Evaluation of a Family Medicine Contingency Management Program for Substance Use Disorder

Kimberly D. Williams, MPH[1]; Deanna Gorgei, DO[2]; Jordan Franklin, OMS-IV[2]; James LaRosa, MD[2]

[1]ChristianaCare, Institute for Research on Equity and Community Health, Wilmington, DE, [2]ChristianaCare, Department of Family and Community Medicine, Wilmington, DE

INTRODUCTION

- **Contingency Management (CM):** behavioral treatment involving delivery of positive reinforcements that are contingent on achieving specific pre-defined goals
  - Providing active recognition of individual achievements can serve as mechanism for fostering a positive self-image & facilitating ongoing treatment support
  - Efficacy & effectiveness of CM has been empirically demonstrated for patients with substance use disorder (SUD), including stimulant and opioid use disorders
  - Despite this, CM remains an underutilized intervention in the real-world clinical setting
- **Research objective**: To demonstrate the development of an evidence-based CM intervention in a family medicine residency SUD treatment program & evaluate preliminary patient participant outcomes

METHODS

Study design: Retrospective observational review study
Setting: Regional family medicine center clinics in northern Delaware
Population: Family medicine patients being treated for opioid use disorder, stimulant use disorder, cocaine use disorder, or benzodiazepine or barbiturate use disorder who are willing to provide urine drug screens (UDS) during their visits

CM program intervention:

- Participants earn **points** based on achievement of **program visit goals** with a maximum of 2 points awarded per visit with:
  - 1 point awarded for visit attendance
  - 1 point awarded for UDS results that are negative for substance being treated (including opioids, cocaine, methamphetamine, benzodiazepines, or barbiturates unless otherwise prescribed)
- Points redeemable for a **prize** during the visit with prizes distributed through a **2-tiered fishbowl method**

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- **1-point fishbowl contains** 20 vouchers (**Fig 1**):
  - 10 vouchers for an inspirational message and candy ($0 value)
  - 8 vouchers for a cabinet prize (books, clothing, toiletries, etc.) ($5 value)
  - 2 vouchers for a gift card prize ($5 value)

Fig 1. 1-point voucher

- **2-point fishbowl** contains 20 vouchers (**Fig 2**):
  - 10 vouchers for a gift card prize ($5 value)
  - 5 vouchers for a cabinet prize (books, clothing, toiletries, etc.) ($5 value)
  - 5 vouchers for a "pick your own prize" from cabinet or gift card choices

Fig 2. 2-point voucher

- Points awarded at each visit and tracked in shared document for the project team & in stamped "Wellness Passport" for the participant (**Figs 3a & 3b**)

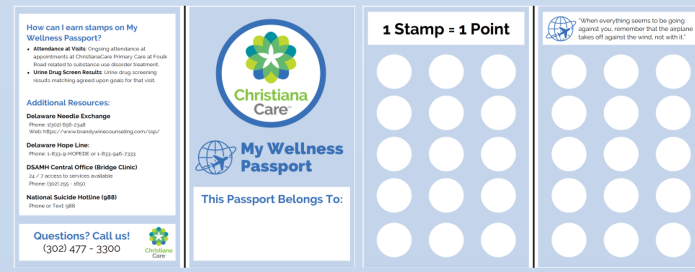

Fig 3a. Wellness Passport outside   Fig 3b. Wellness Passport inside

Analysis:

- Program & survey data analyzed using descriptive statistics to assess central tendency (mean, median) & dispersion of the data (standard deviation, interquartile range), & characterize participant survey responses to Likert scale items
- Wilcoxon rank-sum & Fisher's exact tests examined the relationship between CM program retention outcomes & sociographic characteristics

RESULTS

Table 1. Participant characteristics	N=47
Age in years at enrollment, mean (SD), range	46.7 (13.4), 25-71
Sex assigned at birth, male, N (%)	29 (63.0)
Race, N (%)	
Black or African American	17 (36.2)
White	28 (59.6)
Other	2 (4.3)
Ethnicity, Not Hispanic or Latine, N (%)	46 (95.7)
Insurance status at enrollment, N (%)	
Medicaid	29 (61.7)
Medicare	10 (21.3)
Private	8 (17.0)
Employment status at enrollment, N (%)[a]	
Employed full-time or part-time	29 (51.2)
Not in labor force (e.g., retired, disability, student)	7 (17.1)
Not employed	13 (31.7)
Housing status at enrollment, N (%)[b]	
Live alone	3 (7.9)
Dependent living situation (e.g., supervised setting inc. group home)	1 (2.6)
Independent living situation (e.g., living with family)	34 (89.5)
Treated for opioid use disorder, Yes, N (%)	45 (95.7)

SD: standard deviation. [a]N=41. [b]N=38.

Table 6. CM program retention by participant characteristics (N=47)	3 months			6 months		
	Yes (N=44) N	No (N=3) N	p-value[a]	Yes (N=37) N	No (N=10) N	p-value[a]
Age[b]	44	34	0.13	37	10	0.73
Sex						
Female	16	1	1.00	13	4	1.00
Male	27	2		23	6	
Race						
Black or African American	17	0	0.37	15	2	0.28
White	25	3		21	7	
Other	2	0		1	1	
Ethnicity						
Not Hispanic/Latine	1	0	1.00	43	1	1.00
Hispanic/Latine	36	10		3	0	
Insurance						
Medicaid	27	2	0.52	23	6	0.40
Medicare	10	0		9	1	
Private	1	7		5	3	
Employment[c]						
Employed	20	1	0.74	18	3	0.52
Not in labor force	6	1		5	2	
Not employed	12	1		9	4	
Housing[d]						
Live alone	3	0	1.00	3	0	0.34
Dependent living situation	1	0		0	1	
Independent living situation	31	3		26	8	
Treated for OUD						
No	1	1	0.12	8	2	0.04
Yes	43	2		37	0	

[a]Fisher's exact test unless otherwise noted. [b]Wilcoxon rank-sum test. [c]N=41. [d]N=38. CM: contingency management

Table 2. CM program participation	N=47
Months in program, median (IQR), range	9 (5, 10), 0-11
Program retention at 3 months, Yes, N (%)	44 (93.6)
Program retention at 6 months, Yes, N (%)	37 (78.7)
LTF, Yes, N (%)	13 (27.7)
LTF before 6 months in program, Yes, N (%)	8 (61.5)
LTF after 6 months in program, Yes, N (%)	5 (38.5)
Number visits attended, median (IQR), range	5 (3, 10), 1-17
Number visit no shows, median (IQR), range	2 (1, 3), 0-8
Points earned, median (IQR), range	8 (5, 12), 1-28
Total possible points to earn, median (IQR), range	10 (6, 20), 2-34

CM: contingency management; IQR: interquartile range (25%, 75%); LFT: lost to follow-up

Table 3. Reasons for ending CM program (N=13)*
Cost of visits
Deceased
Declined CM participation while continuing SUD treatment
Distance to clinic
No longer wanted medication treatment for
Lost to follow-up
Moved
Transferred care to opioid treatment program
Transferred care to psychiatry

*Frequencies not reported due to small sample size; CM: contingency management. SUD: substance use disorder

Table 4. Participant experience survey (N=18)	N (%)
Helpfulness of CM program for recovery	
Extremely not helpful or not helpful	0 (0)
Unsure	0 (0)
Extremely helpful or helpful	18 (100)
Satisfaction with treatment team interactions	
Very dissatisfied or dissatisfied	0 (0)
Unsure	0 (0)
Very satisfied or satisfied	18 (100)

CM: contingency management

Table 5. Representative participant quotes

Receiving substance use disorder treatment in the primary care office:

"It has been great being able to deal with all of my issues in one place instead of going to many different offices"

"Your team here [including the medical assistants and office check-in staff] does a great job. [The program's registered nurse] has been great and always answers my calls"

Contingency management prizes:

"My son and I just used our Wawa gift card this week… we were so excited we had it"

"I bring my water bottle with me everywhere"

"The prize I got made the perfect birthday gift for my daughter"

CONCLUSIONS

- Incorporating non-punitive, evidence-based strategies like CM is critical to help improve health outcomes for people with SUD
- Our program illustrates a framework for developing and evaluating a CM intervention for patients with SUD in a family medicine residency program

Challenges & solutions:

- Designing, implementing, & tracking CM interventions can be challenging in clinical practices
- Created a secure, shared spreadsheet for program team members to consistently document & track participant progress
- Automating tasks, such as using quick texts and drop-down menus for efficient & standardized CM documentation in the electronic health record
- Types of prizes offered were modified after receiving feedback from participants
- This allowed the team to learn & provide rewards with more perceived value within the local context of personal preference & other factors such as geographical access to specific stores

Lessons learned:

- Given the evidence, believe our efforts would be more effective if the prize value was higher
- Our program was limited to offering prizes with a maximum $5 value for each visit
- Increasing the monetary value of prizes may further incentivize patients to not only attend but produce a higher rate of UDS results matching treatment goals

HEALTH EQUITY

- Despite numerous scientific advancements, SUD treatment is marred by a history of stigmatization & discrimination leading to inherently punitive policies & practices
  - Contributes to system of care that views SUD as a moral failing & used discipline as the primary incentive for treatment adherence
- Minoritized communities disproportionately experience barriers to SUD treatment
  - Less likely to engage in treatment due to experiences of provider discrimination & racism
  - More likely to be penalized for substance use by criminal justice system
- CM marks a divergence from the historically punitive nature of SUD treatment by focusing on positive reinforcement as primary driver to achieve treatment goals
  - CM can improve patient self-image & foster a more positive treatment experience for both patients & providers as they jointly focus on patient's progress rather than setbacks
  - CM also relatively cost-effective, requires no complex technological components, & can be delivered by non-advanced practitioners enabling low-resource settings to potentially implement CM

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