

The Economic Burden of Alcohol Use Disorder (AUD) Treatment and the Costs Associated with Withdrawal, Compliance, and Hyperalgesia Management

Executive Summary

Alcohol Use Disorder (AUD), a chronic condition characterized by a pattern of excessive drinking and an inability to stop despite harmful consequences, can lead to a range of physical, psychological, and social problems, from liver disease and cardiovascular issues to mental health disorders like depression and anxiety. AUD is a significant public health issue, not only in the U.S., but globally, with nearly one-third of U.S. adults experiencing AUD at some point during their lives imposing significant economic and social costs. In the United States, the annual cost of treating AUD (approximately \$249 billion and is the fifth leading risk factor for premature death and disability¹), managing compliance, and addressing withdrawal symptoms—including hyperalgesia (heightened pain sensitivity)—represents a substantial financial burden on healthcare systems, insurance providers, and individuals.

This white paper provides a detailed analysis of these costs and explores an innovative approach, **Pathways Neuro Pharma, Inc. (Pathways) AUD gene therapy platform targeting GPR139**, to treating AUD. With the potential to extend treatment efficacy beyond 15 months, Pathways' therapy may represent a breakthrough in improving compliance and reducing the need for frequent re-treatment.

The Annual Cost of Treating Alcohol Use Disorder (AUD)

Direct Costs of AUD Treatment

Treatment for AUD includes inpatient and outpatient programs, behavioral therapies, pharmacological treatments, and ongoing support to prevent relapse. Common treatments and their associated costs include:

Inpatient Treatment:

- **Average Cost:** \$6,000–\$50,000 for a 30-day program, depending on the facility.
- **Components:** Comprehensive care, including detox, counseling, and support services.

Outpatient Treatment:

- **Average Cost:** \$5,000–\$10,000 for a three-month program.
- **Components:** Typically includes individual or group therapy sessions, medical check-ins, and medication.

Pharmacotherapy:

- **Common Medications:** Disulfiram, naltrexone, acamprosate, and Vivitrol.

- **Annual Cost:** Ranges from \$300 to over \$20,000, depending on medication choice (e.g., Vivitrol injections at around \$1,700 per month).

Indirect Costs of AUD

Beyond treatment expenses, AUD leads to significant indirect costs due to lost in productivity, legal fees, and family impact, totaling in the hundreds of billions annually.

Compliance in AUD Treatment

Achieving compliance in AUD treatment is essential for long-term recovery. However, maintaining compliance can be challenging due to the nature of addiction, side effects from medications, and psychological factors.

Cost of Non-Compliance:

- **Hospital Readmissions:** Relapse and hospitalization can result from non-compliance, with readmission costs ranging from \$8,000 to \$12,000 per episode.
- **Lost Productivity:** Each relapse episode incurs additional indirect costs through its impact on employment and productivity.

Strategies to Improve Compliance:

- **Medication-Assisted Therapy (MAT):** Medications like naltrexone and acamprosate can aid in compliance.
- **Behavioral Interventions:** Therapy and support groups are key to helping patients adhere to treatment regimens.

Pathways' Gene Therapy Approach

Current treatments are often limited by low efficacy and high relapse rates. Pathways' innovative gene therapy platform targeting GPR139 offers a potential breakthrough in enhancing compliance. Using the AAV6.2FF vector, the therapy sustains gene expression for up to 15 months, reducing the frequency of re-treatment and associated compliance issues. By enhancing endogenous G protein activity, this platform may mitigate side effects, further supporting adherence.

Treatment of Alcohol Withdrawal

Alcohol withdrawal can lead to serious complications, including tremors, anxiety, nausea, and, in severe cases, delirium tremens (DTs). Around 500,000 episodes of severe alcohol withdrawal require pharmacologic treatment each year in the United States.

Treatment Costs:

- **Inpatient Treatment for Severe Cases:** Hospitalization, medications, and supportive care can cost from \$2,000 to \$10,000 for a week of treatment.

- **Outpatient Care:** Generally less costly but still involves expenses for medications and regular monitoring, totaling \$500–\$2,000 for a short-term regimen.

Medication Costs:

- **Common Medications:** Benzodiazepines, gabapentin, and carbamazepine.
- **Cost Range:** Benzodiazepines for short-term management may cost \$100–\$500, while gabapentin and carbamazepine, though less expensive, may require extended treatment.

Risks in Withdrawal Treatment

Benzodiazepines, commonly used to manage severe withdrawal, carry dependency risks, particularly with prolonged use. Other medications, like gabapentin and carbamazepine, present fewer dependency risks but may have side effects, such as dizziness and fatigue.

Hyperalgesia in Alcohol Withdrawal**Prevalence and Impact:**

Hyperalgesia, an increased sensitivity to pain, is a documented but understudied symptom during alcohol withdrawal. While exact prevalence rates are uncertain, hyperalgesia significantly impacts patients, exacerbating discomfort during the withdrawal process.

Cost of Treating Hyperalgesia:

Managing hyperalgesia involves medications, therapy, and regular monitoring:

Management Medications:

- **Common Medications:** Gabapentin, NSAIDs, or opioids (used cautiously due to addiction risk).
- **Cost:** NSAIDs and gabapentin may cost around \$100–\$300 annually, while opioid treatments are generally avoided due to dependency concerns.

Therapeutic Support:

- **Behavioral Interventions:** Cognitive-behavioral therapy (CBT) for pain management can cost between \$1,000–\$3,000 annually if ongoing.

Pathways' Gene Therapy Potential for Hyperalgesia

Pathways' AAV6.2FF gene therapy, targeting GPR139, may offer relief from hyperalgesia by modulating endogenous G protein pathways, potentially mitigating pain sensitivity with fewer side effects than traditional pain management drugs. Preliminary data suggest this approach could reduce the dependency risks associated with benzodiazepines and opioids.

Conclusion

Addressing AUD requires a multifaceted approach—combining early prevention, accessible treatment options, and supportive public health policies. The treatment of AUD, along with managing compliance, withdrawal, and hyperalgesia, presents a substantial economic burden. Pathways’ novel gene therapy, which targets GPR139 and employs an AAV6.2FF vector for extended efficacy, shows promise in addressing these challenges. By improving compliance, reducing side effects, and offering sustained therapeutic effects, this therapy has the potential to reduce the costs and improve the quality of care for AUD patients. Further research on this gene therapy platform and its impact on hyperalgesia will be essential to assess its full potential as a breakthrough in AUD treatment.

References

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About Pathways Neuro Pharma, Inc.

Pathways Neuro Pharma, Inc. is developing the first pharmaceutical treatments that target the pathways in the brain that regulate and control the root causes of alcoholism, substance abuse, depression, and associated neurological conditions. Pathways is led by Bradley Thompson, Chief Technology Officer (CTO), with over 43 years of experience in autoimmune disease, oncology, and infectious disease, and Anthony Mack, President and Chief Executive Officer (CEO), with 35 years of experience in the pharmaceutical and biotech industries as a C-level executive overseeing the successful development and licensure of several innovative drugs in pain and addiction.

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