

Appendix A:

Summary of Studies (listed in chronological order)

Study # & Title	Country	Research Design	Type & Length of Treatment(s)	Sample	Outcome Variables	Findings
#1: McDonnell et al. (2017). A randomized controlled trial of ethyl glucuronide-based contingency management for outpatients with co-occurring alcohol use disorders and serious mental illness.	USA	Experimental	Two experimental conditions: Prize-based CM vs non-contingent. Four-week observation followed by 12-week intervention period.	n=79 individuals diagnosed with alcohol use disorder (AUD) and co-occurring mental illness	Alcohol use (i.e., ethyl glucuronide (EtG) negative urine drug samples).	CM participants had statistically significantly higher odds of submitting an EtG-negative urine drug samples during the intervention, had lower EtG levels on average, reported significantly fewer days of drinking and/or drinking to intoxication compared to the control group. The differences held statistically significant at the three-month follow-up assessment for the self-reported outcomes but not for the objectively measured outcomes. Sixty-five percent of the CM and 74% of the non-contingent participants completed the 12-week intervention phase, with no statistically significant difference. McDonnell et al. (2017) expressed that to their knowledge this was the first randomized controlled trial “adequately powered” study for alcohol dependency utilizing EtG biomarkers and the second RCT with CM to assess benefits for outpatients with severe mental illness in the adult population (p. 375).
#2: Koffarnus et al. (2018). Remote alcohol monitoring to facilitate incentive-based treatment for alcohol use disorder: A randomized trial.	USA	Experimental	Two experimental conditions: Voucher-based CM vs non-contingent. Six-day monitoring phase followed by a 21-day intervention phase.	n=40 individuals diagnosed with AUD	Percentage of days abstinent from alcohol (i.e., self-reported measures, breathalyzer samples).	The CM group achieved 85% abstinent days compared to 38% in the non-contingent group, a difference that was statistically significant. Self-reported alcohol use results showed statistically significantly fewer drinks in the contingent group per day during the intervention and at one-month follow-up. Alcohol use disorder symptoms measured by the Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993) scores also decreased more in the CM group, with significant differences at the 1-month follow-up.

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#3: Orr et al. (2018). Pilot investigation: Randomized controlled analog trial for alcohol and tobacco smoking co-addiction using contingency management.	USA	Experimental	Four experimental conditions: Non-contingent (NC) for alcohol and tobacco vs CM for alcohol and NC for tobacco vs CM for tobacco and NC for alcohol vs CM for alcohol and tobacco. Four-week intervention.	n=34 individuals with AUD and tobacco use disorder	Alcohol and tobacco use (i.e., abstinence from alcohol and tobacco, urinary EtG and cotinine levels).	Participants receiving CM for alcohol submitted statistically significantly more alcohol- and tobacco-abstinent urine drug samples compared to those receiving NC for both substances. Similarly, the CM for tobacco group also submitted statistically significantly more abstinent urine drug samples for both substances compared to the NC group. Analysis of continuous measures showed that the CM for alcohol group submitted samples with statistically significantly lower EtG and cotinine levels compared to the NC group. The CM for tobacco group showed statistically significantly lower cotinine levels, but no significant difference in EtG levels compared with the NC group. The study suggested that CM can promote abstinence not only from the targeted substances but also from non-targeted substances.
#4: Hammond et al. (2021). Digital delivery of a contingency management intervention for substance use disorder: A feasibility study with DynamiCare Health.	USA	Experimental	Two experimental conditions: Treatment as usual (TAU) alone vs TAU combined with access to the DynamiCare app. Three-month intervention & one-month follow-up.	n=61 individuals with AUD	Drug and alcohol use (i.e., breathalyzer, saliva samples).	Alcohol and substance use were reported together and descriptively with no statistical tests. The rate of abstinence from alcohol and substances was 33% for the group that received CM and 16% for the TAU group. Forty-one percent of the CM group compared to 22% of TAU had at least two abstinences across the assessment points. Participants in the CM group had a higher number of days in SUD treatment on average (29.8 days) compared to TAU group (22.2 days) with no statistically significant difference. However, 24% of CM group stayed in treatment for at least 90 days compared to 3% of TAU participants and the difference was statistically significant. The duration of CM smartphone application use was not significantly correlated with the duration of SUD treatment.

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#5: Koffarnus et al. (2021). Remotely administered incentive-based treatment for alcohol use disorder with participant-funded incentives is effective but less accessible to low-income participants.	USA	Experimental	Two experimental conditions: Contingent vs non-contingent. Seven-day monitoring phase followed by 21-day treatment phase.	n=36 individuals with AUD	Alcohol use (i.e., self-reported measures, breathalyzer results).	The contingent group achieved statistically significantly higher abstinence rates (86% vs. 44%) and reported fewer drinks per day during the intervention phase compared to the noncontingent group. Self-reported alcohol use assessments (e.g., AUDIT scores) indicated a statistically significant reduction in drinking during and at the end of the intervention for the contingent group compared to the non-contingent group. However, the two groups did not have any statistically significant differences during the follow-up periods, likely due to missed assessment sessions by heavier drinkers. While the study demonstrated the effectiveness of remote CM in promoting abstinence, the \$75 participant-funded entry deposit posed a barrier for individuals with lower incomes or more severe alcohol use.
#6: McDonnell et al. (2021a). Effect of incentives for alcohol abstinence in partnership with 3 American Indian and Alaska Native communities: A randomized clinical trial.	USA	Experimental	Two treatment conditions: Culturally tailored CM vs non-contingent. 12-week intervention period.	n=158 American Indian and Alaska Native adults with AUD	Alcohol abstinence (i.e., EtG urine drug samples, self-reported alcohol use).	Participants in the CM group were significantly more likely to submit an alcohol-negative urine drug sample compared to the non-contingent group. It was estimated that participants in the CM group had a 65.6% probability of submitting an alcohol-negative urine drug sample compared to a 52.8% probability among control participants. Although participants in the CM group self-reported fewer days of alcohol use within the last 30 days (8.1) compared to the control group (5.9), the difference was not statistically significant. There was no statistically significant difference in drop-out rates between the study groups (53.8% in the CM group and 46.3% in the control group).

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#7: McDonell et al. (2021b). The rewarding recovery study: A randomized controlled trial of incentives for alcohol and drug abstinence with a rural American Indian community.	USA	Experimental	Four experimental conditions: Incentives for submission of urine drug samples only (control condition) vs CM incentives for alcohol abstinence vs CM incentives for drug abstinence vs CM incentives for abstinence from both alcohol and drugs. 12-week intervention period.	n=114 American Indian and Alaska Native (AI/AN) adults with AUD and other substance use disorders	Alcohol and drug abstinence (i.e., urine drug samples, self-reported alcohol and drug use), and attendance.	The odds of having alcohol abstinence were approximately three times higher for those in the CM for alcohol and CM for drug and alcohol abstinence groups compared to control participants. Participants in the CM for drug abstinence group had 1.6 times higher odds of being abstinent from alcohol, even though alcohol was not targeted as part of CM in this group. The CM groups did not differ from each other in alcohol abstinence. Self-reported alcohol use did not show a significant difference across the groups. CM groups, except for the CM for alcohol abstinence group, also were more likely to submit stimulant-negative urine drug samples than the control group.
#8: Campbell et al. (2023). Culturally tailored digital therapeutic for substance use disorders with urban Indigenous people in the United States: A randomized controlled study.	USA	Experimental	Two experimental conditions: TAU vs TAU plus Therapeutic Education System-Native Version (TAU+TES-NAV). 12-week intervention & three-month follow-up period.	n=53 AI/AN adults seeking outpatient treatment for SUD	Abstinence (i.e., the longest consecutive weeks of abstinence, abstinence in the last four weeks of treatment, post-treatment abstinence), retention, coping skills, social connection, and sexual/drug risk behaviors.	The two groups did not show a significant difference in the percentage of abstinent days from heavy drinking and drug use during the last four weeks of the intervention, but there was a significant difference at the follow-up assessment. Specifically, the TAU+TES-NAV group had a statistically significantly higher percentage of days abstinent from heavy drinking and drug use (69%) compared to TAU (49%) during the three-month follow-up. The results offered no breakdown by primary substance. There were comparable end-of-treatment retention rates across the two study conditions (50% for TAU and 52% for TAU+TES-NAV; the difference was not statistically significant). There was no significant change in total drug and sexual risk behaviour scores across or between the two treatment groups.
#9: Dougherty et al. (2023). Effectiveness of contingency management using	USA	Experimental	Two experimental conditions: CM vs yoked control condition.	n=216 individuals who were arrested for driving while intoxicated (DWI).	Absence of heavy drinking (i.e., transdermal alcohol concentration (TAC) monitoring).	Among non-mandated participants, those in the CM group maintained consistent contingency compliance across all eight visits, while control group participants showed a trend toward decreasing

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transdermal alcohol monitoring to reduce heavy drinking among driving while intoxicated (DWI) arrestees: A randomized controlled trial.			Eight-week intervention period.	Both mandated (court-ordered TAC monitoring) and non-mandated participants (study-provided TAC monitoring) were included in the study.		compliance over time, with no statistically significant differences in trends between the groups. However, statistically significantly more CM participants met the contingency criteria compared to controls (61% vs 37% by the final visit). There was no effect of CM for the mandated participants. Unlike the non-mandated group, mandated participants showed no significant benefit from CM treatment, either overall or at the final visit. The percentage of heavy drinking days was also compared across the groups. Non-mandated participants in the CM group drank heavily less often than their counterparts in the control group with a statistically significant difference (10% vs. 17%). The percentage of heavy drinking days remained stable for the non-mandated CM participants, whereas it increased for the controls. This difference in trends between the two groups was statistically significant. Heavy drinking outcomes for the mandated participants did not significantly differ from those in the control group. The researchers noted that CM treatment showed limited additional improvement among mandated participants, likely because most had already reduced their heavy drinking before the study began and maintained these lower levels throughout the study, leaving no room for improvement.

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#10: Novak et al. (2023). Abstinence-contingent wage supplements for adults experiencing homelessness and alcohol use disorder: A randomized clinical trial.	USA	Experimental	Two experimental conditions. Intervention condition (financial incentives contingent on alcohol abstinence) vs control condition (usual care with counseling and referrals). Six-month intervention period.	n=119 adults experiencing homelessness with AUD	Alcohol abstinence (i.e., alcohol use measured via transdermal alcohol concentration (TAC) devices, self-reported alcohol use), employment, and financial stability.	The intervention group demonstrated statistically significantly higher rates of alcohol abstinence (82.8% vs. 60.2% of months). The intervention group had three times higher odds of achieving abstinence than those in the control group. The findings suggest that abstinence-contingent wage supplements are an effective approach to promoting both alcohol abstinence and employment among a vulnerable population of adults experiencing homelessness with AUD.
#11: Jett et al. (2024). Feasibility of a telehealth-based contingency management intervention for alcohol use disorders using the phosphatidylethanol (PEth) 16:0/18:1 alcohol biomarker: A pilot randomized trial.	USA	Experimental	Two experimental conditions: CM vs yoked control. 26-week intervention period.	n=16 individuals with AUD	Alcohol abstinence (i.e., levels of blood-based biomarker phosphatidylethanol (PEth) collected via self-collected blood samples, heavy alcohol use, alcohol use measured via urine drug samples, and self-reported alcohol consumption).	Compared to the control group, CM participants had five times higher odds of submitting PEth samples indicative of alcohol abstinence, a difference that was statistically significant. CM participants demonstrated alcohol abstinence in 72% of study visits compared to 34% in the control group. CM group had longer periods of abstinence (12.3 weeks) than the control group (3.4 weeks), but the difference was not statistically significant. CM participants had lower odds of heavy drinking, higher odds of abstinence verified by urine drug samples, and fewer self-reported drinks per day on average compared to the control group. These differences were not statistically significant.