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Financial Incentives in the Treatment of Addictions: A Systematic Literature Review

Preliminary Points:

- Thank you to the **Centre for Effective Business Management of Addiction Treatment (CEBMAT)** – housed in the University of Alberta School of Business
- Student project, conducted by MBA students working within a "Corporate Social Responsibility" mindset
  - Systematic Review of the Literature is unusual in Business
- This is the first presentation of results
  - Work is still in progress on the manuscript
  - We give some focus today to studies of pregnant women
  - We welcome feedback – today or later

Are financial incentives effective in reducing drug use and/or in the treatment of addictions?

Systematic Review: Search Criteria

- Systematic Literature Review
  - Procedure with other students
  - Careful and diligent
- Search Terms:
  - “financial incentives and treatment of addiction”
  - “financial incentives and addiction treatment”
- Articles published from 2005 to 2012
- Restricted to treatment for illegal drugs or alcohol
- Excluded studies involving use of nicotine and gambling

Databases Searched

Database	Articles Included in the Review
Business Source Complete	2
Medline	3
Scopus	19
Science Direct	3
Hand Search	19
Grey Literature	2
Total	**48**

Characteristics of Studies Reviewed

1. What was the research design?
2. Who are the participants involved in the study?
3. What is the nature of their addiction?
4. What type of incentive was used?
5. What outcome measures were considered?
6. What was the effect of the incentive on the participant's substance use?

Participants in the Studies

- Pregnant or post partum women (3 articles)
- Individuals with chronic health issues (7 articles)
- General population (including adolescents) (37 articles)

Types of Incentives Used

Types of Incentives	# of Studies	Description
Escalating Points System	14	Clients earned an increasing number of points for every consecutive negative urine sample submitted. Points 'earned' could be exchanged for items, such as a gift card for groceries or a hair cut.
Lottery	12	Patients were allowed to draw from a prize bowl, contingent upon submitting a negative urine sample.
On Spot Incentive	8	Patients 'earned' a set and regulated amount of money for every negative urine sample submitted or therapy session attended.
Performance Contingent Reward	4	Funds provided to professionals or facilities if capacity utilization or counselor participation rates met targets.
Combining Two or More Incentives	5	Using any of the two types of the incentives previously described.

Outcome Measures

- Outcome measures for clients / patients:
  - negative urine samples (23 studies)
  - Negative breath and urine samples (3 studies)
  - Attendance and negative urine samples (14 studies)
- Outcome measures for providers/facilities :
  - Facility or physician goals (4 studies)
  - Attendance and breath samples (1 study)
  - Urine, breath, and attendance samples (1 study)
  - Measures of methadone treatment (1 study)
- Impact of financial incentives post-treatment program (1 study)
- Main outcome measures pertaining to studies focused on pregnant women: Drug abstinence, medication adherence, birth assessment

Meta Analysis

Author	Number of Studies	Outcome Measure	Type of Incentive	Results
Lussier et al., 2006	30 studies	Urine Sample	On-Spot Incentive	• Effect size 0.32 • VBRT significantly better than control
Prendergast et al., 2006	47 studies	Urine Sample	On-Spot Incentive	• Most effective in Opiate and Cocaine use • Effect size 0.42

Study Outcomes

- Across all incentives and client types, **the use of** financial incentives was associated with significant positive outcomes i.e. negative urine or breathalyzer tests and retention in treatment programs, for the time period that clients were participating in the treatment program.
  - Silverman et al., noted that substance negative urine sample were 54% for the incentive group and 32% for the control group
  - McLellan et al., indicated that utilization rates of facilities improved from 54% to 95%, and treatment completion rates improved from 53% to 70%.
  - Rauch et al., noted that the mean negative urine samples submitted for the incentive group and the control group were 13.9 and 9.9, respectively.
  - Lott et al., indicated that opioid positive urine samples decreased from 33% to 23.4%.

Studies involving pregnant or post-partum participants:

1. "Treating the partners of opioid-dependent pregnant patients: feasibility and efficacy"

   Jones HE, Tuten M, O'Grady KE, 2011.

2. "Implementation and evaluation of a harm-reduction model for clinical care of substance using pregnant women"

   Wright T, Schuetter R, Fombonne E, Stephenson J, Haning WF, 2012.

3. "Maintenance of reinforcement to address the chronic nature of drug addiction"

   Silverman K, DeFulio A, Sigurdsson SO, 2012.

Treating the partners of opioid-dependent pregnant patients…

- Study Design:
  - Experimental Design
  - Participants randomized: 1 in Usual Care to every 3 in HOPE
- Type of Incentive:
  - Both pregnant women and their male partners received $40 for baseline assessment, $20 per follow up interview, $10 per urine sample (2/week), and $10 per study visit completed.
- Nature of the Client:
  - Partners of drug-dependent pregnant women
  - non-treatment-seeking opioid users
- Outcome Measures:
  - 4- and 28-week post-randomization outcomes were tracked on 10 outcome measures
  - Included: drug use, treatment services received, employment, illegal involvement, recreation, and partnership relationship quality
- Summary of Findings
  - Men in the HOPE condition showed increased treatment retention, decreases in heroin use, increase in recreational activity involvement, and increased social support for their pregnant partners.
  - Feasible and efficacious in the short-term

Implementation and evaluation of a harm reduction model…

- Study Design:
  - Program Analysis
  - Data from Path Clinic patients compared with a representative cohort of women delivering at Kapiolani Medical Centre for Women and Children during the same time frame, who were enrolled in another study of pregnancy outcomes.
- Type of Financial Incentive:
  - Reward attendance
  - $50 gift card for 1st visit, $20 gift card for completion of psychosocial assessment, “fish bowl” picks for each subsequent doctor’s visit.
- Nature of the Client:
  - 213 pregnant women with past or present history of addiction
- Outcome Measures:
  - Drug Use, Birth Outcomes, Post-Partum Depression
- Summary of Findings
  - Efficacy of comprehensive approach to treatment and harm-reduction model
  - High rates of abstinence during pregnancy
  - 97 women delivered during this study, > 90% retained custody at 8 weeks
  - Increased prenatal visits associated with increased abstinence and decreased relapse postpartum

Maintenance of reinforcement to address the chronic nature…

- Study Design:
  - Meta-Analysis: reviewed 8 studies of the therapeutic workplace
- Type of Financial Incentive:
  - Employment-based reinforcement
  - Must provide evidence of abstinence or medication adherence to work and earn wages
  - Examples: escalating base pay and payment for professional demeanor
- Nature of Client:
  - Varied by study, but included: substance use, pregnant or post-partum women, unemployed welfare recipients
- Outcome Measures:
  - Drug abstinence, medication adherence
- Summary of Findings:
  - Employment-based reinforcement can initiate and maintain cocaine abstinence
  - Relapse can occur even after long-term exposure to reinforcement
  - Therapeutic reinforcement may need to be maintained indefinitely to prevent relapse.

Discussion of Findings:
incentive & outcome measures

- Incentives were of *low monetary value* → the value of the incentive might have different effects in different sub-populations.
  - Defulio et al., 83% of prizes were worth $1.
- For treatment programs with a time based element (e.g. pregnancy or post partum) → incentives can help achieve positive results during treatment, however little is know as to longer term effects.
- financial rewards are *extrinsic* → management research suggests that longer term behavioral change is more likely when behavior is motivated by *intrinsic* rewards.
- financial rewards are targeted at specific behavior (clean tests) → more complex behavioral change may not be incented

Conclusions

- Consideration of long-term vs short-term is critical
- Nature of the financial incentive needs further attention:
  - Vouchers
  - Material items
  - Cash
  - Indirect rewards (to providers; to partners of pregnant women)
- What is the overall goal?
  - During pregnancy goal is different from general population
  - Behaviour change vs clean urine/ breath test
  - Kerr (1975) “On the Folly of Rewarding A While Hoping for B”