
Professional Certificate in AI-Powered Addiction Recovery Coaching

Introduction to Artificial Intelligence in Addiction Recovery

Artificial Intelligence (AI) in Addiction Recovery is a rapidly evolving field that leverages advanced technology to enhance the effectiveness of addiction recovery coaching and interventions. To effectively navigate this complex and dynamic landscape, it is essential to have a solid understanding of key terms and vocabulary commonly used in the context of AI-powered addiction recovery coaching. This comprehensive guide aims to provide a detailed explanation of these key terms to help professionals in the field better comprehend and utilize AI tools and techniques in their practice.

- Artificial Intelligence (AI)**: AI refers to the simulation of human intelligence processes by machines, particularly computer systems. In addiction recovery, AI can be used to analyze data, identify patterns, and make predictions to support personalized treatment plans and interventions.
- Machine Learning (ML)**: ML is a subset of AI that enables machines to learn from data without being explicitly programmed. ML algorithms can analyze large datasets to uncover insights and make informed decisions in addiction recovery settings.
- Deep Learning**: Deep learning is a type of ML that involves neural networks with multiple layers to extract complex patterns from data. Deep learning algorithms are used in addiction recovery to process diverse types of information and generate actionable insights.
- Natural Language Processing (NLP)**: NLP is a branch of AI that focuses on the interaction between computers and humans using natural language. NLP can be utilized in addiction recovery coaching to analyze text data, extract sentiment, and facilitate communication between clients and coaches.
- Predictive Analytics**: Predictive analytics involves using statistical algorithms and machine learning techniques to predict future outcomes based on historical data. In addiction recovery, predictive analytics can help identify individuals at risk of relapse and tailor interventions accordingly.
- Reinforcement Learning**: Reinforcement learning is a type of ML where an agent learns to make decisions by interacting with an environment and receiving rewards or penalties. In addiction recovery, reinforcement learning can be used to optimize treatment strategies and reinforcement schedules.
- Data Mining**: Data mining is the process of discovering patterns and relationships in large datasets. In addiction recovery, data mining techniques can be employed to uncover hidden insights, such as risk factors for substance use disorders and effective intervention strategies.

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8. **Big Data**: Big data refers to large and complex datasets that cannot be easily processed using traditional data processing applications. In addiction recovery, big data analytics can help identify trends, correlations, and predictive patterns to inform evidence-based interventions.
 9. **Algorithm**: An algorithm is a set of instructions or rules followed by a computer to solve a problem or perform a task. In addiction recovery, algorithms are used to process data, make decisions, and optimize treatment plans based on individual needs and preferences.
 10. **Feature Engineering**: Feature engineering involves selecting, transforming, and extracting relevant features from raw data to improve the performance of ML models. In addiction recovery, feature engineering can help identify key variables that influence treatment outcomes and recovery trajectories.
 11. **Supervised Learning**: Supervised learning is a type of ML where the model is trained on labeled data to predict outcomes or classify inputs. In addiction recovery, supervised learning algorithms can be used to develop personalized treatment plans and predict relapse risk.
 12. **Unsupervised Learning**: Unsupervised learning is a type of ML where the model learns patterns and structures in data without labeled examples. In addiction recovery, unsupervised learning techniques can be applied to cluster individuals based on shared characteristics or behaviors.
 13. **Semi-Supervised Learning**: Semi-supervised learning combines aspects of supervised and unsupervised learning by training the model on a small amount of labeled data and a larger amount of unlabeled data. In addiction recovery, semi-supervised learning can help leverage limited labeled data to improve model performance.
 14. **Transfer Learning**: Transfer learning involves reusing pre-trained ML models on new tasks or domains with limited training data. In addiction recovery, transfer learning can accelerate model development and adaptation to new client populations or treatment settings.
 15. **Ethical Considerations**: Ethical considerations in AI-powered addiction recovery coaching involve ensuring the responsible use of technology to protect client privacy, autonomy, and well-being. Professionals must adhere to ethical guidelines and standards to maintain trust and integrity in their practice.
 16. **Bias and Fairness**: Bias and fairness in AI refer to the potential for algorithms to reflect and perpetuate existing prejudices or inequalities in data. In addiction recovery, addressing bias and ensuring fairness in AI models is essential to provide equitable and effective support to all individuals seeking treatment.
 17. **Interpretability**: Interpretability in AI refers to the ability to understand and explain the decisions and predictions made by ML models. In addiction recovery, interpretable AI models can help clinicians and

coaches gain insights into underlying factors influencing client outcomes and intervention effectiveness.

18. **Human-Machine Collaboration**: Human-machine collaboration involves combining the strengths of AI systems and human expertise to enhance decision-making and problem-solving in addiction recovery. By leveraging the complementary capabilities of humans and machines, professionals can optimize treatment strategies and outcomes.

19. **Personalization**: Personalization in addiction recovery coaching involves tailoring interventions and support services to meet the unique needs and preferences of each individual. AI-powered personalization algorithms can analyze client data and feedback to create personalized treatment plans and recommendations.

20. **Virtual Coaching Assistants**: Virtual coaching assistants are AI-powered tools that provide support, guidance, and feedback to individuals undergoing addiction recovery. These virtual assistants can offer personalized interventions, reminders, and resources to help clients stay motivated and engaged in their treatment journey.

21. **Behavioral Insights**: Behavioral insights in addiction recovery refer to the knowledge gained from analyzing behavioral data to understand patterns, triggers, and motivations underlying substance use disorders. AI algorithms can extract valuable insights from behavioral data to inform personalized interventions and relapse prevention strategies.

22. **Gamification**: Gamification involves incorporating game elements, such as rewards, challenges, and progress tracking, into addiction recovery interventions to increase engagement and motivation. AI-powered gamification tools can enhance client adherence to treatment plans and promote long-term behavior change.

23. **Chatbots**: Chatbots are AI-based conversational agents that simulate human interactions through text or voice interfaces. In addiction recovery coaching, chatbots can provide real-time support, guidance, and resources to individuals seeking help or coping with cravings, enhancing accessibility and continuity of care.

24. **Sentiment Analysis**: Sentiment analysis is a NLP technique that involves identifying and categorizing emotions expressed in text data. In addiction recovery, sentiment analysis can be used to assess client feedback, monitor emotional states, and tailor interventions to address specific needs and concerns.

25. **Natural Language Understanding (NLU)**: NLU is a branch of NLP that focuses on extracting meaning and context from human language. In addiction recovery coaching, NLU algorithms can interpret client messages, identify key themes, and provide relevant information or support based on individual needs.

26. **Decision Support Systems**: Decision support systems are AI tools that help clinicians and coaches

make informed decisions by analyzing data, generating insights, and recommending treatment options. In addiction recovery, decision support systems can streamline decision-making processes and improve treatment outcomes.

27. **Continuous Monitoring**: Continuous monitoring involves using AI tools to track and analyze client data in real-time to detect changes, patterns, or anomalies that may indicate relapse risk or treatment progress. By implementing continuous monitoring systems, professionals can intervene proactively and provide timely support to clients.

28. **Adaptive Interventions**: Adaptive interventions in addiction recovery involve adjusting treatment strategies and support services based on client feedback, progress, or changing needs. AI-powered adaptive interventions can personalize treatment plans, optimize outcomes, and enhance client engagement throughout the recovery process.

29. **Digital Phenotyping**: Digital phenotyping involves capturing and analyzing behavioral data from digital devices, such as smartphones or wearables, to monitor mental health and well-being. In addiction recovery, digital phenotyping can provide valuable insights into client behaviors, triggers, and relapse risk factors to inform tailored interventions.

30. **Blockchain Technology**: Blockchain technology is a decentralized and secure system for recording and verifying transactions or data. In addiction recovery, blockchain technology can be used to ensure the integrity and confidentiality of client information, facilitate secure communication, and enhance data transparency and accountability.

31. **Augmented Reality (AR)**: AR is a technology that superimposes digital information or virtual objects onto the real world through a device, such as a smartphone or headset. In addiction recovery, AR applications can create immersive experiences, simulations, or support tools to help individuals visualize and practice coping skills in realistic scenarios.

32. **Virtual Reality (VR)**: VR is a technology that creates a simulated environment or experience through a headset or immersive display. In addiction recovery, VR therapy can be used to expose individuals to triggering situations, practice coping strategies, and develop resilience in a controlled and supportive environment.

33. **Internet of Things (IoT)**: IoT refers to interconnected devices that collect and exchange data over the internet. In addiction recovery, IoT devices can monitor biometric data, track medication adherence, and provide real-time feedback to clinicians or coaches to support remote monitoring and management of client progress.

34. **Algorithmic Transparency**: Algorithmic transparency refers to the openness and accountability of AI systems in disclosing their decision-making processes and criteria. In addiction recovery, ensuring

algorithmic transparency is crucial to building trust, validating model accuracy, and promoting ethical and responsible use of AI tools in clinical practice.

35. **Precision Medicine**: Precision medicine involves tailoring medical treatments and interventions to individual characteristics, such as genetics, lifestyle, and preferences. In addiction recovery, precision medicine approaches can leverage AI technologies to identify personalized risk factors, treatment responses, and recovery trajectories to optimize outcomes for each client.

36. **Health Informatics**: Health informatics is the interdisciplinary field that focuses on the acquisition, storage, retrieval, and use of healthcare information to support clinical decision-making and improve patient outcomes. In addiction recovery, health informatics plays a critical role in leveraging AI technologies to analyze and interpret health data, inform treatment decisions, and enhance care delivery.

37. **Data Privacy and Security**: Data privacy and security involve protecting sensitive client information and ensuring compliance with regulations and best practices for data handling and storage. In addiction recovery, safeguarding data privacy and security is essential to maintain client trust, confidentiality, and ethical standards in using AI-powered tools and technologies.

38. **Telehealth and Telemedicine**: Telehealth and telemedicine involve delivering healthcare services remotely through technology, such as video conferencing, mobile apps, or virtual platforms. In addiction recovery, telehealth services can provide access to coaching, therapy, and support interventions from anywhere, enabling individuals to receive timely and convenient care.

39. **Knowledge Graphs**: Knowledge graphs are structured representations of knowledge that capture relationships and connections between entities in a domain. In addiction recovery, knowledge graphs can organize and link information about substances, treatments, providers, and outcomes to facilitate data integration, decision-making, and knowledge sharing among professionals.

40. **Robotic Process Automation (RPA)**: RPA involves automating repetitive tasks and processes using software robots or bots. In addiction recovery, RPA can streamline administrative workflows, data entry, and documentation tasks to enhance efficiency, reduce errors, and free up time for clinicians and coaches to focus on client care and support.

41. **Cognitive Computing**: Cognitive computing is a branch of AI that aims to simulate human thought processes, such as reasoning, learning, and problem-solving. In addiction recovery, cognitive computing technologies can analyze complex data, extract insights, and support decision-making to optimize treatment plans and interventions for better client outcomes.

42. **Neurofeedback**: Neurofeedback involves using EEG or other neuroimaging techniques to provide real-time feedback on brain activity and train individuals to regulate their brain patterns. In addiction recovery, neurofeedback can help clients manage cravings, improve emotional regulation, and enhance

cognitive control to support long-term sobriety and well-being.

43. **Biofeedback**: Biofeedback involves monitoring physiological signals, such as heart rate, skin conductance, or muscle tension, to help individuals learn to control their bodily responses. In addiction recovery, biofeedback techniques can be used to reduce stress, manage triggers, and develop self-regulation skills to support recovery and relapse prevention.

44. **Self-Tracking and Quantified Self**: Self-tracking and quantified self refer to the practice of monitoring and recording personal data, such as activities, behaviors, and health metrics, to gain insights and make informed decisions. In addiction recovery, self-tracking tools and apps can help individuals track triggers, cravings, and progress towards recovery goals to enhance self-awareness and accountability.

45. **Peer Support Networks**: Peer support networks involve connecting individuals with shared experiences or challenges to provide mutual support, encouragement, and understanding. In addiction recovery, peer support networks can offer valuable insights, empathy, and community engagement to enhance treatment adherence, motivation, and long-term recovery success.

46. **Resilience Building**: Resilience building involves developing coping strategies, skills, and resources to overcome adversity, stress, and challenges. In addiction recovery, resilience-building interventions can help individuals navigate triggers, setbacks, and relapse risks by fostering emotional regulation, problem-solving, and adaptive coping mechanisms to promote sustained recovery and well-being.

47. **Client Engagement and Retention**: Client engagement and retention strategies aim to enhance client participation, motivation, and commitment to treatment and support services. In addiction recovery, using AI-powered tools, such as personalized interventions, feedback, and reminders, can improve client engagement, adherence, and outcomes by tailoring support to individual needs and preferences.

48. **Behavior Change Techniques**: Behavior change techniques are evidence-based strategies and interventions used to modify behaviors, habits, and attitudes towards healthier choices and outcomes. In addiction recovery, incorporating behavior change techniques, such as goal-setting, self-monitoring, and reinforcement schedules, can support clients in adopting and maintaining positive changes for sustainable recovery.

49. **Relapse Prevention Strategies**: Relapse prevention strategies aim to identify and address triggers, risk factors, and warning signs of relapse to prevent setbacks and promote sustained recovery. In addiction recovery, AI-powered relapse prevention tools can analyze client data, predict relapse risk, and provide personalized interventions, coping skills, and support resources to empower clients in managing cravings and challenges effectively.

50. **Client-Centered Care**: Client-centered care emphasizes the importance of tailoring treatment plans, interventions, and support services to meet the unique needs, preferences, and goals of each individual. In

addiction recovery, adopting a client-centered approach involves engaging clients in shared decision-making, respecting autonomy, and collaborating to co-create personalized treatment strategies that empower clients to take an active role in their recovery journey.

51. **Digital Therapeutics**: Digital therapeutics are evidence-based interventions delivered through digital platforms, such as apps, wearables, or virtual programs, to prevent, manage, or treat medical conditions. In addiction recovery, digital therapeutics can provide accessible, scalable, and personalized support to individuals seeking help with substance use disorders, offering tailored interventions, feedback, and resources to facilitate recovery and well-being.

52. **Self-Management Tools**: Self-management tools are resources, apps, or platforms that empower individuals to take an active role in managing their health, well-being, and recovery. In addiction recovery, self-management tools can help clients track progress, set goals, access support resources, and build skills to cope with cravings, stress, and triggers, promoting autonomy, empowerment, and self-efficacy in sustaining recovery.

53. **Behavioral Economics**: Behavioral economics combines insights from psychology and economics to understand how individuals make decisions and choices influenced by cognitive biases, emotions, and social factors. In addiction recovery, applying behavioral economics principles can inform interventions, incentives, and nudges to promote healthier behaviors, encourage treatment adherence, and prevent relapse by addressing motivational, cognitive, and emotional factors that affect decision-making and behavior change.

54. **Digital Detox**: Digital detox refers to unplugging from electronic devices and online activities to reduce screen time, distractions, and information overload. In addiction recovery, digital detox strategies can help individuals manage stress, improve focus, and cultivate mindfulness to enhance self-care, mental well-being, and recovery outcomes by promoting balance, presence, and healthy lifestyle habits.

55. **Personal Resilience**: Personal resilience involves developing adaptive coping strategies, self-regulation skills, and emotional resources to bounce back from setbacks, challenges, and stressors. In addiction recovery, building personal resilience can help individuals navigate triggers, cravings, and relapse risks by fostering self-awareness, emotional regulation, and problem-solving abilities to promote long-term recovery, well-being, and quality of life.

56. **Peer Mentorship**: Peer mentorship involves pairing individuals with lived experience in recovery to provide guidance, support, and encouragement to others seeking help or navigating addiction challenges. In addiction recovery, peer mentorship programs can offer valuable insights, empathy, and motivation to empower individuals in their recovery journey by fostering connections, understanding, and shared experiences to promote healing, growth, and community support.

57. **Mindfulness Practices**: Mindfulness practices involve cultivating present-moment awareness, non-judgmental acceptance, and self-compassion through meditation, breathing exercises, or mindful activities.

In addiction recovery, incorporating mindfulness practices can help individuals cope with cravings, stress, and triggers by promoting self-regulation, emotional resilience, and inner peace to support sobriety, well-being, and holistic healing.

58. **Stress Management Strategies**: Stress management strategies aim to reduce, cope with, or prevent stressors that can trigger cravings, relapse, or negative coping behaviors. In addiction recovery, implementing stress management techniques, such as relaxation exercises, mindfulness practices, or cognitive-behavioral strategies, can help individuals build resilience, regulate emotions, and develop healthy coping skills to navigate challenges, promote recovery, and enhance overall well-being.

59. **Emotional Intelligence**: Emotional intelligence refers to the ability to recognize, understand, and manage one's own emotions and those of others effectively. In addiction recovery, developing emotional intelligence can help individuals navigate cravings, triggers, and interpersonal challenges by enhancing self-awareness, empathy, and emotional regulation skills to cultivate healthier relationships, coping strategies, and personal growth for sustained recovery and well-being.

60. **Cognitive Behavioral Therapy (CBT)**: CBT is an evidence-based psychotherapy approach that focuses on identifying and changing negative thought patterns, beliefs, and behaviors to promote healthier coping skills, emotional regulation, and well-being. In addiction recovery, CBT techniques can help individuals challenge cravings, triggers, and distorted thinking associated with substance use by building cognitive skills, coping strategies, and problem-solving abilities to support relapse prevention and recovery maintenance.

61. **Motivational Interviewing (MI)**: MI is a client-centered counseling approach that aims to explore and resolve ambivalence towards behavior change by eliciting intrinsic motivation, values, and goals. In addiction recovery, MI techniques can help individuals clarify their intentions, strengths, and barriers to change, enhancing readiness, commitment, and engagement in treatment and recovery by fostering autonomy, empowerment, and collaborative decision-making to support positive outcomes and sustained change.

62. **Positive Psychology**: Positive psychology focuses on promoting strengths, well-being, and positive emotions to enhance resilience, fulfillment, and quality of life. In addiction recovery, applying positive psychology principles can help individuals cultivate optimism, gratitude, and purpose to build self-esteem, coping skills, and social connections that support recovery, growth, and holistic well-being by fostering a strengths-based, solution-focused approach to treatment, self-care, and personal development.

63. **Trauma-Informed Care**: Trauma-informed care involves recognizing and addressing the impact of trauma on individuals' mental health, behaviors, and recovery needs. In addiction

Artificial Intelligence (AI) in Addiction Recovery has revolutionized the way we approach and manage substance use disorders. This course, Professional Certificate in AI-Powered Addiction Recovery Coaching,

aims to equip individuals with the necessary skills and knowledge to leverage AI tools and technologies in assisting individuals on their journey to recovery. To fully grasp the concepts and principles of AI in addiction recovery, it is crucial to understand key terms and vocabulary associated with this field.

1. **Artificial Intelligence (AI)**: AI refers to the simulation of human intelligence processes by machines, particularly computer systems. These processes include learning, reasoning, problem-solving, perception, and language understanding. In addiction recovery, AI can be used to analyze data, predict outcomes, and personalize treatment plans for individuals struggling with substance use disorders.
2. **Machine Learning (ML)**: Machine learning is a subset of AI that enables systems to learn and improve from experience without being explicitly programmed. ML algorithms can analyze data, identify patterns, and make decisions with minimal human intervention. In addiction recovery, ML can be used to predict relapse risk, recommend interventions, and tailor treatment approaches based on individual needs.
3. **Deep Learning**: Deep learning is a subset of ML that uses artificial neural networks to model and process complex patterns in large datasets. Deep learning algorithms can automatically learn representations of data and extract meaningful insights. In addiction recovery, deep learning can be used to analyze brain imaging data, detect early signs of relapse, and optimize treatment strategies.
4. **Natural Language Processing (NLP)**: NLP is a branch of AI that focuses on enabling computers to understand, interpret, and generate human language. NLP algorithms can analyze text data, extract relevant information, and generate responses in natural language. In addiction recovery, NLP can be used to analyze patient records, extract key insights from therapy sessions, and provide personalized feedback to individuals in recovery.
5. **Predictive Analytics**: Predictive analytics involves using statistical algorithms and machine learning techniques to analyze historical data and make predictions about future events. In addiction recovery, predictive analytics can be used to identify risk factors for relapse, forecast treatment outcomes, and allocate resources more effectively.
6. **Reinforcement Learning**: Reinforcement learning is a type of ML that involves training agents to make sequential decisions in an environment to maximize a reward. In addiction recovery, reinforcement learning can be used to develop personalized behavior change interventions, optimize treatment plans, and encourage positive habits and coping strategies.
7. **Data Mining**: Data mining is the process of discovering patterns and extracting knowledge from large datasets. Data mining techniques can uncover hidden insights, trends, and relationships in data that can be used to improve decision-making. In addiction recovery, data mining can be used to analyze treatment outcomes, identify subpopulations at higher risk of relapse, and tailor interventions accordingly.
8. **Virtual Reality (VR)**: VR is a technology that uses computer-generated simulations to create a realistic

sensory experience. In addiction recovery, VR can be used to expose individuals to triggering situations in a controlled environment, practice coping skills, and desensitize them to cravings and substance-related cues.

9. **Internet of Things (IoT)**: IoT refers to a network of interconnected devices that can collect and exchange data. In addiction recovery, IoT devices such as wearables, smart pill dispensers, and biometric sensors can be used to monitor individuals' behaviors, track medication adherence, and provide real-time feedback to clinicians.

10. **Chatbots**: Chatbots are AI-powered virtual assistants that can simulate conversations with users through text or speech. In addiction recovery, chatbots can provide 24/7 support, deliver psychoeducation materials, and engage individuals in self-reflection exercises to enhance motivation and adherence to treatment.

11. **Ethical Considerations**: Ethical considerations are essential when implementing AI in addiction recovery. It is crucial to ensure the privacy, security, and confidentiality of individuals' data, as well as to mitigate biases in algorithms and decision-making processes. Additionally, transparency, accountability, and informed consent should be prioritized to maintain trust and integrity in the use of AI technologies.

12. **Personalized Medicine**: Personalized medicine involves tailoring medical treatment to individual characteristics, such as genetics, lifestyle, and preferences. In addiction recovery, AI can enable personalized medicine by analyzing biomarkers, genetic data, and behavioral patterns to identify optimal treatment approaches for each individual.

13. **Behavioral Economics**: Behavioral economics combines principles from psychology and economics to understand how individuals make decisions and behave in real-world settings. In addiction recovery, behavioral economics can be used to design interventions that leverage cognitive biases, incentives, and nudges to promote healthy behaviors and prevent relapse.

14. **Gamification**: Gamification involves applying game design elements and principles to non-game contexts to engage and motivate individuals. In addiction recovery, gamification can be used to enhance treatment adherence, track progress, and reinforce positive behaviors through rewards, challenges, and social interactions.

15. **Telehealth**: Telehealth refers to the use of technology to deliver healthcare services remotely, such as through video conferencing, mobile apps, and wearable devices. In addiction recovery, telehealth can expand access to treatment, provide continuous monitoring and support, and improve engagement and retention in care.

16. **Digital Therapeutics**: Digital therapeutics are evidence-based interventions delivered through software programs or devices to prevent, manage, or treat medical conditions. In addiction recovery, digital therapeutics can offer cognitive-behavioral therapy, mindfulness exercises, and relapse prevention tools to

support individuals in their recovery journey.

17. **Blockchain Technology**: Blockchain technology is a decentralized and secure digital ledger that records transactions across multiple computers. In addition recovery, blockchain can be used to ensure the integrity and traceability of treatment data, protect individuals' privacy, and facilitate secure sharing of information among healthcare providers.

18. **Data Privacy**: Data privacy refers to the protection of individuals' personal information and healthcare data from unauthorized access, use, or disclosure. In addition recovery, data privacy regulations such as the Health Insurance Portability and Accountability Act (HIPAA) and the General Data Protection Regulation (GDPR) must be followed to safeguard individuals' confidentiality and rights.

19. **Bias and Fairness**: Bias and fairness are critical considerations when developing and deploying AI algorithms in addiction recovery. It is essential to address biases in data, algorithms, and decision-making processes to ensure equitable and ethical outcomes for all individuals, regardless of their background, demographics, or circumstances.

20. **Algorithmic Transparency**: Algorithmic transparency refers to the openness and accountability of AI systems in explaining their decisions and behaviors. In addiction recovery, it is important to ensure that AI algorithms are transparent, interpretable, and explainable to clinicians, individuals in recovery, and other stakeholders to build trust and confidence in their use.

In conclusion, mastering the key terms and vocabulary associated with AI in addiction recovery is essential for professionals seeking to leverage the power of technology to enhance treatment outcomes, support individuals in their recovery journey, and advance the field of addiction medicine. By understanding these concepts and principles, professionals can effectively navigate the complexities of AI-powered interventions, address ethical and practical challenges, and optimize the use of technology to improve the lives of individuals affected by substance use disorders.