Best Evidence Summaries of Topics in Mental Healthcare

BEST *in* MH *clinical question-answering service*

Question

"In adults of a working age, how effective are financial or voucher incentives compared to any other intervention / treatment as usual in managing obesity or promoting healthy weight management?"

Clarification of question using PICO structure

Patients:	Adults of a working age
Intervention:	Financial / voucher incentives
Comparator:	Any other intervention / treatment as usual
Outcome:	Managing obesity / promoting healthy weight management

Clinical and research implications

No definite clinical implications can be made from the available evidence. There was consensus that more research is needed to compare different types of financial incentives using well-designed, long-term, controlled trials. In addition, components of motivation need to be measured to determine how motivation shapes one's reaction to incentives and how motives and incentives interact. Future studies should also compare the effects of incentives across socioeconomic groups. Lastly, the authors of one systematic review stated that there is an indication that group weight loss goals and incentives may be more effective than individual weight loss goals and incentives, and more research is needed in this area. One systematic review author recommended that financial incentives should not be used as a therapy in itself, but as an adjuvant to treatment.

What does the evidence say?

Number of included studies/reviews (number of participants)
Two systematic reviews (SRs) (Burns 2012; Paul-Ebhohimhen 2008) met the inclusion criteria for this BEST summary. There was some overlap of included studies between these SRs.

Main Findings
One recent systematic review identified 27 randomised controlled trials (RCTs) that evaluated the efficacy of material incentives for promoting weight loss and obesity-related lifestyle behaviours, such as physical activity (Burns 2012). Due to differences in interventions (i.e. size, timing, mode), and populations evaluated, the results were described as a narrative synthesis. The SR authors stated that the evidence regarding the efficacy of cash rewards was mixed, however, cash rewards were more effective than no treatment, insight psychotherapy, and learning self-control principles. Studies that evaluated lotteries and gifts did not demonstrate effectiveness. Evidence of the efficacy of deposit contracts was conflicting, with some studies finding contracts for individual weight loss to be relatively more effective in producing weight loss than various comparison conditions, and others finding no effect. Finally, combinations of deposit contracts, cash rewards, and lotteries contingent on weight loss were shown to be more effective than no-incentive control groups in producing weight loss during treatment, but not during follow-up.

Another earlier systematic review focused on the use of only guaranteed incentive schemes (Paul-Ebhohimhen 2008). They reported that the use of financial incentives was associated with a non-significant WMD weight change at 12 months: -0.4 kg (95% CI -1.6 to 0.8 kg), at 18 months: -0.7 kg (95% CI -2.5 to 1.1 kg) and at 30 months: 1.1 kg (95% CI -1.3 to 3.4 kg), compared with groups where financial incentives were not used in treatment (based on 7 studies).

Authors Conclusions
The SR by Burns (2012) concluded that material incentive for weight loss is a promising avenue of research, but that the heterogeneous methods used in the literature make it difficult to draw generalised conclusions.

The SR by Paul-Ebhohimhen (2008) reported that meta-analysis showed no significant effect of use of financial incentives on weight loss or maintenance at 12 months and 18 months.

Reliability of conclusions/Strength of evidence
The SR by Burns (2012) was well conducted, with the exception that the authors did not report on the quality of the studies included in the review, so that the reliability of the evidence presented is uncertain. Nevertheless, the authors presented appropriately cautious conclusions. The SR by Paul-Ebhohimhen (2008) also appears to be a well-conducted SR, and although no statistical heterogeneity was found between the trials in the meta-analyses, the forest plots in the paper appear to show some variability between the studies.

What do guidelines say?

Searches did not find any relevant UK guidelines that discuss using financial or voucher incentives in relation to weight management.

Date question received: 03/06/2013
Date searches conducted: 24/05/2013 (Searches from a previous BEST summary were used)
Date answer completed: 14/06/2013

References

1. Burns R, Donovan A, Ackermann R, Finch E, Rothman A, Jeffery R. A Theoretically Grounded Systematic Review of Material Incentives for Weight Loss: Implications for Interventions. ann. behav. med. (2012) 44:375–388.

2. Paul-Ebhohimhen V, Avenell A. Systematic review of the use of financial incentives in treatments for obesity and overweight. obesity reviews (2008) 9, 355–367.

Results

Systematic Reviews

*** Because a recent systematic review was found that addresses the topic in question, a search for primary studies did not take place. A relevant systematic review (Wall J, Mhurchu C, Blakely T, Rodgers A, Wilton J. Effectiveness of Monetary Incentives in Modifying Dietary Behavior: A Review of Randomized, Controlled Trials. 2006 Nutrition Reviews, Vol. 64, No. 12) was also excluded as post-dated by the included reviews.**

Author (year)	Search Date	Inclusion criteria	Number of included studies	Summary of results	Risk of bias
Burns 2012	2011	*Study design* – English language, randomised controlled trials, focussing primarily upon weight control. *Population* – 18 and over. *Intervention* – material incentive contingent upon outcome or behaviour, provided directly to the participant for achieving a particular weight or performing a weight related behaviour. *Comparison* – any independent condition / group. *Outcome* – Outcomes included achieving a particular weight, performing a weight related behaviour, tracking changes in weight, attendance at, and participation in weight-related educational programmes, exercise and healthy diet behaviours.	N = 27	**Positive Reinforcement, Fixed-Ratio Schedule** Two types of positive reinforcement with fixed ratio scheduling procedures were identified across six studies: cash rewards (5 studies) and non-cash rewards (i.e. coupons for fresh produce; 1 study). The SR authors stated that the evidence regarding the efficacy of cash rewards was mixed, however, cash rewards were more effective than no treatment, insight psychotherapy, and learning self-control principles. In addition, the SR authors stated that cash rewards appeared to affect only the contingent behaviour given that offering incentives for attendance at supervised walking sessions improved attendance, but did not affect weight loss. Reinforcing attendance at education sessions for low income women with coupons for fresh produce did not improve attendance or	High (no quality assessment)

				weight loss relative to a no incentive control group. **Positive Reinforcement, Variable-Ratio Schedule** Two studies used lotteries and a single study used gifts. The SR authors reported that earning entry into a lottery for returning a survey postcard reporting weight and engagement in weight-relevant behaviours, such as walking, eating fruits and vegetables, and self-weighing, did not increase postcard returns and did not affect weight trajectories. Similarly, offering entries into a lottery for attendance at walking sessions did not produce greater attendance or weight loss than not offering the incentive. There was no difference in attendance at workplace weight-loss education sessions between employees who were offered gifts (e.g., t-shirts and mugs) compared to control conditions, although employees at workplaces offering incentives were more likely to express interest in signing up for future iterations of the programme. **Negative Reinforcement, Fixed-Ratio Schedule** Eleven studies evaluated deposit contracts two studies evaluated and payroll deductions. In deposit contracts, money deposited by the participants at the outset of the intervention is incrementally refunded	

				as specified goals or criteria are met. The SR authors stated that evidence regarding the efficacy of deposit contracts was conflicting, with some studies finding contracts for individual weight loss to be relatively more effective in producing weight loss than various comparison conditions, and others finding no effect. The magnitude of the deposit may be influential, given that a particularly large deposit was more efficacious than a no-incentive control and that larger deposits are associated with greater weight loss during treatment than smaller deposits. One study suggested that group-based deposit contracts in which refunds are contingent on the average weight loss of a group of people, rather than individual weight loss, were particularly effective in producing weight loss. Reimbursements that increase in size as greater progress is made were more efficacious in producing weight loss than reimbursements that remained constant. Neither study on payroll deductions reported on absolute effectiveness. **Combinations** Combinations of deposit contracts, cash rewards, and lotteries contingent on weight loss have been shown to be more effective than no-incentive control groups in producing weight loss during treatment, but not during follow-up.	

Paul-Ebhohimhen (2008)	Not specified (though likely to be late 2006 / early 2007)	*Study design* – Randomised controlled trials, with a minimum follow up of 1 year. *Population* – were 18 years and over, and were required to have a body mass index of equal to or greater than 28Kg m^{-2} *Intervention* – Obesity treatments using financial incentives. *Comparison* – Any treatment *Outcome* – Weight change	N=9	In two studies, the financial incentives were freely supplied. All other studies used financial incentives provided from participants' deposited money. Refunds were made for weight loss or compliance with behaviour change or attendance at sessions. Some studies compared refund for weight change with refund for compliance with behaviour change. All included studies were coordinated by psychologists, and intervention groups received behavioural, diet and exercise advice. Some groups had other motivators such as provision of food and provision of personal exercise trainers. Duration of use of incentives ranged from 8 weeks to 18 months. The use of financial incentives was associated with a WMD weight change at 12 months of -0.4 kg (95% CI -1.6 to 0.8 kg), at 18 months of -0.7 kg (95% CI -2.5 to 1.1 kg) and at 30 months of 1.1 kg (95% CI -1.3 to 3.4 kg), compared with groups where financial incentives were not used in treatment (based on 7 studies). Sub-group analysis by mode of delivery and amount of incentives although also non-statistically significant were suggestive of very weak trends in favour of use of amounts greater than 1.2% personal disposable income, rewards for behaviour change rather than for weight, rewards	Low

				based on group performance rather than for individual performance and rewards delivered by non-psychologists rather than delivered by psychologists.	

Risk of Bias: SRs

Author (year)	Risk of Bias				
	Inclusion criteria	**Searches**	**Review Process**	**Quality assessment**	**Synthesis**
Burns 2012	☺	☺	☺	☹	☺
Paul-Ebhohimhen (2008)	☺	☺	☺	☺	☺

☺Low Risk ☹High Risk ? Unclear Risk

Search Details

- **As a recent systematic review was found, produced within the last 12 months, no primary study searches were carried out.**

Source	Search Strategy	Number of hits	Relevant evidence identified
SRs and Guidelines			
NICE	"financial incentives" AND weight	14	0
DARE	1 (weight) IN DARE 2159 Delete 2 ((incentive* OR competit* OR contest* OR reward* OR prize* OR (contingent ADJ2 payment*) OR (deposit* ADJ2 contract*) OR voucher* OR (financial ADJ2 assist*) OR (monetary ADJ2 support*) OR subsid*)) IN DARE 264 Delete 3 MeSH DESCRIPTOR Motivation EXPLODE ALL TREES 139 Delete 4 MeSH DESCRIPTOR Financial Support EXPLODE ALL TREES 14 Delete 5 MeSH DESCRIPTOR Reward EXPLODE ALL TREES 13 Delete 6 MeSH DESCRIPTOR Reimbursement, Incentive EXPLODE ALL TREES 14 Delete 7 MeSH DESCRIPTOR Body Weight Changes EXPLODE ALL TREES 395 Delete 8 MeSH DESCRIPTOR Body Weight EXPLODE ALL TREES 986 Delete 9 MeSH DESCRIPTOR Weight Gain EXPLODE ALL TREES 106 Delete 10 MeSH DESCRIPTOR Weight Loss EXPLODE ALL TREES 300 Delete	51	3

	11 MeSH DESCRIPTOR Weight Reduction Programs EXPLODE ALL TREES 5 Delete 12 #2 OR #3 OR #4 OR #5 OR #6 415 Delete 13 #1 OR #7 OR #8 OR #9 OR #10 OR #11 2639 Delete 14 #12 AND #13 51 Delete		
Summary	**NA**	**NA**	

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