

# Commitment contracts as a way to health

Commitment contracts, whereby people deposit money that they receive back only if they succeed, have substantial conceptual appeal as a method of changing health behaviour.

**Scott Halpern, David Asch, and Kevin Volpp** examine the evidence behind them and find many unanswered questions

Much illness stems from poor health behaviours. But changing behaviours is difficult, particularly when immediate desires must be sacrificed to achieve future benefits,<sup>1</sup> as when people try to quit smoking, eat less, or exercise more. To overcome these challenges, corporate ventures such as [www.stickk.com](http://www.stickk.com) and [www.healthywage.com](http://www.healthywage.com) are banking, quite literally, on commitment contracts, offering the millions of people who struggle to lose weight or take their medicines more regularly the opportunity to deposit money that they will receive back only if they succeed. Grounded in behavioural economic theory,<sup>2</sup> commitment contracts bring a risk of loss into the present, where the temptations also lie, and augment motivation to succeed. They potentially offer an efficient mechanism of behaviour change because people generally are more motivated to avoid losses than they are to achieve similarly sized gains.<sup>3</sup>

Although new to health promotion, the idea of making voluntary commitments that restrict future options has a rich history. Cortes scuttled his ships to overthrow the Aztec empire. Odysseus lashed himself to his ship's mast so he could hear the song of the Sirens but not be tempted to throw himself overboard. And for more than a century, people have saved money in Christmas club accounts that provide little or no interest and charge fees to prevent early withdrawals, despite the widespread availability of penalty-free savings accounts with higher interest rates. Indeed, recent evidence shows that some people use commitment contracts to help them save money,<sup>4</sup> complete homework assignments on time,<sup>5</sup> and limit their consumption of what they see as vices.<sup>6</sup>

Imposing restrictions on ourselves to overcome expected future temptations may seem irrational. But succumbing to the temptations all around us to engage in unhealthy behaviours is at least as irrational. Commitment contracts aim to redirect the irrationality that typically makes us fail to create situations where we are more likely to succeed. How well commitment contracts can achieve this aim, however, depends on five important criteria: efficacy, acceptability, effectiveness, cost effectiveness, and targeting.

## Efficacy

The first question is how effective are commitment contracts at promoting healthier behaviours in participants? More specifically, what proportion of people who establish contracts actually achieve their goals, and how does the efficacy of contracts compare with that of other methods for promoting the same behaviours?



Answers to these questions are just beginning to emerge, particularly in the context of weight loss.<sup>7, 8</sup> For example, a recent randomised controlled trial showed that roughly half of obese people participating in a 16 week commitment contract programme achieved their weight loss goal of 0.45 kg (1lb) a week, whereas only 10% of people receiving usual care did so.<sup>8</sup> Similar findings emerged in a follow-up randomised trial of 32 week commitment contracts.<sup>9</sup> However, in both of these trials, the early improvements in weight loss waned after the contracts ended, such that the benefits were no longer evident months later.<sup>8, 9</sup>

In one sense, we should not be surprised. We do not expect drugs or other treatments to remain effective after they are no longer in use, and we should not hold commitment contracts to a higher standard. Instead, we should pursue future experiments designed to evaluate ways to promote the long term efficacy of commitment contracts, compare commitment contracts with non-incentive based interventions, determine what deposit amounts, frequency, timing, and duration are required to promote success (as in trials of new drugs), and assess whether recovery of deposits should be predicated on behaviours (such as participation in smoking cessation programmes) or on health outcomes (such as quitting smoking).

Another influential factor is likely to be what happens to deposited money in the event of failure; we might expect greater success if lost deposits were to go to causes or people one dislikes rather than a favourite charity. Or, as we are testing in a randomised trial of incentive programmes for smoking cessation, we might expect particularly high success rates if people's forfeited money gets redistributed to competitors who succeed.<sup>10</sup> Finally, for behaviours like reduced energy consumption that need to be sustained over time, provision of incremental matching funds or other extra incentives may be needed to keep people engaged.

**Acceptability**

A second factor for success is the acceptability of commitment contracts among people with unhealthy behaviours. What proportion will sign up for such contracts, and how can



**How well do commitment contracts compare with other methods for promoting the same behaviours?**

acceptability be augmented? One study has confirmed an intuition that the more people are asked to deposit, the less likely they are to participate.<sup>7</sup> But we know little about how acceptance rates may vary in other settings. For example, in January 2012 www.stickk.com advertised that more than 130 000 contracts had been created through its website committing people to a broad range of behaviours. But these numbers say nothing about how many more people considered and rejected such contracts, or what characteristics of contracts make them acceptable.

As well as being affected by factors that also influence efficacy, acceptability may be affected by whether patients can choose the amount to be deposited, whether contracts are offered during times when we tend to be future oriented (for example, at New Year or after learning of a new diagnosis), and by whether or in what amounts matching funds are offered. For example, we are comparing the proportions of obese people receiving healthcare coverage through a large American insurer who will sign up for commitment contracts to lose weight that provide no match of deposited funds, a 1:1 match, or a 2:1 match. The hypothesis is that the greater the degree to which employers or insurers match the amounts deposited by individuals, the greater will be the initial uptake and the effectiveness of any given deposit.

**Population effectiveness**

Population effectiveness represents the product of uptake and efficacy (individual effectiveness conditional on uptake). To be effective (and efficient), contracts must be designed so that they do not simply attract highly motivated people who might change their behaviour on their own anyway; nor should they attract those who are unlikely to change their behaviour with them. The absolute and comparative effectiveness of commitment contracts are likely to influence employers', insurers', policy makers', or others' decisions to offer contracts. However, examining the individual components of acceptance and efficacy can help to build better programmes.

Consider two hypothetical commitment contracts for smoking cessation, both of which have expected values to participants of \$400 (£260; €310) (table). Programme A, a \$200 deposit matched 1:1 by an employer, is accepted by 20% of people to whom it is offered, and 50% of those who accept it stop smoking. Programme B is a \$50 deposit matched 7:1 by an employer. Because the deposit required by employees is much lower and the matching is much greater, we might expect this programme to have much greater acceptance (say 70%), but perhaps lesser efficacy (say 40%) because the larger deposits in programme A provide stronger motivation among those who accept. Although programme A has a higher efficacy (50% v 40%), programme B recruited more people and was therefore more effective in terms of numbers quitting (280 v 100 for programme A).

**Cost effectiveness**

The fourth consideration is the cost effectiveness of commitment contracts. How does this compare with that of other approaches to

Programme*	Participants	No (%) accepting	No (%) quitting (efficacy)	Effectiveness	Collections/ payments (\$)	Cost/success (\$)
A (\$200 deposit, matched 1:1)	1000	200 (20)	100 (50)	100/1000 (10%)	40 000/40 000	0
B (\$50 deposit, matched 7:1)	1000	700 (70)	280 (40)	280/1000 (28%)	35 000/112 000	275†

\*Both programmes have an expected value of \$400.  
†Incremental cost effectiveness= \$427.78 per additional success that would not have been obtained under programme A.

behaviour change? And how sensitive are such estimates to the matching funds that may be needed to promote adequate acceptance and ongoing engagement? The commitment contracts offered presently through private firms that are surviving in the marketplace appear to be at least self supporting because they do not offer matching funds. Clearly, such programmes can be useful to individuals even if they have very low participation rates. But if insurers or employers wish to offer contracts to help sizeable proportions of their populations, their incremental cost effectiveness in changing behaviour is going to be central. Matching funds may be needed to increase acceptance rates and help sustain longer term behaviour change. As the table shows, the ratio of matching can be an important determinant of absolute and incremental cost effectiveness. However, because disbursements are contingent on success, even relatively high matching funds may be more cost effective than interventions (such as drugs) that are financed for all who use them regardless of outcomes.

### Target population

Finally, we need to know for whom commitment contracts are most likely to be acceptable, efficacious, effective, and cost effective. In other words, what characteristics of people make them particularly likely to take up a contract and use it to achieve behaviour change, and how might consumer detailing be used to augment contracts' effectiveness and cost effectiveness? We might expect that people most willing to accept commitment contracts are those who recognise their difficulties with resisting temptations and who are motivated to change this. People for whom commitment contracts have the greatest incremental efficacy may be those with particularly high levels of impulsivity.<sup>2</sup> However, getting such people to accept the contracts may be a particular challenge. If we can identify people in whom commitment contracts are more effective, programmes could be targeted at these groups. Such data might also suggest ways to broaden the acceptability and efficacy of commitment contracts, perhaps through interventions that help people link present behaviours to future consequences.<sup>11</sup>

### Future potential

In summary, there is great conceptual strength to the idea that commitment contracts can provide a way to health for the millions of people struggling to modify health behaviours that they themselves recognise as harmful. However, before they are implemented we need a careful assessment of key design features. This

is a nascent science in need of further experimentation. Only through careful investigation will we be able to determine whether commitment contracts measure up to their considerable promise.

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## BMJ.COM BLOG

### Bye bye A&E, hello SFS



Reality is created by the language we use. Language creates reality rather than describing it; that is the consistent message from Ludwig Wittgenstein, Benjamin Lee Whorf, and John R Searle. If we want to change reality one way is to change the language used, and for this reason we ban, or try to ban, the use of the terms primary, secondary, acute, and community in the workshops we run, like the workshop with great participants from West Berkshire that was held on 2 February.

What emerged at that workshop was the need to change the mindset about A&E, and the new term that emerged was SFS—the system failure service. The term “accident” implies chance, fate, or luck. The word “emergency” implies an unplanned uncontrollable event, but the workshop decided to consider them system failures and to assume that good systems should make A&E “redundant.” Obviously they won't, but the shift in mindset would be of great importance in identifying system failures and reducing As and Es.

The iconic Taiichi Ohno introduced the practice of the “five whys” to Toyota; ask why five times when any problem occurs. Try it when a frail elderly person has been brought in from a nursing home in a blue light ambulance, or when a young person has been rushed in with stab wounds. What systems have failed?

I asked it myself when I had my STEMI and got as far as the answer that I had given up taking the polypill because of the nuisance of cutting two of the constituent pills in half. Would it have prevented my trip to, and excellent care in, A&E? Who knows, but a system failure had been identified and in my next life I will stick with the regime!

So, goodbye A&E, hello SFS, to pick up a theme from a previous blog.

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