

What are the tensions between evolving science linking Addiction to the Immune System, primitive addiction treatment and impaired and dangerous behavior for individuals, families as well as civil commitment procedures for substance abuse and criminal justice?

Evolving neuroimmune science vs. legacy control systems

Recent research links addiction to **neuroimmune dysregulation** and neuroinflammation, while many treatment and legal responses (including civil commitment and criminal justice practices) still rely on older, more moralistic or purely behavioral models. This creates tensions around how to interpret “dangerousness,” impaired judgment, and what counts as ethical and effective care for individuals and families.

Neuroimmune science and impaired behavior

- Drugs and alcohol activate innate immune pathways (e.g., **TLR4**, inflammasomes), driving neuroinflammation, epigenetic change, and neurodegeneration in brain regions that govern judgment, emotion, and reward (Nichols, 2024; Hofford et al., 2018; Czerwińska-Błaszczuk et al., 2022; Erickson et al., 2018; Montesinos et al., 2016; Hutchinson & Watkins, 2013).
- Chronic innate immune activation is linked to **impulsivity, loss of behavioral control, anxiety–depression, cognitive dysfunction, craving, and compulsive use**, all of which underlie risky and violent behavior and relapse (Nichols, 2024; Hofford et al., 2018; Czerwińska-Błaszczuk et al., 2022; Erickson et al., 2018; Montesinos et al., 2016).
- Reviews argue that neuroimmune signaling is now a major frontier, with **immunopharmacology and neuroimmunopharmacology** proposed as next-generation treatments, in contrast to traditional symptom-focused or purely abstinence models (Namba et al., 2021; Hofford et al., 2018; Mayfield et al., 2013; Erickson et al., 2018; Hutchinson & Watkins, 2013).

Neuroimmune contributions to addiction-related behavior

Mechanism / change	Behavioral consequence	Citations
TLR/HMGB1 activation, microglial sensitization	Impaired executive function, anxiety, addiction-like behavior	(Nichols, 2024; Czerwińska-Błaszczuk et al., 2022; Erickson et al., 2018; Montesinos et al., 2016)
Neuroinflammatory “sterile” response	Heightened craving, relapse risk	(Hofford et al., 2018; Czerwińska-Błaszczuk et al., 2022; Erickson et al., 2018)
Immune modulation (e.g., OEA)	Reduced inflammation, withdrawal, and alcohol seeking in animals	(Orio et al., 2019)

FIGURE 1 How immune signaling shapes addictive behavior.

Tensions with “primitive” / coercive treatment and civil commitment

- Involuntary civil commitment (ICC) for SUD is expanding, often justified by **danger to self/others and impaired capacity**, but evidence of benefit is mixed and harms can be substantial (Silcox et al., 2024; Nichols, 2024; Christopher et al., 2021; Christopher et al., 2018; Cummins et al., 2024; Christopher et al., 2020; Cochran et al., 2024).
- Qualitative work shows ICC can disrupt access to MOUD, heighten distress, and contribute to continued use and overdose risk after release, while violating autonomy and motivation critical for effective treatment (Silcox et al., 2024; Nichols, 2024; Christopher et al., 2021; Christopher et al., 2018).
- Court clinicians report broad, sometimes extra-statutory interpretations of “imminent risk,” highlighting how legal thresholds can stretch beyond clear evidence of danger (Christopher et al., 2021).
- Persons with opioid use disorder often support civil commitment more for mental illness than for drug use and are skeptical of its efficacy when they have experienced it themselves (Christopher et al., 2020).
- Population analysis of state CC laws found **no overall reduction in opioid overdose deaths**, and higher post-COVID overdose rates in states with CC SUD laws, suggesting structural limits of coercive approaches (Cochran et al., 2024).

Ethical and systems-level conflicts

- Ethical analyses frame ICC as sitting between **public safety, family desperation, and individual rights**, in a context where SUD is a recognized mental disorder but often treated differently than other mental illnesses (Nichols, 2024; Cavaola & Dolan, 2016; Walton & Hall, 2017).
- Some work notes ICC may divert people from criminal conviction and offer access to treatment, but only when programs provide **evidence-based care and MOUD in health—not correctional—settings**, and respect due process (Nichols, 2024; Cavaola & Dolan, 2016).
- Post-overdose outreach programs that frequently promote ICC tend to align with **abstinence-only philosophies** and are less engaged in harm reduction (e.g., naloxone, syringe services), revealing clash between punitive/abstinence cultures and harm-reduction science (Cummins et al., 2024).
- Reviews of justice-involved populations with co-occurring disorders emphasize substantial gaps in access to integrated, evidence-based treatment (e.g., CBT, integrated dual-disorder care), despite strong need (Peters et al., 2017).

Implications for individuals, families, and justice

- Families often drive ICC out of fear of death and lack of voluntary treatment options, illustrating how **system failures in accessible, science-based care** push toward coercion (Nichols, 2024; Cummins et al., 2024).
- At the same time, evolving neuroimmune science suggests that many “dangerous” or non-compliant behaviors arise from **pathophysiological changes**, not simple defiance, challenging moralized punishment and short, custody-like commitments (Namba et al., 2021; Nichols, 2024; Hofford et al., 2018; Czerwińska-Błaszczuk et al., 2022; Erickson et al., 2018; Montesinos et al., 2016).
- Commentaries and ethical reviews call for aligning civil commitment and criminal justice with:
 - robust due-process safeguards and narrow danger criteria (Cavaiola & Dolan, 2016; Walton & Hall, 2017);
 - guaranteed access to MOUD and emerging neuroimmune-targeted treatments (Nichols, 2024; Hofford et al., 2018; Erickson et al., 2018; Cochran et al., 2024);
 - a shift from criminalization toward **health-based, rights-respecting responses** (Silcox et al., 2024; Nichols, 2024; Cavaiola & Dolan, 2016; Cummins et al., 2024; Walton & Hall, 2017).

Conclusion

Evolving evidence shows addiction is deeply intertwined with immune and inflammatory processes that impair judgment and drive dangerous behavior, while many civil commitment and justice practices still rely on coercive, abstinence-focused models with limited demonstrated benefit. The central tension is between a **neuroimmune, chronic-disease understanding** that points toward immunomodulatory and evidence-based care, and legacy legal and treatment systems that prioritize control, short-term risk management, and criminalization, often at the expense of autonomy, effectiveness, and family trust.

These search results were found and analyzed using Consensus, an AI-powered search engine for research. Try it at <https://consensus.app>. © 2026 Consensus NLP, Inc. Personal, non-commercial use only; redistribution requires copyright holders' consent.

References

- Cavaiola, A., & Dolan, D. (2016). Article Commentary: Considerations in Civil Commitment of Individuals with Substance Use Disorders. *Substance Abuse*, 37, 181 - 187. <https://doi.org/10.1080/08897077.2015.1029207>
- Christopher, P., Pridgen, B., & Pivovarova, E. (2021). Court Clinicians' Experiences Performing Civil Commitment Evaluations for Substance Use Disorders. *The journal of the American Academy of Psychiatry and the Law*, 49, 187 - 193. <https://doi.org/10.29158/jaapl.200061-20>
- Christopher, P., Anderson, B., & Stein, M. (2018). Civil Commitment Experiences among Opioid Users. *Drug and alcohol dependence*, 193, 137 - 141. <https://doi.org/10.1016/j.drugalcdep.2018.10.001>
- Christopher, P., Anderson, B., & Stein, M. (2020). Comparing views on civil commitment for drug misuse and for mental illness among persons with opioid use disorder.. *Journal of substance abuse treatment*, 113, 107998. <https://doi.org/10.1016/j.jsat.2020.107998>
- Cochran, P., Chindavong, P. S., Edelenbos, J., Chiou, A., Trulson, H. F., Garg, R., & Parker, R. W. (2024). The impact of civil commitment laws for substance use disorder on opioid overdose deaths. *Frontiers in Psychiatry*, 15. <https://doi.org/10.3389/fpsy.2024.1283169>

Cummins, E. R., Walley, A. Y., Xuan, Z., Yan, S., Schoenberger, S., Formica, S. W., Bagley, S. M., Beletsky, L., Green, T. C., Lambert, A. M., & Carroll, J. J. (2024). Use and perceptions of involuntary civil commitment among post-overdose outreach staff in Massachusetts, United States: A mixed-methods study.. *Addiction*.

<https://doi.org/10.1111/add.16690>

Czerwińska-Błaszczyk, A., Pawlak, E., & Pawłowski, T. (2022). The Significance of Toll-Like Receptors in the Neuroimmunologic Background of Alcohol Dependence. *Frontiers in Psychiatry*, 12.

<https://doi.org/10.3389/fpsy.2021.797123>

Erickson, E. K., Grantham, E. K., Warden, A., & Harris, R. (2018). Neuroimmune signaling in alcohol use disorder. *Pharmacology, biochemistry, and behavior*, 177, 34 - 60. <https://doi.org/10.1016/j.pbb.2018.12.007>

Hofford, R. S., Russo, S., & Kiraly, D. (2018). Neuroimmune mechanisms of psychostimulant and opioid use disorders. *The European journal of neuroscience*, 50, 2562 - 2573. <https://doi.org/10.1111/ejn.14143>

Hutchinson, M., & Watkins, L. (2013). Why is Neuroimmunopharmacology crucial for the future of addiction research?. *Neuropharmacology*, 76. <https://doi.org/10.1016/j.neuropharm.2013.05.039>

Mayfield, J., Ferguson, L. B., & Harris, R. (2013). Neuroimmune Signaling: A Key Component of Alcohol Abuse. *Current opinion in neurobiology*, 23, 513 - 520. <https://doi.org/10.1016/j.conb.2013.01.024>

Montesinos, J., Alfonso-Loeches, S., & Guerri, C. (2016). Impact of the Innate Immune Response in the Actions of Ethanol on the Central Nervous System.. *Alcoholism, clinical and experimental research*, 40 11, 2260-2270.

<https://doi.org/10.1111/acer.13208>

Namba, M. D., Leyrer-Jackson, J. M., Nagy, E. K., Olive, M., & Neisewander, J. (2021). Neuroimmune Mechanisms as Novel Treatment Targets for Substance Use Disorders and Associated Comorbidities. *Frontiers in Neuroscience*, 15. <https://doi.org/10.3389/fnins.2021.650785>

Nichols, C. (2024). Ethical Considerations in Civil Commitments for Substance Use Disorders. *International Journal of Social Work Values and Ethics*. <https://doi.org/10.55521/10-021-210>

Orio, L., Alén, F., Pavón, F., Serrano, A., & García-Bueno, B. (2019). Oleylethanolamide, Neuroinflammation, and Alcohol Abuse. *Frontiers in Molecular Neuroscience*, 11. <https://doi.org/10.3389/fnmol.2018.00490>

Peters, R., Young, M., Rojas, E. C., & Gorey, C. (2017). Evidence-based treatment and supervision practices for co-occurring mental and substance use disorders in the criminal justice system. *The American Journal of Drug and Alcohol Abuse*, 43, 475 - 488. <https://doi.org/10.1080/00952990.2017.1303838>

Silcox, J., Rapisarda, S. S., Hughto, J. M. W., Vento, S. A., Case, P., Palacios, W. R., Zaragoza, S., Shrestha, S., Stopka, T., & Green, T. C. (2024). Views and experiences of involuntary civil commitment of people who use drugs in Massachusetts (Section 35). *Drug and alcohol dependence*, 263, 112391 - 112391.

<https://doi.org/10.1016/j.drugalcdep.2024.112391>

Walton, M., & Hall, M. T. (2017). Involuntary Civil Commitment for Substance Use Disorder: Legal Precedents and Ethical Considerations for Social Workers. *Social Work in Public Health*, 32, 382 - 393.

<https://doi.org/10.1080/19371918.2017.1327388>