

DRUG & ALCOHOL FINDINGS *Review analysis*

This entry is our analysis of a review or synthesis of research findings considered particularly relevant to improving outcomes from drug or alcohol interventions in the UK. The original review was not published by Findings; click [Title](#) to order a copy. Free reprints may be available from the authors – click [prepared e-mail](#). [Links](#) to other documents. [Hover over](#) for notes. [Click to](#) highlight passage referred to. [Unfold extra text](#) . The Summary conveys the findings and views expressed in the review. Below is a commentary from Drug and Alcohol Findings.

Send email for updates

SEND [About updates](#)

▶ [Title and link for copying](#) ▶ [Comment/query to editor](#) ▶ [Tweet](#)

▶ [Prize-based contingency management for the treatment of substance abusers: a meta-analysis.](#)

Benishek L.A., Dugosh K.L., Kirby K.C. et al.
Addiction: 2014, 109(9), p. 1426–1436.

Unable to obtain a copy by clicking title? Try asking the author for a reprint by adapting this [prepared e-mail](#) or by writing to Dr Benishek at ibenishek@tresearch.org. You could also try this [alternative](#) source.



Systematically giving substance use patients a chance to win valuable prizes if they test abstinent offers a lower-cost alternative to 'contingency management' systems which provide rewards each time, but does it work? Across 18 studies the answer was 'Yes,' though effects soon faded.

SUMMARY 'Contingency management' is among the strategies for promoting abstinence from drug use with the most robust research support. These procedures entail regularly monitoring a patient's drug use (for example, through urinalysis) and delivering an incentive only after verification of abstinence. The theoretical basis is operant conditioning, developed to explain how actions which result in pleasant or otherwise 'reinforcing' experiences come to be repeated and dominate other behaviours. In the treatment of substance dependence, incentives compete with the reinforcing effects of the drug itself, increasing the likelihood that abstinence will be initiated and maintained.

Perhaps the best-known contingency management procedures for substance use reward verified abstinence with vouchers exchangeable for goods and services either every time, or instead offer a *chance* to win such 'prizes' when abstinence is verified. In the latter 'prize-based' systems, abstinence usually earns the patient an opportunity to draw from a prize bowl containing slips of paper signifying winnings of differing material value or of value to the patient, such as a more convenient prescribing regimen. Typically about half have no value and are labelled 'good job', and most of the rest (labelled 'small') indicate low-value prizes worth for example a US dollar. A few (labelled 'large') signify a prize of moderate value, worth for example \$20, and usually one 'jumbo' slip indicates a high-value prize. Prize-based and other systems typically increase voucher values or offer more draw opportunities with consecutive abstinence but revert to initial values if drug use is detected, a loss which the patient can reverse if they again demonstrate abstinence a predetermined number of times.

Key points
 From summary and commentary

Systematically giving substance use patients the chance to win prizes if they test abstinent offers a lower-cost alternative to other 'contingency management' systems which reward every eligible negative test.

The featured analysis amalgamated findings on these prize-based systems and found a substantial overall effect during the incentives period which had faded to around zero six months after incentives ended.

More sustained benefits have been found by integrating contingency management with 'talking' therapies, and larger effects have been found with higher value rewards.

Results from contingency management studies have previously been amalgamated using [meta-analytic](#) techniques, but the featured analysis was the first to concentrate exclusively on prize-based systems. Also, most previous analyses focused on outcomes at the end of the incentives period, while the featured analysis also examined outcomes at short-term (up to three months after contingency management ended) and longer term (six months after it ended) follow-ups.

For the featured analysis studies were sought which had been published between the year 2000 (when the first prize-based study with substance users was published) and February 2013, in which biological tests such as urinalysis had been used to confirm abstinence from illicit substance use (but not necessarily from alcohol), and in which patients had been randomly assigned to prize-based contingency management versus more conventional treatments, helping to eliminate factors which might cause differences in outcomes other than the difference in treatment regimens.

The 18 relevant studies (all but one from the USA) made 19 comparisons between prize-based contingency management and usual treatments. All assessed outcomes at the end of the incentives period (which in 15 of the 18 studies lasted 12 weeks) and nine and six respectively also assessed outcomes at short and longer term follow-ups. The method the featured study used to amalgamate their results did not assume there was one true magnitude of effect of contingency management which varied only by chance across the studies, but that impacts might really differ in different circumstances. Where possible, estimates of the magnitude of intervention effects were based on the assumption that a missing biological test for substance use would have been positive for the targeted substance.

Main findings

At the end of the incentives period all 19 comparisons yielded an advantage in abstinence rates for contingency management versus usual treatment, of which one was not statistically significant, six were small [effect sizes](#), 10 medium and two large. They combined to a highly statistically significant moderate effect size of 0.46, an effect very unlikely to have been due to chance and which was fairly consistent across the studies.

Two to three months after incentive periods had ended most of the nine available comparisons still favoured contingency management, though three were not statistically significant. Another two yielded small effects, three medium, and one large. All nine combined to a statistically significant small to medium [effect size](#) of 0.33 favouring contingency management, which again was fairly consistent across the studies.

Three or four months later – six months after incentives had been withdrawn – there were no statistically significant

Three or four months later – six months after incentives had been withdrawn – there were no statistically significant effects as assessed by urinalysis either in any individual study or across all six comparisons. In three of the comparisons non-significant differences favoured the usual treatments (group and/or individual counselling) against which contingency management was compared. The amalgamated impact was near zero, but slightly favoured usual treatments, a result which was fairly consistent across the studies.

Across all three time points the impression is of a waning impact of contingency management, from a medium effect at the end of treatment down to a small to medium (but still statistically significant) effect two to three months later, and falling six months after treatment to a statistically insignificant figure.

The authors' conclusions

Compared to treatment-as-usual, prize-based contingency management consistently and meaningfully bolstered abstinence while the prizes were available. The moderate **effect size** was consistent with those found in other **meta-analytic** amalgamations of findings on contingency management for substance use which were not limited to prize-based procedures.

It is unclear whether the impact of prize-based systems match that of voucher-based systems which reward all eligible instances of abstinence, a comparison **likely to be influenced** by the relative value of the rewards. An **analysis** of voucher-based systems found a larger end-of-treatment effect than in the featured analysis, seemingly due to the preponderance of high-value systems. It is fairly widely believed that prize-based contingency systems offer a less expensive alternative to conventional systems, but little attention has been given to the risk that this may be at the cost of diminished impact.

As with most treatments for problem substance use, effects waned after treatment ended, and none were apparent six months later. However, two to three months after incentives had ended they still exercised a small to medium effect on abstinence, showing that effects do not disappear as soon as contingencies are removed. As with other treatments, these results suggest that after initiating abstinence contingency management needs to be followed by aftercare or continuing care aimed at preventing relapse.

FINDINGS COMMENTARY Contingency management was one of only **two** psychosocial therapies **recommended** by the UK's National Institute for Health and Care Excellence (NICE) for the treatment of problems related to illicit drug use. Typically the promising results which persuaded the NICE committee were seen during the time rewards and sanctions were in place, often just the 12 weeks typical of the trials in the featured analysis. Many trials have not gone beyond that time to see if benefits persist, and those which have often discovered they rapidly lessen or disappear.

Nevertheless NICE's positive verdict **prompted** the English National Treatment Agency for Substance Misuse (now absorbed into **Public Health England**) to organise a demonstration programme to test the approach. Larger trials **are underway** to evaluate the feasibility, acceptability and clinical and cost-effectiveness of contingency management in NHS drug treatment services.

Prize-based procedures would **it was hoped** remain effective but cost less than systems which offer rewards each time, enabling more widespread and longer implementation – though as with conventional systems, the more patients are paid, the **greater** the impact. In the featured analysis there was an appreciable impact during treatment which was largely sustained up to three months later, but had disappeared six months after the last prizes were available.

The authors of the featured review presented post-treatment fading of effects as common to substance use treatment in general rather than a weakness of contingency management, but cognitive-behavioural approaches **have a better record** of sustained impact, most apparent within studies which featured follow-ups rather than across different studies. In contrast, in the featured analysis follow-up studies consistently found a substantial effect at the end of treatment which had become statistically insignificant six months later. In four of six studies the insignificant six-month effect had reversed in a negative direction, favouring the comparison treatments, though sometimes only marginally. Integrating (ie, not simply parallel provision) contingency management with cognitive-behavioural and other 'talking' therapies seems to offer the best prospect of a large and sustained positive impact, at least **in respect** of cannabis use.

Short-term benefits must be set alongside **ethical concerns**, including the possible aggravation of health inequality if only already relatively **advantaged patients** gain prizes and benefit from any therapeutic effects, professional and public resistance to rewarding what most people do for nothing (ie, not illegally use drugs), and some evidence that intrinsic motivation will be undermined if patients see themselves as 'just doing it for the prizes'. What seems a simple matter of rewarding the 'right' and punishing the 'wrong' **is far from simple** when it comes to human beings engaged in meaning-laden social (including treatment) interactions. The hoped-for impact of these programmes can be confounded if patients see them as disempowering impositions or a chance to milk the system, but the same programmes can be integrated into a wider context which transforms their meaning into a recognition of achievement otherwise rare in these patients' interactions with mainstream social institutions.

One possibly relevant variable not considered by the featured analysis is the frequency of testing for drugs. A **synthesis** of contingency management findings on patients in methadone maintenance found diminished impacts in studies where urine tests had been conducted less than three times a week, affording patients a greater chance to 'cheat' the system.

An Effectiveness Bank **hot topic** has further discussed the issues and evidence relating to contingency management.

Thanks for their comments on this entry in draft to review author Lois Benishek of the Treatment Research Institute in Philadelphia in the USA. Commentators bear no responsibility for the text including the interpretations and any remaining errors.

Last revised 21 April 2016. First uploaded 21 April 2016

- ▶ [Comment/query to editor](#)
- ▶ [Give us your feedback on the site \(two-minute survey\)](#)
- ▶ [Open Effectiveness Bank home page](#)
- ▶ [Add your name to the mailing list](#) to be alerted to new studies and other site updates

Top 10 most closely related documents on this site. For more try a **subject or free text search**

HOT TOPIC 2016 [Should we offer prizes for not using drugs?](#)

DOCUMENT 2013 [Rewarding virtue](#)

REVIEW 2015 [Psychological and psychosocial interventions for cannabis cessation in adults: a systematic review short report](#)

REVIEW 2009 [Efficacy of opiate maintenance therapy and adjunctive interventions for opioid dependence with comorbid cocaine use disorders: a systematic review and meta-analysis of controlled clinical trials](#)

STUDY 2010 [Randomized trial of continuing care enhancements for cocaine-dependent patients following initial engagement](#)

STUDY 2010 [Randomized trial of continuing care enhancements for cocaine-dependent patients following initial engagement](#)
REVIEW 2009 [Cognitive-behavioral treatment with adult alcohol and illicit drug users: a meta-analysis of randomized controlled trials](#)
REVIEW 2011 [Psychosocial and pharmacological treatments versus pharmacological treatments for opioid detoxification](#)
REVIEW 2012 [Meta-analyses of seven of the National Institute on Drug Abuse's principles of drug addiction treatment](#)
ABSTRACT 2008 [Coping skills training and contingency management treatments for marijuana dependence: exploring mechanisms of behavior change](#)
STUDY 2008 [Toward cost-effective initial care for substance-abusing homeless](#)