

# **PAIN PRESS**

## **WELCOME**

The Pain Press is an opportunity for all to gather and read up on all things pain management and beyond.

The Pain Press is a venue for pain management specialists, clinicians, patients, legislators, law enforcement, and the lay public alike to gain a deeper appreciation for all things pain management.

The Pain Press is also a springboard for aspiring writers.

~Mark "Pain Guy" Garofoli (Editor-in-Chief)



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## Just in Time: Headlines

Chronic Pain More Common than Diabetes or Depression

<https://www.nbcnews.com/health/health-news/chronic-pain-more-common-diabetes-depression-study-rcna84470>

Nobel Prize Winning Hot Chicken!!! A Possible New Way to Reduce Pain Inspired by Chickens

<https://med.stanford.edu/news/all-news/2023/02/pain-medication-chickens.html>

Endometriosis-Associated Pain

<https://www.practicalpainmanagement.com/pain/other/abdominal-pelvis/endometriosis-pain>

Novel Drug Reduces Acute Pain After Common Surgeries — Investigational sodium channel blocker shows benefit in two trials (Vertex, VX-548)

<https://www.medpagetoday.com/neurology/painmanagement/105735>

Methadone Clinics: Long Term Efficacy for OUD

<https://www.practicalpainmanagement.com/issue202304/methadone-clinics-and-long-term-efficacy-for-opioid-use-disorder>

Why I Prescribe SNRIs for Chronic Pain, Regardless of a Mental Health Diagnosis

<https://www.practicalpainmanagement.com/issue202304/why-i-prescribe-snr-is-for-chronic-pain-regardless-of-a-mental-health>

Getting Better Control of Gout

<https://www.practicalpainmanagement.com/painscan/gout-management>

Ketamine: More than Just an Anesthetic

<https://www.practicalpainmanagement.com/issue202304/ketamine-more-than-an-anesthetic>

FDA Approves New Longer-Acting Opioid Reversal Nasal Spray (Nalmefene)

<https://www.fda.gov/news-events/press-announcements/fda-approves-prescription-nasal-spray-reverse-opioid-overdose>

White House Plan to Counteract Xylazine

<https://www.whitehouse.gov/ondcp/briefing-room/2023/07/11/icymi-in-continued-response-to-overdose-epidemic-the-white-house-releases-national-response-plan-to-address-the-emerging-threat-of-fentanyl-combined-with-xylazine/>

Captagon: The Old Drug That Birthed a New Narco State

<https://www.painmedicineneeds.com/Commentary/Article/08-23/Captagon-Narco-State-US-Clinicians-Warning-System/71113>

The Stimulant Overdose Crisis

<https://www.practicalpainmanagement.com/treatments/addiction-medicine/the-stimulant-overdose-crisis>

AAPM 2023 Clinician Perspective

<https://www.practicalpainmanagement.com/meetings/AAPM-2023-meredith-barad-takeaways>

## Pain Pubs: Manuscripts

Capsaicin-Like Chicken Inspired Pain Medication

<https://www.jci.org/articles/view/163735>

Prevalence: Chronic Pain > Diabetes > Depression

<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2804995>

Buprenorphine Inductions via Transdermal Patches for Opioid Use Disorder in the Inpatient Setting

<https://www.tandfonline.com/doi/full/10.1080/15360288.2023.2222021>

Acute Pain Management for Patients with Substance Use Disorder Receiving Buprenorphine or Methadone Compared to Patients without Opioid-Dependence Disorder

<https://www.tandfonline.com/doi/full/10.1080/15360288.2021.1931630>

Pain Management Strategies in Rheumatoid Arthritis: A Narrative Review

<https://www.tandfonline.com/doi/full/10.1080/15360288.2021.1973647>

Analgesic Treatment Approach for Postherpetic Neuralgia: A Narrative Review

<https://www.tandfonline.com/doi/full/10.1080/15360288.2023.2174632>

Perceptions of West Virginia Teens and Adults Regarding the Risks of Over-the-Counter Pain Medications

<https://www.tandfonline.com/doi/full/10.1080/15360288.2023.2180701>

## Pain Pod Recent Episodes

Available via [www.painguy.us](http://www.painguy.us) and all your podcast apps

Cracking Open the 2023 Beers Criteria

Geriatric Duty: A Geriatric Patient Care Discussion with DeLon Canterbury

Thug Drugs: Opioids

Naloxone: The High Cost of What Price

Unfit for Recovery: A Chat with Jake Nichols

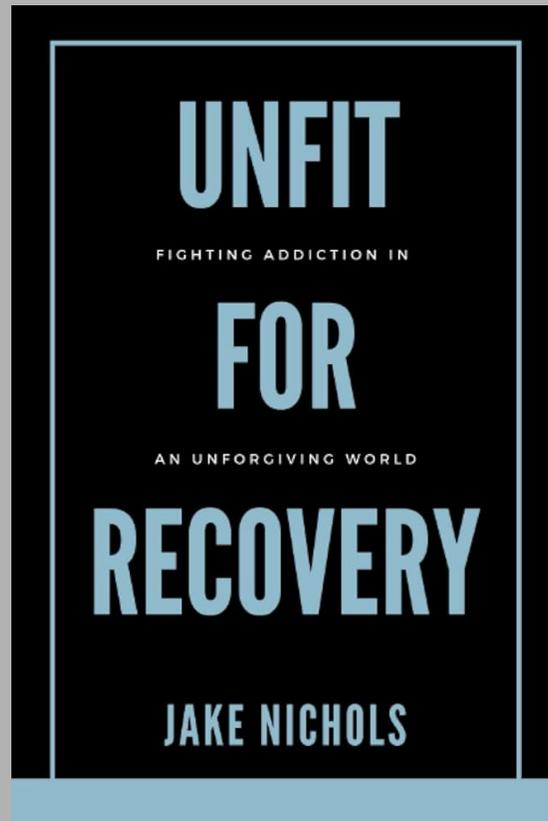
Buprenorphine: The Most Misunderstood Medication of the Century

Urine Luck! A Review of Urine Drug Monitoring

2022 CDC Opioid Guideline Update

## Pain (Book) Club

One never talks about Fight Club, but everyone talks about Pain (Book) Club!



Jake Nichols takes readers through his journey called life, in a riveting manner. Bet you can't put this book down (seriously, ask Pain Guy's Wife, it was read within 24 hours), as the only reason to momentarily stop is reflect upon your own life, actions, and words.

Pain Guy Rating: MUST READ

Amazon Link: <https://www.amazon.com/Unfit-Recovery-Fighting-Addiction-Unforgiving/dp/B0BPVTVH6G>

## Pain Stream

Pain goes main stream on the Pain Stream!



Real stories meshed with really good drama, acting, and straight up hollywood. Have patients lost their lives within our Opioid Crisis originating in the healthcare supply chain? Absolutely. Is that the vast majority of cases? Not Quite. This should not be anyone's first jump into the Opioid Crisis, yet, for so many in the lay public, it is. It's a start, and it will most likely leave your emotions on your shoulder, regardless of what the actual emotions are.

Pain Guy Rating: Watch It, with a free 30-day streaming trial

Streaming Link: [www.hulu.com](http://www.hulu.com)

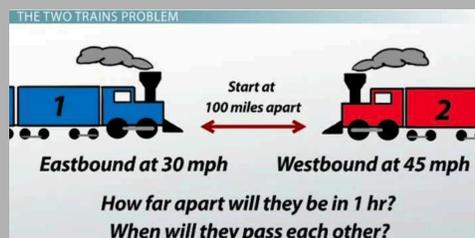
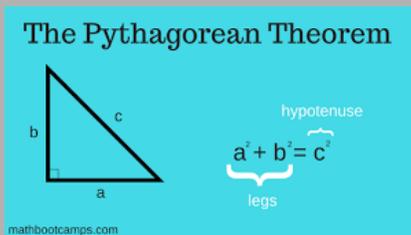
## Red Flag Football: DEA Red Flag Case

The NFL football season kicked off last week, yet this is not a play on words diminishing the incredible knowledge and expertise of healthcare professionals in matters involving controlled substances, rather a dive into propelling said folk to think deeper.

### THE CASE

Ms. Fay Kinet presents to your pharmacy with a prescription for buprenorphine 8mg TID #90 from Dr. Phil Good. Fay lives 70 miles east of your pharmacy, while Phil's practice is 60 miles north of MME's house. Fay is concerned with the stigma associated with her medication and medical condition, thus asks to pay out-of-pocket instead of billing her prescription insurance which would "leave a paper trail". Fay mentions that her sister "May" may visit your pharmacy if you're willing to appreciate her circumstance as well. Fay's respective PDMP report illustrates a zolpidem and alprazolam dispensing 6 months ago (around the time Fay's Mother passed). Fay is over complimentary in the aesthetics of the pharmacy and everyone's outfits.

**What "DEA Red Flags" +/- "General Controlled Substance Concerns" are involved in this case?**



Follow-Up Reading: <https://www.practicalpainmanagement.com/issue202206/prescribing-and-dispensing-controlled-substances-when-to-pump-the-brakes>

Follow-Up Thoughts in the next volume of the PAIN PRESS!

## Guest Editorial (Matthew Hermenau)

### A Deep Dive into the Relationship Between Obesity and Chronic Pain MATTHEW HERMENAU, PharmD

If you search the Merriam-Webster dictionary for the definition of a preventionist you will find “one expert in or favoring or employing preventive measures”.<sup>1</sup> In healthcare the main preventionists are Infectious Disease/Infection Control while Chronic Pain remains elusive.<sup>2</sup> But why is this? In the following article, I hope to elucidate the pathways that have led to obesity and chronic pain in the US, and what we can do to fill the void as Chronic Pain Preventionists in our daily lives. You will likely find my talks to be *Pharmless* or non-pharmacological which as a pharmacist has an irony to it.

In 2021, the prevalence of chronic pain among United States (US) adults was 20.4% affecting approximately 51 million people.<sup>3</sup> People ages 25-64 years old accounted for approximately 33 million or ~64%.<sup>3</sup> From 2002-2018 there was also an increase in the reporting of “any pain” in at least one site by 10%, and a linear trend in pain proportion across all US adults ages 25-84. The most common pain areas impacted were the joints (21% increase) and low back/neck (15% and 16% increase).<sup>4</sup> While rising chronic pain has impacted the US, we have faced an even larger issue of obesity (BMI > 30) in children and adults. From 1990-present day we have witnessed a four-fold increase in adult obesity (11.6% vs 41.9%), and two-fold increase childhood obesity (12% vs 20%).<sup>5,6,7,8</sup> While chronic pain is multifaceted involving a biopsychosocial model, prior literature has demonstrated a correlation between obesity and pain.<sup>9,10</sup> It has also been shown that for individuals who are obese, losing approximately 10% of body weight can reduce the likelihood to endorse pain at any body site by 30% (OR = 0.699, 95% CI = .548, .891).<sup>11</sup> Following a Chronic Pain Preventionist mindset, it is important to understand the potential causes for our country’s rise in obesity. The most simplistic, and not all encompassing, approach would be to analyze movement and nutrition. The following paragraphs will specifically discuss adult obesity.

Lack of movement has been a point of discussion over the years with advancements in technology and more time spent sitting.<sup>12</sup> Objectively evaluating the trends in aerobic exercise criteria guidelines of 150-300 minutes/week, the US is nearly twice as active now compared to 30 years ago (2020 – 46.9% vs. 1990 – 24.3%).<sup>13,14</sup> The muscle-strengthening guidelines of  $\geq 2$  days a week including all seven muscle groups (legs, hips, chest, back, abdomen, shoulders and arms), established in 2008 by the US Department of Health and Human Services, have also seen a considerable increase over the years (2020 – 31% vs 2009 – 6%).<sup>13,15</sup> Thus, if exercise and muscle strengthening has been gradually improving, the next logical step would be to evaluate the correlation between food consumption and obesity. Specifically, analyzing foods with potentially harmful herbicides. In 1974, Roundup, a glyphosate-based herbicide, emerged onto the market. Glyphosate acts by inhibiting the shikimic acid pathway, a key factor in the formation of amino acids tyrosine, phenylalanine, and tryptophan in plants, fungi and other microorganisms.<sup>16</sup> Without this pathway, the plant cannot grow and develop. This pathway is not present in animals, and glyphosate was not deemed dangerous at the time of its inception. In 1996, the Monsanto Company that created Roundup, also created a genetically modified seed allowing for crops to be resistant to the herbicides attack on weeds.<sup>17</sup> The use of these seeds and Roundup has grown at a massive rate dominating 70-90% of the global genetically modified seed market and global use of glyphosate reaching approximately 825,000 tons in 2014.<sup>18</sup> But, as the herbicide and genetically modified crop production surged, scientists began to notice glyphosates harmful impact on humans. Humans don't possess the shikimic acid pathway but their gut bacteria inside of them do. These gut bacteria play a major role in human physiology.<sup>19</sup> Emerging literature has shown it can cause harmful effects on humans' anaerobic glycolysis, aerobic respiration, and DNA repair in mitochondria, impacting caloric conversion to energy.<sup>18</sup> Alarmingly, in a 2013-14 US study of 2,310 individuals > 6 years of age, glyphosate was detectable in the urine of 81.2% participants. More importantly, those who fasted more than eight hours saw reductions in serum levels showing that food consumption is proportionate to concentrations in the body.<sup>20</sup> Thus, the obesity nutrition conversation needs to be broadened from a caloric input/output concept to an approach which takes into account how much glyphosate is being consumed on a daily basis.

Glyphosate has been shown to significantly affect the activity of lactate dehydrogenase (LDH), an enzyme involved in the anaerobic metabolism of glucose when oxygen is limited. Normally, when humans enter into an anaerobic pathway of limited oxygen our bodies convert carbohydrates to glucose to pyruvate + NADH + H<sup>+</sup> using LDH into Lactate + NAD<sup>+</sup> + ATP. This is a balancing act where LDH is maintaining lactate and pyruvate homeostasis while also being involved in protective mechanisms such as DNA repair and processing.<sup>18</sup> Disrupting this pathway ultimately changes glucose metabolism and energy production of ATP. The exact amount of energy-linked inhibition in the mitochondria of isolated rat liver was shown to be 46% and NAD<sup>+</sup>/NADH converting process by 34.5%.<sup>18</sup> Consuming glyphosate in genetically modified crops leads to reduced mitochondria activity and energy metabolism so your body isn't creating valuable energy from foods and instead storing them as fat.

Fortunately, there are several *Pharmless* or non-pharmacologic ways to combat this obesity crisis and prevent chronic pain. First, patients should avoid genetically modified foods and consume organic foods whenever feasible. An effective way to see if a product is organic is to check labeling for USDA Organic certification. This certification signifies that a company cannot intentionally spray foods with chemical herbicides like glyphosate. The most common GMO foods to avoid include corn, canola, soybeans, summer squash and potatoes. Further information on pesticides in produce can be found by searching for the Dirty Dozen™ and Clean Fifteen™ produce lists.<sup>21,22</sup> Second, practitioners should personalize the current diet and lifestyle criteria used to measure effective weight loss. Currently, weight loss medication initiation criteria include patients with BMI ≥ 30 or BMI ≥ 27 with comorbidities such as hypertension, diabetes, or hyperlipidemia. Certain manufacturers suggest the combination of a medication, reduced calorie meal plan and increased physical activity.<sup>23</sup> The American Association of Clinical Endocrinology and American College of Endocrinology guidelines suggest participation in a high intensity program (≥ 14 sessions in 6 months) involving aerobic exercise, resistance training and a reduced-calorie diet with a goal of 5-10% body weight loss in 6 months before trialing pharmacotherapy.<sup>24</sup> Schrepf et al., previously demonstrated that a 10% weight reduction is shown to reduce pain reported in all sites. However, some of the strategies used in the study highlight the importance

of how clinical trials may not be relatable to the real life scenarios. In the study, they used a full-liquid diet, very-low calorie restricted diet (800 kcal/day), including women who were not of child-bearing age not experiencing a hormonal cycle (mean age 51 years and 67% female), and completed the study in just 12 weeks.<sup>12</sup> Individuals seeking to lose weight often require a tailored approach with education on food quality vs. quantity, the effects of hormones on weight loss and muscle synthesis, and longer time for more sustained results and habit forming. Lastly, practitioners should employ a broader view of weight loss factors outside of caloric restriction alone. Some of these factors include the types of macronutrients being consumed, gut microbiome, and the psychological effect of weight loss via adipose hormones. To put this into perspective, carbohydrates, fats and proteins all have different energy expenditures when being broken down. It's generally accepted that protein uses 20-30% of its total calories to digest, carbohydrates use 5-10%, and fats use 0-3%.<sup>25</sup> Thus, consuming a nutritional plan with a large proportion of processed fats and carbohydrates will likely result in more caloric absorption as opposed to a high protein diet. In regards to our gut microbiome, we are experiencing a plethora of new information as to how it relates to inflammation, metabolism and many other physiological pathways.<sup>26,27</sup> Our scientific community is now aware that having a diverse gut bacteria can lead to less occurrence of long-term weight gain.<sup>28</sup> More shockingly, we've uncovered our microbiome-gut-brain axis pathway plays a major role in serotonin and melatonin production.<sup>29</sup> So what you eat can either help or hurt your microbiome contributing to mood, sleep and digestion. Finally, understanding the psychological aspects of obesity through caloric restriction is imperative in creating a weight loss program. Individuals who are obese have increased levels of leptin in fat cells.<sup>30</sup> Leptin is an adipose hormone tissue which regulates satiety and curbs appetite. Elevated leptin levels lead to desensitization and downregulation of the hormone causing patients with obesity to feel hungry more often.<sup>31</sup> When a very-low calorie diet is utilized, patients will be impacted by these hormone imbalances and potentially relapse to binge consumption.

Overall, the US has seen a steep rise in the rates of obesity and chronic pain across all age groups over the past 30 years. We now understand that there is a correlation between these diseases

and the beneficial effects of weight loss to reduce the incidence of each. Interestingly, the rates of aerobic exercise and muscle-strengthening in the US adult population have increased while the rates of obesity have not responded in a positive manner. This information warrants further investigation of harmful herbicides like glyphosate in everyday foods, de-personalized weight loss approaches and the lack of knowledge on gut microbiome and adipose hormones.

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