Contingency management for behavior change: applications to promote brief smoking cessation among opioid-maintained patients.

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Transfer of responsibility for monitoring and promoting addiction treatment to Public Health England seems likely to encourage broader health promotion among treatment services, placing smoking cessation higher up the agenda. The US studies reported in this article have paved the way, showing that at least initial non-smoking can be achieved via incentives.

Summary Problem substance users have been found more likely to die from smoking-related illness than illness related to drug and alcohol abuse. Smoking is particularly common among opioid-dependent patients maintained on substitute drugs such as methadone. Surveys have found that about 70%–80% of these patients are interested in being helped to stop smoking, yet relatively few manage to do so, perhaps partly because opiate-type drugs augment the reinforcing effects of cigarettes.

The featured article briefly reviews the literature on smoking cessation among opioid maintenance patients and discusses barriers to promoting cessation among these patients, before describing the results of the authors' own research aiming to develop a successful smoking intervention for this challenging population.

Barriers to successful smoking cessation among opioid-maintained patients include the fact that commonly clinics do not emphasise this issue and few offer smoking-cessation resources to patients. Studies have found that 30–40% of opioid-maintained patients say counsellors have encouraged them to delay quitting smoking while in treatment and 4% had been encouraged never to attempt to quit. One concern commonly cited by clinic staff is that smoking cessation will prompt relapse to illicit drug use. However, research has not substantiated this fear.

Smoking cessation efforts among opioid-maintained patients have yielded low to moderate abstinence rates. Efforts have included pharmacotherapies such as nicotine patches and bupropion and behaviourally-based interventions, among which contingency management has produced the greatest rates of abstinence. These programmes offer patients monetary incentives (often in the form of vouchers) contingent on their providing objective evidence (such as biochemically confirmed abstinence) of the desired changes in behaviour.

Although evaluation findings have provided some support for contingency management, abstinence rates are still low, suggesting that opioid-maintained patients may require more intensive intervention. In these studies smoking was tested two or three times a week. However, opioid-maintained patients often come to the treatment clinic daily or near-daily, so can be monitored more often. Initial intensive monitoring of abstinence during a quit attempt is important due to the high rate of relapse. It also provides an opportunity to more frequently reinforce non-smoking. Secondly, the studies generally assumed that a carbon monoxide breathalyser reading of no more than 8 ppm meant the patient had not been smoking and could qualify for the programme's rewards. However, this cut-off may miss low-level or intermittent smoking. Given that early and sustained abstinence is associated with long-term abstinence, these details may determine the longer-term success of the intervention.

Main findings

The authors of the featured study have tested programmes which rectify these possible deficiencies through a series of randomised trials of contingency management aiming to promote abstinence from smoking among maintained opioid-dependent patients for at least two weeks – a duration chosen on the basis of research showing that abstinence over this period tends to be sustained. As in previous trials, patients could earn vouchers for not smoking as confirmed by biochemical tests, but these were conducted daily, stricter cut-off points were used, and tests consisted not just of breath tests, but also urinalysis for cotinine, detectable several days after smoking. This combination means that even low-level smoking is detected. Also participants could earn much higher value voucher incentives for non-smoking than in previous studies.

The result it seems was that a relatively high proportion of the tests showed that the patients had stopped smoking. In the largest trial to date, contingency management patients tested smoking-free on 55% of occasions compared to 17% among patients who also received vouchers, but not tied to their test results. Contingency management patients were also on average abstinent for 7.7 days in a row compared to 2.4 days for non-contingent patients. Among the patients who took up this option, taking bupropion did help somewhat, but not to a statistically significant degree.

In these new studies there was no evidence that smoking cessation promoted relapse to illicit drug use, even though in the largest trial half the patients said a drug counsellor had advised them to delay quitting smoking.

Though an improvement on previous results, several challenges remain. In these studies there were marked differences between individuals in response to the interventions, some achieving either near-complete smoking abstinence, others at best moderate levels of abstinence. The results also confirmed that bupropion (as with other smoking-cessation pharmacotherapies) is relatively ineffective in promoting abstinence among opioid-maintained patients compared to smokers in general. Although these studies successfully promoted initial smoking cessation, many patients then relapsed, possibly due to the brevity of the intervention and the removal of the contingencies. The next step is to identify whether this initial smoking abstinence can be maintained over a longer period using a longer-lasting contingency programme.

The authors' conclusions

In summary, cigarette smoking is three times as common among opioid treatment patients as among the general population and is associated with increased morbidity and mortality. The few attempts to promote smoking abstinence in this population have had limited success. However, improved contingency management programmes have been shown to promote initial smoking abstinence. Research is needed to identify ways to sustain these gains.

FINDINGS Transfer of responsibility for monitoring and promoting addiction treatment in England to Public Health England seems likely to encourage a broader health promotion agenda among treatment services, paying attention not just to the threats to health faced by their patients due to the substance use for which they are seeking treatment, but also wider determinants of morbidity and early death. As part of that agenda, smoking cessation – one of the agency's priorities – could play a much larger role than to date.

Return to substance use once the rewards have been withdrawn is a common feature of contingency management programmes. In the major trial cited by the featured study, three months later just 5% of the patients formerly rewarded for not smoking were still not smoking, not a statistically significant gain over the 0% among patients whose vouchers were not tied to test results. At one and two months the gap had been 10% v. 0%, larger but still not statistically significant. The two-week contingency period was chosen because in methadone patients among others, it has been strongly associated with more prolonged non-smoking. However, in the featured study, and though all the patients were interested in stopping smoking, fostering initial abstinence through incentives had little lasting impact. These findings are consistent with non-smoking during the first two weeks being mainly to gain the rewards. This external impetus did not it seems appreciably alter the lasting motivational balance of the patients.

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