, and national level. He spoke on how the burden of these and other adverse birth outcomes is disproportionately carried people of color.

Closing remarks were made by Cheryl Hunter-Grant, LMSW, CLC, Executive Director, LHVPN. She stressed the importance of an upstream, root/cause approach to prevent the burden of disease, especially in our most vulnerable populations. Ms. Hunter-Grant’s imparting message was a call to action on disparate health access, and the importance of advocacy in public health.

In conclusion, the conference was well attended with dynamic, cutting edge speakers. We welcome suggestions for future speakers and topics by email: Heather_Brumberg@nycm.edu.



Dr. Frances Hsieh

Welcome Frances Hsieh, MD

Please join us in welcoming to Westchester Medical Center in the Division of Maternal Fetal Medicine/Department of OBGYN.

Dr. Hsieh completed her fellowship in Maternal Fetal Medicine at Hofstra – Northwell School of Medicine/North Shore University Hospital/Long Island Jewish Medical Center, in addition to an

MPH degree from Johns Hopkins Bloomberg School of Public Health. Dr. Hsieh is board certified in Obstetrics and Gynecology, and is a fellow of the American College of Obstetricians and Gynecologists. She is currently working on In-Utero Oxytocin (OXT) Exposure and Gene Expression/Neurotransmitter Secretion and Metabolism in the Perinatal Mouse Brain. She already has several publications and brings a wide range of interests and skills to the medical center and we are pleased to have her join us.



Dr. Juliet Mushi

Welcome Juliet Mushi, MD

Please join us in welcoming to Westchester Medical Center in the Division of Maternal Fetal Medicine/Department of OBGYN.

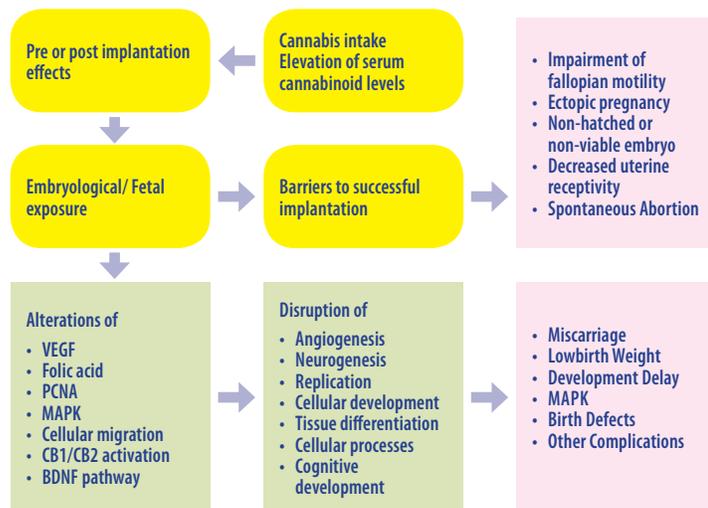
She completed her fellowship training in Maternal Fetal Medicine at Albert Einstein College of Medicine – Montefiore Medical Center. Dr. Mushi is board certified in Obstetrics

and Gynecology, and is a fellow of the American College of Obstetricians and Gynecologists. She is currently doing research on the action of dimethylacetamide-based compounds on pro-inflammatory cytokines, implicated in the pathogenesis of preterm birth in a funded project. In addition, she has established an interest in global health and is exploring perinatal depression among women in Rwanda. She already has numerous publications to her credit, and we are delighted to have her join our community at the outset of a very promising career.

chronic pain, inflammation, multiple sclerosis and epilepsy.³ Evidence of the adverse effects, in both short term (impaired memory, impaired coordination during driving, impaired judgement and paranoia/psychosis at high doses) and long term (addiction, cognitive impairment, diminished life satisfaction/achievement, chronic bronchitis, and exacerbation of psychosis in schizophrenia) is increasing. Recently, marijuana has been shown to permanently alter brain development in adolescent heavy users.³

Pregnant mother: The mechanisms of cannabinoids effects on fetal development are shown in figure 2. The self-reported prevalence of marijuana use in pregnancy is from 2% to 5%.⁶ The half-life of marijuana in fat tissue is long (~8 days). In pregnant chronic users it can be detected in the blood for up to 30 days. THC crosses the placenta, which in conjunction with the slow fetal clearance, results in prolonged fetal exposure, even after consumption is discontinued. A study in pregnant Rhesus monkeys injected with marijuana found that THC was detectable in fetal plasma by 15 min and equilibrated with maternal plasma levels by 3 h.⁷ Data on the effects of other byproducts during smoking including carcinogens and the effects of passive smoking are lacking. A long term follow up study of neonates exposed to marijuana in utero showed multiple adverse effects including fMRI evidence of altered neural activity during visuospatial working and memory processing at age 18-22years.⁸ Although the evidence of detrimental effects is accumulating the healthcare providers are not prepared to educate their patients about ill-effects of marijuana.⁹

FIGURE 2. Cannabinoids Endanger Fetal/Neonatal Development Through Multiple Mechanisms



Adapted from; "Friedrich, Joseph, et al. "The grass isn't always greener: The effects of cannabis on embryological development." *BMC Pharmacology* 17.1 (2016): 45-6

Marijuana & Breast feeding: Evidence of THC exposure on infant development via breastfeeding alone is sparse but THC levels in human milk are 8-times higher than maternal plasma levels. THC metabolites are found in breast-feeding infant feces, indicating that THC is absorbed and metabolized by the infant.⁶ THC can be detected in neonatal urine for 2–3 days, depending on the type of use (occasional vs chronic) and dosage. THC is rapidly distributed and stored in the brain and adipose tissue of the infant with a long half-life of 25–57 hours. Presence of marijuana metabolites in maternal urine cannot distinguish between occasional and habitual use. In the recently revised Clinical Protocol #21 in 2015, the Academy of Breastfeeding Medicine states that breastfeeding mothers should be counseled to reduce or eliminate their use of marijuana to avoid exposing their infants and advised of the possible long-term neurobehavioral effects from continued use but that the benefits of breastfeeding should be

factored in as well.¹⁰ The 2015 ACOG opinion states that medicinal and recreational use of marijuana preconception and during pregnancy should be avoided. ACOG also advises against marijuana use during breastfeeding stating that "in the absence of data to evaluate the effects of marijuana on infants during lactation and breastfeeding, marijuana use should be discouraged".¹¹

Marijuana & the American Academy of Pediatrics: In March, 2015 AAP published a 10-point recommendation for marijuana supporting decriminalization, but opposing legalization.¹² AAP supports strict enforcement of all regulations limiting access, marketing and advertising to youth in states with legalized recreational use. Further, AAP states that the development of pharmaceutical cannabinoids should be promoted along with the development of policies promoting research on the medical use. Finally, AAP recommends changing marijuana from a DEA schedule I to II to facilitate research.¹²

Marijuana & Business: Investment of \$100 in marijuana stocks in January 2014 would have led to 600-2000% profit by 2016 according to business reports. New Frontier Data reports that the sales of legal marijuana grew to \$6.6 billion (\$4.7 and \$1.9 billion for medical and recreational respectively) in 2016 and are expected to exceed \$24 billion by 2025. Legalization of marijuana has been reported by the think tanks to generate annual tax revenue of \$67 million in Colorado alone. Rising business profit and growing state tax revenue are being used to promote marijuana cultivation and legalization, with the medical consequences being left in the sidelines.¹³

Conclusion: Marijuana is one of the earliest cultivated plants used over millennia in daily life. The waxing and waning use in USA has been affected by the changing economic and political climates. Its categorization in Schedule I and the war on drugs have restricted research and limited our understanding of its beneficial and harmful effects. The resultant back lash movement, which ushered the rapidly spreading legalization of both medicinal and recreational marijuana, is causing societal acceptance and increased use in populations particularly vulnerable to its harmful effects. The healthcare providers must follow the rapidly changing federal and state laws pertaining to marijuana, advocate for more research and strive to increase their knowledge in order to support their patients in the quest to improve health.

References available upon request:

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Dr. Amy Reichlin

Welcome Amy Reichlin, MD

Please join us in welcoming Dr. Amy Reichlin to Westchester Medical Center in the Division of Neonatal Medicine.

Dr. Reichlin is an experienced neonatologist who trained in Neonatal Perinatal Medicine at Mount Sinai Medical Center in New York. She continued her fellowship research in

immunology at the Rockefeller University supported by a NIH training grant. She has been a neonatal attending at St. Louis Children's Hospital, Mount Sinai Medical Center, NYU Medical Center, and Jacobi Medical Center before coming to us. She has been recognized for her excellence in resident and medical student education. She is now going to focus her attention on neonatal follow up as well as continuing her activities as an attending in the NICU. We are excited to have her join our neonatal team.

Celebrating Hailey's Hope & their 10 Years of Support of our NICU Families!



Hailey's Hope Foundation is a nonprofit organization dedicated to supporting families with premature and critically ill babies in New York area NICUs. They provide practical, financial, emotional and informational support to help parents cope during their NICU journey and to help improve the health outcomes of their babies. The foundation has supported over 2,300 families since it was founded in February 2008.

In addition to the support provided to patients and families, the foundation also assists the Maria Fareri Children's Hospital NICU in many other ways. Hailey's Hope has purchased and donated cribs, NICU Kangaroo Care recliners, an EKG machine, and a digital camera and photo supplies for NICU bereavement photos. Additionally, they have sponsored ice cream treats for families at the NICU Graduate Reunion Party.

Families who have received support from Hailey's Hope have expressed their appreciation: "Thank you so much for the kindness that you have shown our family. In a severe time of need, it has been incredible to know that your organization exists and is willing to give back and help us the way you have." Another family stated, "Hailey's Hope Foundation is a miracle! They helped us so much... (we) could never repay them for their generosity..."

More information about Hailey's Hope can be found at www.haileyshopefoundation.org. Please join us in thanking Hailey's Hope for ten years of support!

SAVE THE DATE Perinatal Nursing Conference **Conception to Cradle** Triage, Transport, Transition

Sponsored by The Regional Perinatal Center at Westchester Medical Center

Tuesday, March 20, 2018 / 8:00am – 4:00pm
Maria Fareri Children's Hospital Conference Room
100 Woods Rd, Valhalla, NY, 10595

Target Audience
Nurses in Labor & Delivery, Post-Partum, Well-Baby & Special Care Nurseries, NICU, Patient Transport/Emergency Medical Services, and Emergency Department

Please contact Marichu Smith, RNC, MSN for details.
(914) 493-8590 / Marichu.Smith@wmchealth.org

To Register:
<http://www.westchestermedicalcenter.com/events/conception-to-cradle-triage-transport-transition-5988>

Congratulations Sergio Golombek, MD



Dr. Sergio Golombek

Dr. Sergio Golombek's article "Recomendaciones del VI Consenso Clinico de SIBEN para la Hipertension Pulmona Persistente del Recien Nacido" (Recommendations of SIBEN's VI Clinical Consensus regarding Neonatal Persistent Pulmonary Hypertension) – work done with many physicians from Latin America as part of educational endeavors of SIBEN, The Iberoamerican Society of Neonatology was the #1 most read 2017 article published in American Academy of Pediatric's Neo Reviews. Congratulations Dr. Sergio Golombek!

Full article can be found at:
<http://neoreviews.aapublications.org/content/18/5/e327>

We are interested in providing you with a newsletter that is relevant and of interest to you. Please contact us with perinatal topics you would like to see addressed. For a copy of our newsletter or to be placed on our mailing list, contact us by phone or e-mail.

Please visit www.westchestermedicalcenter.com/RPC for information about the Regional Perinatal Center at the Maria Fareri Children's Hospital at Westchester Medical Center and to locate previous issues of *The Perinatal Gazette*.

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