Contingency Management Approaches in Substance Use Disorder Treatment: A Review of Research and Program Implementation

Prepared for the:

New Hampshire Bureau of Drug and Alcohol Services' Clinical Services Unit

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Overview of This Research Brief

Topic: This research request addressed two related topic areas:

1. Identify agencies and organizations within New Hampshire that provide contingency management (CM) as part of their therapeutic approaches to substance use disorder (SUD) treatment
2. Conduct a review of average cost per client per year of CM approaches, including start up and sustainability costs

Background: CM interventions, which involve providing clients with tangible rewards to reinforce positive behaviors, are based on the principles of operant conditioning. Numerous studies have shown the efficacy of using CM interventions in SUD treatment for diverse populations and for a wide range of psychoactive substances. Both the National Institutes of Health and the Substance Abuse and Mental Health Services Administration (SAMHSA) recognize CM as an evidence-based approach.[1]

Methodology: Growth Partners LLC (Growth Partners) used the methods below to collect information on each topic area.

Identifying agencies and organizations that provide CM as a component of SUD treatment for New Hampshire residents. SAMHSA's SUD treatment locator was used as the initial source to identify SUD treatment facilities in New Hampshire that might provide CM services. Growth Partners conducted a filtered search by location, distance, treatment type, payment options, age, and facility type. This yielded 140 potential SUD treatment facilities. Growth Partners then reviewed (1) each facility profile to determine if the term "CM or motivational incentive" appeared in the description of services and (2) the websites of each facility listing these approaches to confirm their use. When websites did not cite specific treatment approaches, information from SAMHSA's treatment facility locator, which collects information on thousands of state-licensed providers who specialize in treating SUDs addiction, and mental illness, was deemed reliable. In addition, because many New Hampshire drug courts use a CM approach, a list of drug courts by population or treatment type was added to this research.

Identifying average cost per client per year of CM approaches. Growth Parters completed electronic searches of databases, such as PubMed, Google Scholar, ProQuest, and ScienceDirect, to identify and select articles using the search terms "contingency management, motivational incentives, voucher- and prize-based rewards/incentives, prize-based/fishbowl CM," and "behavioral therapy incentive approaches." Research was compiled using the most recent research studies, guidance, and articles on CM approaches. Growth Partners included research articles that mentioned at least one of the search terms and a description of the intervention

[1] For example, see Evidence-Based Resource Guide Series: Treatment of Stimulant Use Disorders, p. 13, and Continency Management: New Directions and Remaining Challenges for an Evidence-Based Intervention.

type, duration, frequency, and cost. ***Note: all costs cited are based on the year the research was conducted, and have not been adjusted to reflect current dollars.***

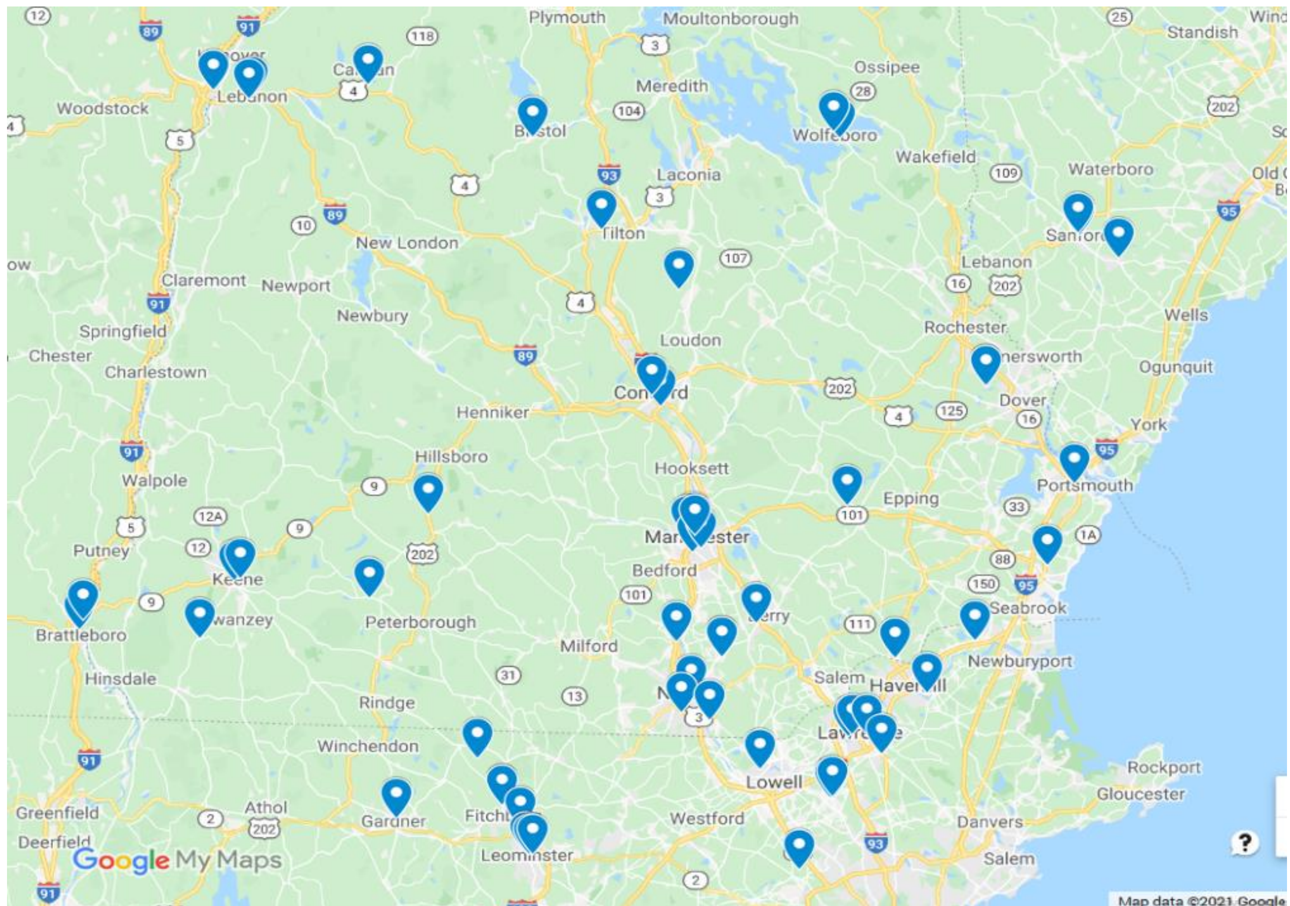
About This Technical Assistance (TA) Product: The New Hampshire Technical Assistance Center, operated by Growth Partners, is funded by the New Hampshire Bureau of Drug and Alcohol Services to provide a wide range of TA services to support the state's alcohol and other drug continuum of care. If you would like more information about this document or to request TA, please visit us at www.nhtac.org.

Summary of Findings

Agencies and Organizations That Provide CM as a Component of SUD Treatment for New Hampshire Residents

The interactive map in Figure 1 identifies 60 agencies and organizations that offer CM/motivational incentives as a component of SUD treatment. (The methodology used to identify them is provided on page 1.) Appendix A provides a complete list of these agencies and organizations, along with contact information. (Note: The list includes some treatment facilities located within 100 miles of the New Hampshire border in Maine, Vermont, and Massachusetts.)

Figure 1: Facilities That Use CM Approaches as a Component of SUD Treatment



Because New Hampshire drug courts also use CM approaches, a list of drug courts by type (e.g., Adult, Mental Health, Veterans, Teens, HOPE [Helping Our Pupils Excel] program, and Drug Diversion) is provided in Appendix B. The *2020 Annual Report of the State of New Hampshire's Drug Offender Program* provides this description of how CM approaches are used:

> *During court sessions a judge awards incentives to participants who have stayed sober, reported to treatment on time, attended self-help meetings, and made a payment*

toward drug court fees. Incentives can include applause, certificates, praise, gift cards, a reduction in fees, etc. For those offenders who have been non-compliant by lying about drug tests, failing to report to probation or treatment, failing to show up for court, the judge issues sanctions (p. 5). *… [During the COVID-19 pandemic] Drug Courts were forced to think more outside the box than ever before with contingency management options by creating more sanctions that did not include jail or community service, incentives were adapted as well* (p. 6).

The Adult Drug Court Participant Handbook, used by the Superior Court of New Hampshire Drug Offender Program, notes that, upon recommendation of the the Drug Court Team, participants may be given rewards or incentives for desirable behaviors. These include honesty, starting employment, participating positively in intensive outpatient treatment, getting a self-help sponsor or recovery coach, effective communication with the team, paying fines, and obtaining stable housing. Incentives can include the following (p. 9):

- Judicial praise/congratulations
- Reduction of court appearances
- Early advancement between phases
- Called at the beginning of the docket
- Selection from the “fishbowl” or candy
- Bus passes
- Curfew extension
- Reduction of fees
- Gift cards

Average Cost per Client per Year of CM Approaches

CM SUD treatment interventions identified through the literature review ranged from approximately 12 to 24 weeks in duration. Although studies varied with respect to type of reinforcement (e.g., voucher versus direct payments via gift cards), research indicates that CM/motivational incentives are effective strategies to increase abstinence and treatment adherence.

Incentives ranged from $75 to approximately $1,000 per client, based on the duration and intensity of the intervention. Interventions involving CM often also included a variety of components, such as group and individual counseling, to build motivation to abstain from drug use, identification of new sources of non-drug reinforcement (e.g., healthy forms of recreation and entertainment), and development of effective coping skills.

Although total costs for interventions were rarely cited, key factors to consider for CM program costs include operational costs, such as staff training, recruitment and retention of participants, biospecimen analysis/toxicology screens, incentive costs, and tracking and follow-up procedures.

Table 1 on the following page summarizes the studies and associated costs. Appendices C, D, and E provide abstracts of the studies, additional references, and acronyms used, respectively.

Table1: Studies Reviewed by Costs per Participant by Duration of Intervention

Study	Duration of Intervention	Total CM Incentive/Participant (rounded)
Pfund et al., 2021	20 weeks	$350
	Unknown	$95
Bolivar et al, 2021*	17.2 weeks	$250.00
	14.3 weeks	$152.00
	13.9 weeks	$142.50
	11.3 weeks	$126.00
	17.4 weeks	$181.50
Glass et al., 2020	A review of National Institute on Drug Abuse (NIDA)-funded studies demonstrated cost per patient.	$400-$500 or more over the course of the treatment type and length
Higgins et al., 2019	12 weeks	$998.00
	Community Reinforcement Approach (CRA) plus Contingent Voucher treatment – 24 weeks – Higher magnitude	$1,995
	CRA plus Contingent Voucher treatment – 24 weeks – Lower magnitude	$499
	13 follow-up visits over 6 months	$390
Washington State Institute for Public Policy, 2019	Washington State – Less than a year Staff costs, inventory, shop and restock of prizes, material costs of items, counseling session costs, and toxicology screens	$601 (2018 dollars)
Roll et al., 2009	12-week treatment period. If a clinic was already conducting regular drug testing as part of outpatient therapy, each additional week of continuous abstinence would cost $75.40 per patient ($25.13 per month) under prize-based CM.	$75.40
	If the clinic was not already conducting drug testing, the expense would be $103.30 per patient ($34.43 per month).	$103.30
	Note: Material and wage costs for administering urinalysis and breath testing average $7.53 per test. (Twice weekly assessment is recommended; see meta-analysis by Griffith et al., 2000)	
Program Start-Up and Cost Considerations		
Kellogg et al., 2005	Consider budget for incentives: $10,000–$20,000 (2005 dollars) was given to New York programs by the City Council to cover 200 clients, which is approximately $50–$100 per participant.	

***Researchers conducted a meta-analyses of studies where the mean number of weeks was calculated as a result of the number of studies reviewed.**

Appendix A: Agencies and Organizations Which Provide CM as a Component of SUD Treatment

(This list includes agencies within 100 miles of New Hampshire's borders.)

Organization	Website	Address	City	State
Community Health Connections Inc. Fitchburg Community Health Center	www.chcfhc.org	326 Nichols Rd.	Fitchburg	MA
Community Health Connections Inc. ACTION Community Health Center	www.chcfhc.org	130 Water St.	Fitchburg	MA
Fitchburg Comprehensive Treatment Center	www.fitchburgctc.com	155 Airport Rd.	Fitchburg	MA
Spring Hill Recovery Center	www.springhillrecovery.com	250 Spring Hill Rd.	Ashby	MA
GAAMHA Inc. Pathway House	www.gaamha.org	171 Graham St.	Gardner	MA
Community Healthlink Inc. Orchard Street Program	www.communityhealthlink.org	17 Orchard St.	Leominster	MA
Community Health Connections, Inc.	www.chcfhc.org	14 Manning Ave.	Leominster	MA
Catholic Charities Leominster Co-Occurring Enhanced Residential Rehabilitation Services	www.ccworc.org	196-Mechanic St.	Leominster	MA
Veterans Mental Health and Addictions Program	www.bedford.va.gov	200 Springs Rd., Bldg. 6-T, Basement Floor	Bedford	MA
Topsail Addiction Treatment Inc.	www.topsailaddictiontreatment.com	140 Haverhill St., Suite 8	Andover	MA
Spectrum Health Systems Inc.	www.spectrumhealthsystems.org	100 Plaistow Rd.	Haverhill	MA
Serenity at Summit	www.serenityatsummit.com	61 Brown St.	Haverhill	MA
Tower Hill Recovery Home	http://rhcmass.org/wordpress1/tower-hill-recovery-home/	611 Lowell St.	Lawrence	MA
Psychological Center Pegasus House	www.pscyhologicalcenter.com	482 Lowell St.	Lawrence	MA
Column Health Lawrence	www.columnhealth.com	280 Merrimack St., Suite 112	Lawrence	MA
Megan's House	www.themeganhouse.org	32 Berry Rd.	Lowell	MA
Sheehan Women's Program Lowell House Inc.	www.lowellhouseinc.org	366 East St., Bldg. 29	Tewsbury	MA
Lowell House Inc. Men's Recovery Home	www.lowellhouseinc.org	366 East St., Bldg. 34	Tewsbury	MA
Lahey Health Behavioral Services Hart House Program	www.nebhealth.org	365 East St.	Tewsbury	MA
Center for Behavioral Health & Addiction Treatment Services	https://linkhouseinc.org/programs/outpatient-services/	110 Haverhill Rd.	Amesbury	MA
Health Care Resource Centers (BayMark Health Services)	https://www.hcrcenters.com/health-care-resource-centers-hudson/	323 Derry Rd.	Hudson	NH

Organization	Website	Address	City	State
Merrimack River Medical Services Inc. Healthcare Resource Centers	www.hcrcenters.com	323 Derry Rd.	Hudson	NH
Process Recovery Center	www.theprocessrecoverycenter.com	41 Sagamore Park Rd.	Hudson	NH
Bresnahan and Ball Counseling Services	https://bresnahanandballcounselingservices.com/	1B Commons Drive, Suite 7	Londonderry	NH
Road to a Better Life	https://roadtoabetterlifenh.com/locations/	2 Mound Ct.	Merrimack	NH
Harbor Care	https://www.harborcarenh.org/merit-program-methamphetamine-treatment	45 High St.	Nashua	NH
Youth Council	https://tycnh.org/helping-youth-with-challenges/	74 Northeastern Blvd., Unit 10A	Nashua	NH
Lamprey Healthcare Raymond Center	www.lampreyhealth.org	128 State Route 27	Raymond	NH
James J. Foster Associates, Ltd.	http://www.counselingnh.com/	540 Chestnut St., Suite 102	Manchester	NH
Manchester Comprehensive Treatment Center (Acadia Healthcare)	https://www.acadiahealthcare.com/	20 Market St., Lower Level	Manchester	NH
Families In Transition/New Horizons Willows Transitional Living Program	https://www.fitnh.org/	15 Brook St.	Manchester	NH
LifeStance Health (Counseling Center of NE)	https://counselingcenter.com/	148 Coolidge Ave.	Manchester	NH
Farnum Center	https://farnumcenter.org/	140 Queen City Ave.	Manchester	NH
Granite Pathways Youth Treatment Center	https://granitepathwaysnh.org/news/	60 Rogers St., Suite 205	Manchester	NH
Commons at WestBridge Residential	https://www.westbridge.org/about-westbridge/locations/treatment-programs-nh/	600 Chestnut St.	Manchester	NH
MidState Health Center - RISE Recovery Services	www.midstatehealth.org	100 Robie Rd.	Bristol	NH
New Freedom Academy	www.graniterecoverycenters.com	367 Shaker Rd.	Canterbury	NH
New Season Franklin Treatment Center	www.newseason.com	880 Central St., Suite K	Franklin	NH
Concord Metro Treatment Center	https://www.newseason.com/clinics/concord-metro-treatment-center/	100 Hall St.	Concord	NH
Choices Riverbend Community Mental Health	www.choicesnh.org	42 Pleasant St.	Concord	NH
Community Improvement Associates (CIA) Keene	https://cianh.com/locations/	170 Emerald St., Suite 203	Keene	NH
Phoenix House Keene	https://www.phoenixhouse.org	106 Roxbury St.	Keene	NH
Sobriety Centers of NH Antrim House	www.sobrietycentersofnh.com	55 Main St.	Antrim	NH
Phoenix House New England Dublin	https://www.phoenixhousene.org/new_hampshire/dublin-residential-program/	3 Pierce Rd.	Dublin	NH
Keene Metro Treatment Center of NH LP	https://www.newseason.com/treatment/	1076 West Swanzey Rd.	Swanzey	NH
Halo Educational Systems	https://haloeducationalsystems.com/our-services	44 Roberts Rd.	Canaan	NH
Headrest Inc.	https://headrest.org/	14 Church St.	Lebanon	NH

Organization	Website	Address	City	State
Addiction Treatment Program Dartmouth Hitchcock Hospital	https://www.dartmouth-hitchcock.org/psychiatry/addiction-treatment-program	85 Mechanic St.	Lebanon	NH
White Horse Recovery Inc.	www.whitehorserecovery.org	68 Route 16-B	Center Ossipee	NH
Southeastern New Hampshire Services - Turning Point	www.senhs.org	272 County Farm Rd.	Dover	NH
Southeastern New Hampshire Services - Outpatient Services	www.senhs.org	272 County Farm Rd.	Dover	NH
Insight Medical Group, LLC	http://www.insightmedicalgroup.com/	861 Lafayette Rd., Bld. 6	Hampton	NH
Road to a Better Life	https://roadtoabetterlifenh.com/locations/	245 South Main St.	Wolfeboro	NH
Northern Human Services - The Mental Health Center	www.northernhs.org	70 Bay St.	Wolfeboro	NH
Health Affiliates Maine	https://www.healthaffiliatesmaine.com/	908 Main St., Suite 5	Sanford	ME
Nantucket Counseling SC		886 Main St., Suite 305	Sanford	ME
Enso Recovery Sanford	www.mainesuboxone.com	69 Eagle Dr.	Sanford	ME
White River Junction VA Medical Center	www.whiteriver.va.gov/services/Mental_Health/Substance_Abuse.asp	215 North Main St.	White River Junction	VT
Brattleboro Retreat Inpatient Co Occurring Disorders	https://www.brattlebororetreat.org/	1 Anna Marsh Lane	Brattleboro	VT
Brattleboro Comprehensive Treatment Center	https://www.ctcprograms.com/location/brattleboro-comprehensive-treatment-center/	16 Town Crier Dr.	Brattleboro	VT

Appendix B: New Hampshire Drug Courts by Type

(This information was extracted as listed from: https://www.courts.nh.gov/our-courts/drug-mental-health-courts)

Court	County Served	Town Served	Court Address (Physical)	Coordinator	Title	Phone	Email
Strafford Superior Court (Hybrid Adult)	Strafford		279 County Farm Rd., Dover, NH 03820	Chris Gowell	Coordinator	(603) 516-7193 o (603) 988-1857 c	cgowell@co.strafford.nh.us
Grafton County Superior Court (Hybrid Adult)	Grafton		North Country Health Consortium 6 Church St., Suite 2, Woodsville, NH 03785	Annie Crowley	Coordinator	(603) 707-5054	acrowley@nchcnh.org
Rockingham County Superior Court (Hybrid Adult)	Rockingham		10, Route 125, Brentwood, NH 03833	Christine McKenna	Coordinator		c.mckenna@nhpartnership.org
Cheshire County Superior Court (Hybrid Adult)	Cheshire		33 Winter St., Keene, NH 03431	Alison Welsh	Coordinator	(603) 209-6467	awelsh@co.cheshire.nh.us
4th Circuit - District Division – Laconia (Hybrid Adult)	Belknap	Laconia	26 Academy St., Laconia, NH 03246	Jesse Friedman	Public Defender		jfriedma@nhpd.org
Hillsborough – Nashua (Hybrid Adult)	Hillsborough South			Julie Christensen-Collins	Coordinator		christensen-collinsj@gnmhc.org
Hillsborough – Manchester (Hybrid Adult)	Hillsborough North			Alex Casale	State Coordinator		acasale@state.courts.nh.us
Federal Court (Adult)	New Hampshire		Concord	Kevin Lavigne	Deputy U.S. Probation Officer	(603) 225-1484	Kevin_Lavigne@nhp.uscourts.gov

Court	County Served	Town Served	Court Address (Physical)	Coordinator	Title	Phone	Email
7th Circuit - District Division - Rochester	Strafford	Rochester	76 North Main St., Rochester NH, 03867	Blair Rowlett	Director	(603) 516-5182 o (603) 817-1808 c	browlett@co.strafford.nh.us
10th Circuit - District Division - Portsmouth	Rockingham	Portsmouth, Hampton	111 Parrott Ave., Portsmouth, NH 03801				dcaron@courts.state.nh.us
10th Circuit - District Division - Brentwood	Rockingham	Exeter	10 Route 125, Brentwood, NH 03848		Clerk		candrews@courts.state.nh.us
6th Circuit - District Division - Concord	Merrimack	Concord, Franklin, Hooksett, Henniker	32 Clinton St., Concord, NH 03301	Robert Dumond	Program Manager	(603) 796-3631 o (603) 219-3037 c	bdumond@mcdoc.net
9th Circuit - District Division - Manchester	Hillsborough North	Northern Hillsborough	35 Amherst St., Manchester, NH 03131	Meaghan Johns	Court Liaison	(603) 668-4111 ex. 5321	johnsmea@mhcgm.org
9th Circuit - District Division - Nashua	Hillsborough South	Nashua, Milford, Merrimack	30 Spring St., Nashua, NH	Jill O'Neil	Coordinator	(603) 889-6147	o'neilj@gnmhc.org
2nd Circuit - District Division - Lebanon	Grafton	Lebanon	3785 Dartmouth College Hwy. North Haverhill, NH 03774	Shelly Golden	Coordinator	(603) 787-2291	sgolden@co.grafton.nh.us
2nd Circuit - District Division - Littleton	Grafton	Littleton, North Haverhill	3785 Dartmouth College Highway, North Haverhill, NH 03774	Shelly Golden	Coordinator	(603) 787-2291	sgolden@co.grafton.nh.us
2nd Circuit - District Division - Plymouth	Grafton	Plymouth	26 Green St., Plymouth, NH 03264	Shelly Golden	Coordinator	(603) 787-2291	sgolden@co.grafton.nh.us

Court	County Served	Town Served	Court Address (Physical)	Coordinator	Title	Phone	Email
8th Circuit - District Division - Keene	Cheshire	Keene	33 Winter St., Keene, NH 03431	Michael Potter	Director	(603) 355-0157	mpotter@co.cheshire.nh.us
TYPE: VETERANS COURT							
9th Circuit - District Division - Nashua	Hillsborough South	Nashua	30 Spring St., Nashua, NH 03060	Diane Levesque	Coordinator	(603) 624-4366 ex. 2296	diane.levesque@va.gov
	Hillsborough North	Manchester					
	Rockingham	Derry					
	Grafton	Plymouth					
2nd Circuit - District Division - Lebanon	Grafton	Lebanon		Shelly Golden	Coordinator	(603) 787-2291	sgolden@co.grafton.nh.us
TYPE: HAWAII'S OPPORTUNITY PROBATION WITH ENFORCEMENT							
Merrimack Superior	Merrimack						
Hillsborough Superior	Hillsborough South			Christine McKenna	Coordinator		
Rockingham Superior	Rockingham			Frank Swirko		(603) 271-1907	francis.swirko@nhdoc.state.nh.us
TTTYPE: SUCCESSFUL OFFENDER ADJUSTMENT & REENTRY							
	Merrimack Superior	Merrimack					
TYPE: DRUG DIVERSION							
8th Circuit - District Division - Keene	Cheshire	Keene	33 Winter St., Keene, NH 03431	Michael Potter	Coordinator	(603) 335-0157	mpotter@co.cheshire.nh.us
TYPE: PEER MODEL TEEN COURT							
Rochester School District		Rochester		Nicole Rodler	Coordinator	(603) 330-7149	nicole.rodler@rochester.net

Appendix C: Abstracts of Studies and Research Used in This Review

(NOTE: All costs cited in articles reflects the year the research was conducted, and have not been adjusted to reflect current dollars.)

Pfund, R., Cook, J., McAfee, N., Huskinson, S., & Parker, J. (2021). Challenges to conducting contingency management treatment for substance use disorders: Practice recommendations for clinicians. *American Psychological Association Professional Psychology: Research and Practice*, *52*(2), 137–145. https://doi.org/10.1037/pro0000356

This article identifies challenges in implementing CM in clinical SUD treatment settings and presents possible solutions, as well as implications for practice.

Researchers highlight the efficacy of CM in clinical research settings for a project funded by SAMHSA called Helping HAND (Helping to Advance in New Directions). The program is being conducted in a large urban HIV clinic operated by the Division of Infectious Diseases at an academic medical center. Researchers state the intervention's effectiveness often decreases when implemented in a clinical setting due to difficulties adhering to three main factors: immediacy, frequency, and magnitude of reinforcements. The article discusses possible solutions to challenges and implications for practice.

Helping HAND Program Description: February 2018 – May 2020		
Participants	**Demographics**	**Disorder**
107	• 64% male • 31% female • 5% transgender • 80% Black/African-American • 45% gay • 3% bisexual	Alcohol Use Disorder • 11% high risk • 26% dependent alcohol use Drug Use Disorder • 89% high risk • 43% dependent drug use

Participants receive reinforcers immediately following submission of a negative drug screen. Reinforcement escalates upon submission of consecutive negative urine drug screen (UDS) results and resets upon submission of positive drug screens, appointment cancellations within less than 24 hours, and no shows. Gift cards are from mulitple retail stores, and participants select gift cards based on their personal preference at the time of reinforcement. The reinforcers in the CM program and fishbowl approach[2] are as follows.

[2] The fishbowl approach uses a variable ratio reinforcement schedule. The approach rewards behavior with a *chance* to be reinforced. Each time a contingent behavior occurs, the participant draws a ticket from a fishbowl. Draws progressively increase with continued performance of the behavior. As only a proportion of tickets are equal to a tangible prize, reinforcement is variable and, thus, much less expensive. The fishbowl technique also addresses other practical issues, including reducing the need for continuous recordkeeping and frequently purchasing prizes.

CM Program (Total cost/participant: $350)

- $10 gift card – 1st UDS, negative result
- $10 gift card – for each consecutive UDS, negative result
- $15 gift card – increased amount, 4th consecutive UDS, negative result
- $20 gift card – 10th-20th consecutive UDS, negative result

Fishbowl Approach (Total cost/participant: $95)

Participants have an opportunity to continue treatment but continue with the fishbowl approach as a motivational incentive. Therefore, they can receive gift cards mixed with verbal praise. Participants have a 26 percent chance of receiving "praise slips," which provide a message such as "Great Job!" or "Keep It Up!" and there is a 74 percent chance of receiving a slip for a gift card, which is set at a specific dollar amount:

- $10 gift card (51 percent chance)
- $15 gift card (10.5 percent chance)
- $20 gift card (10.5 percent chance)
- $50 gift card (2 percent chance)

This research article did not indicate the total length of time participants continued with this approach; therefore, calculation of total cost/participant is based on the information provided.

All clients enrolled in the CM intervention or fishbowl approach who receive a gift card (along with their therapists) sign a receipt on which client-identifying information and the denomination, vendor, date, and serial number of the gift card are recorded.

Challenges to key components of CM include:

- ***Immediacy*** (Objective Verification): Verifying drug abstinence via the submission of urine samples may delay the delivery of a reinforcer.
- ***Frequency*** (Scheduling Issues): Frequent appointments place demands on the logistics of running a clinic and burden on clients and clinicians' time and involve costs for conducting frequent drug screens.
- ***Magnitude and Escalation*** (Logistics of Supplying Reinforcers): If there is not an adequate supply of reinforcers, the magnitude and escalation of CM may be disrupted. CM often depends on grant funding, which may come with its own restrictions (e.g., caps on reinforcement amounts or use of monetary reinforcement). Insitutional prohibitions may also preclude employees giving anything of value to participants.

Three recommendations to address challenges include:

1. **Immediacy/Objective Verification**
    a. Before enrolling the client in CM, educate them about the possibility of false UDS results.

b. Inform clients their urine specimen will be sent to the laboratory for additional testing, requiring a delay in their reinforcement. Given the competing principles of timeliness and accuracy, accuracy is deemed more crucial.
c. Follow up on the results immediately at the next appointment, including giving delayed rewards if drug screen results were falsely positive.

2. **Frequency/Scheduling Issues**
   a. Strive to reinforce drug abstinence as frequently as possible, but tailor appointment frequency to individual clients and the specific treatment program.
   b. Create a plan with clients about attending appointments, and establish procedures about rescheduling appointments related to the reinforcement schedule. Use technologies, such as mobile phones and transdermal alcohol sensors, to better control conditions.
   c. Review the plan with clients, and answer any of their questions
3. **Logistics of supplying reinforcers**
   a. To address incentive supply issues, combine incentives of lower cost/value to deliver an appropriate incentive for the appropriate magnitude of the behavior.
   b. Inform the client about inabilities to provide reinforcers, and discuss alternative solutions, such as providing a voucher or "IOU" for the earned reward.
   c. When appropriate, use non-material rewards as reinforcers (e.g., clients may get longer-duration prescriptions based on drug-negative tests). This saves time and expense that would have been needed for more frequent appointments. This approach is well established among methadone clinics, with take-home doses being the reward (Silverman et al., 2004.)
   d. Regularly check there is an adequate supply of reinforcers with the appropriate magnitude. If there is low stock at the vendor, consider combining reinforcers of lower magnitudes (e.g., two $10 gift cards for a $20 gift card reward).
   e. If there is no way to combine lower-magnitude reinforcers, inform the client of the error, take responsibility, and ensure them of delivery of their reinforcer at the next appointment. Clinicians should educate themselves about procedures that might delay the supply of reinforcers within their academic institution or clinic and factor them into facilitating CM practice.
   f. Clinicians must be prepared to educate and advocate for the use of CM reinforcers by using scientific literature.

Additional considersations include:

- Clinicians should ensure the value of each card is verified before dispensing to the client. If the cards are purchased at a retail outlet, the purchase receipt will show each card's serial number and value. For cards purchased through administrative channels, electronically verify each card's value on the vendor's website.
- Some gift cards have the value printed on them, while others do not. Add the value to each card that lacks it, using an indelible marker.

- Develop a system that verifies the client received their reinforcement. For example, keep a running record of the serial numbers of available gift cards, and ask clients to verify receipt of a reinforcer with their signature.

Bolivar, H., Klemperer, E., Coleman, S., DeSarno, M., Skelly, J., & Higgins, S. (2021). Contingency management for patients receiving medication for opioid use disorder: A systematic review and meta-analysis. *JAMA Psychiatry, 78*(10), 1092–1102. https://doi.org/10.1001/jamapsychiatry.2021.1969

This article provides evidence that supports the use of CM in addressing clinical problems among clients receiving medication for opioid use disorder (OUD).

Researchers conducted a systematic review and meta-analysis of the association of CM interventions with end-of-treatment outcomes for comorbid stimulant use and other behavioral health problems. Seventy reports met inclusion criteria for narrative review, and 60 for inclusion in meta-analyses. Results indicate that when abstinence and adherence categories were collapsed, CM was associated with medium-effect sizes for abstinence and treatment adherence compared with controls. Researchers concluded that results from these analyses provide evidence to support the use of CM in addressing key clinical problems among clients receiving medication for OUD.

Type and Number of Studies Analyzed	Mean Duration of Intervention	Mean Maximum Daily Earnings	Total CM Incentive/Participant (rounded)
Psychomotor stimulants (22)	17.2 weeks	$14.51	$250.00
Polysubstance use (23)	14.3 weeks	$10.63	$152.00
Illicit opioids (11)	13.9 weeks	$10.25	$142.50
Therapy attendance (11) that prescribed methadone as the medication for MOUD	11.3 weeks	$11.18	$126.00
Medication adherence (9) to naltrexone, methadone, and other medications; polydrug abstinence; and counseling attendance.	17.4 weeks	$10.43	$181.50

Glass, J., Nunes, E., & Bradley, K. (2020, March 11). Contingency management: A highly effective treatment for substance use disorders and the legal Barriers that stand in its way [Blog]. *Health Affairs*.
https://www.healthaffairs.org/do/10.1377/hblog20200305.965186/full/

This article provides evidence that CM is the most effective psychosocial treatment for SUDs but notes that CM effectiveness is impacted by the size of the rewards, with smaller rewards providing less benefit.

The authors of this article note that CM appears to be the most effective of psychosocial treatments for SUDs, when combined with medications for OUD. Operant conditioning principles provide an item of monetary value to clients to not use drugs, but the effectiveness of CM is moderated by the size of the rewards, with smaller rewards providing less benefit.

Challenges in Operationalizing CM

One of the biggest barriers to implementing CM in community-based SUD treatment settings in the U.S. is it can be unlawful for clients who are enrolled in federally or state-funded health plans or programs. For example, federal laws indicate incentives can be considered kickbacks or inducements when they exceed monetary values that are considered nominal. However, the U.S. Department of Health and Human Services' Office of the Inspector General released an advisory opinion in 2008 that offering CM at a specific rigorous treatment program did not violate anti-kickback statutes. The Centers for Medicare & Medicaid Services imposes annual limits (p. 77791) on incentives to a maximum monetary value of $75.

Washington State imposes annual limits on incentives of monetary value of $100 for health insurance plans funded through the state (Washington State Institute for Public Policy, December 2019). The laws are intended to prevent fraud, waste, and abuse. The laws also penalize providers that try to direct clients toward a specific treatment program or health insurance plan.

Benefits of CM

NIDA-funded studies demonstrated that CM has been effective with the cost per client averaging $400-$500 or more over the course of the treatment. The studies noted, however, that lower incentives (e.g., annual limits of $75-$100) do not consistently work. (Lussier et al., 2006).

Higgins, S., Kurti, A., & Davis, D. (2019). Voucher-based contingency management is efficacious but underutilized in treating addictions. ***Perspectives on Behavior Science, 42*****, 501–524. https://doi.org/10.1007/s40614-019-00216-z**

This study provides evidence that CM is effective in treating SUDs and other health-related behavioral issues but is underutilized in routine clinical practice.

This study reviews research demonstrating the efficacy of voucher-based CM delivered alone or in combination with other interventions for treating SUDs and other health-related behavior problems. Efficacy supporting these types of interventions is robust, and evidence-based interventions are being underutilized in routine clinical care for SUDs. The report reviews projects developed by the University of Vermont and discusses dissemination of the model to public- and private-sector efforts to improve individual and population health.

Community Reinforcement Approach Plus Vouchers

This intervention for cocaine-dependent outpatients offered 24 weeks of structured individual counseling, based on an adaptation of the CRA intervention for alcohol use disorders in combination with a 12-week CM intervention. The latter provided vouchers that were exchangeable for retail items, contingent on objective evidence of recent abstinence from cocaine use. CRA integrates several treatment components:

- Building motivation to abstain from drug use
- Reengaging with earlier sources or identifying new sources of non-drug reinforcement (e.g., healthy forms of recreation and entertainment)
- Developing coping skills (e.g., drug refusal, managing negative affect, and sleep hygiene)

The initial 12 weeks consisted of twice-weekly counseling and thrice-weekly urine toxicology testing to detect any cocaine use during the initial 12 weeks. The counseling and urine testing was reduced to once-weekly counseling and twice-weekly urinalysis during weeks 13-24. Weeks 25-52 consisted of an aftercare program, where participants completed once-monthly check-ins with a counselor and random urinalysis. During the initial 12 weeks, clients earned vouchers for providing objective evidence of cocaine abstinence. Key elements of the voucher system are as described:

- 1 point = $0.25 for providing cocaine negative urine specimens at thrice-weekly visits.
- First negative urine sample was worth 10 points.
- Points earned per sample (i.e., magnitude of reinforcement) increased across consecutive negative samples.
- Points equivalent to a $10.00 bonus were provided for every three consecutive negative tests.
- If participants tested positive for cocaine, they earned zero points for that sample, and the value for the voucher available for the next cocaine negative test result was reset back to where it was prior to the reset.

- Vouchers could be redeemed through study staff for retail items in the community but had to be approved by their therapist as being aligned with the overarching CRA aim of recruiting natural sources of reinforcement for a cocaine-free lifestyle.
- Maximum total vouchers a client could earn was $997.50 across the 12-week period.
- Note: Not all clients successfully abstained; therefore, the average earnings in vouchers were typically about one-half of the maximum.

Efficacy Trials Conducted at the University of Vermont – Cocaine Dependence

The CRA plus Vouchers intervention in treating cocaine dependence was demonstrated empirically in seven consecutive randomized controlled clinical trials at the University of Vermont. One of the seven trials sought to understand who achieves longer-term abstinence by randomly assigning 100 cocaine-dependent outpatients to one of two CRA plus Contingent Voucher treatment conditions (Higgins et al., 2007). In the first condition, vouchers were set at twice the usual monetary value (maximum of $1,995), and the second condition was set at half the usual value (maximum of $499) during the 12-week intervention. Researchers found that increasing the value of the vouchers increased the duration of continuous cocaine abstinence achieved during the 24-week treatment period by twofold. They concluded that cocaine abstinence was consistently greater among those treated in the high-magnitude voucher condition compared to the low-magnitude condition in assessments conducted every 3 months throughout the 18-month follow-up period.

Efficacy Trials Conducted at the University of Vermont – Opioid Dependence

Researchers pilot tested an intervention to increase use of prescription contraceptives for 31 opioid-dependent women. They randomly assigned to a treatment-as-usual group/control or an experimental intervention group. The control group involved women receiving an informational booklet about birth control methods, list of local providers, and offer of free condoms and a dose of emergency contraception. The experimental intervention group included the control methods, combined with the World Health Organization's contraception initiation protocol that included free contraceptives, and voucher contingent upon attending 13 follow-up visits over 6 months to help manage common side effects and other issues which lead women to discontinue contraceptives. Vouchers were not contingent on using a contraceptive. Maximal potential voucher earnings for attending all visits were $390.

Women assigned to the experimental versus usual-care control conditions initiated prescription contraceptive use (100 percent versus 29 percent) and reported prescription contraceptive use at the 1-month (63 percent versus 13 percent), 3-month (88 percent versus 20 percent), and 6-month (94 percent versus 13 percent) assessments. None of the experimental condition participants became pregnant during the 6-month protocol versus three women (20 percent) in the control condition. In addition, 38 percent of women in the experimental condition chose the most effective prescription contraceptive methods (long-acting reversible contraceptives) versus 7 percent of women in the control condition.

Washington State Institute for Public Policy. (2019). Contingency management (higher cost) for substance use disorders. (Benefit-cost estimates updated 2019.) **http://www.wsipp.wa.gov/BenefitCost/ProgramPdf/297/Contingency-management-higher-cost-for-substance-use-disorders**

This cost-benefit analysis of CM for those with an SUD (excluding marijuana use disorder) found that the estimated long-term cumulative net benefits per participant for the first 50 years beyond the initial investment in the program exceed the initial investment.

This benefit-cost analysis by the Washington State Institute for Public Policy focused on CM for participants with SUDs (excluding marijuana use disorder), where contingencies were provided for remaining abstinent. The two methods reviewed included (1) a voucher system where abstinence earned vouchers that could be exchanged for goods provided by the clinic or counseling center and (2) a prize or raffle system where participants who remained abstinent earned an opportunity to draw for a prize.

Researchers conducted a meta-analysis of two programs to estimate its effect on outcomes. CM in Washington State is typically provided for less than a year. Researchers determined that the average annual cost per participant for administering the incentive program, which included staff costs, inventory, shop and restock of prizes, material costs of items, counseling session costs, and toxicology screens was $548 in 2012. Next, they re-calculated the costs in 2018 dollars, which equaled $601. Note that all staff costs include salary, benefits, and overhead, and the costs were calculated from the clinic perspective.

Roll, J., Madden, G., Rawson, R., & Petry, N. (2009). Facilitating the adoption of contingency management for the treatment of substance use disorders. *Behavior Analysis in Practice, 2*(1), 4–13. https://doi.org/10.1007/BF03391732

This article discusses challenges and solutions to implementing CM in community-based SUD treatment settings.

In this paper, the authors describe several areas that hinder the transfer of CM into community-based practice settings, address barriers, and offer suggestions to overcome the challenges. Lack of familiarity with CM approaches at the community-based provider level is a barrier to successful implementation. The authors note that in New Hampshire, 45 percent of clinicians who practice at state-funded substance abuse treatment facilities had no familiarity with CM for substance abuse, and only 9 percent reported any practical experience with CM techniques (McGovern et al., 2004.) They further explore barriers such as issues with research language translation to a community-based setting, provider training, and little time for researchers to spend on effectively transferring knowledge from CM research to the community due to competing factors. Cost-efficacy analysis of CM has shown that for every $1 spent by adding CM to a methadone detoxification treatment program, one could expect a $5 reduction in health care costs (Hartz et al., 1999.)

Furthermore, the authors note that restructuring a community substance abuse clinic to implement CM may require more than just provider training (i.e., also new equipment). As an example, contingencies, such as urirnalysis, breath, saliva, or hair analysis, require tailoring counseling sessions to include sample collection, testing, and recording of results.

- In community treatment settings, material and wage costs for administering urinalysis and breath testing averages $7.53 per test (Sindelar et al., 2007).
- The average monetary value of vouchers employed in successful CM trials has been $50 per week (Petry & Alessi, 2007).
- Vouchers with a monetary value were most preferred. Other items, such as take-home medication privileges, have proven useful in promoting drug abstinence, identifying a large menu of low- or no-cost items and privileges that can effectively compete with drugs as a reinforcer.
- Sindelar et al. (2007) estimated the cost of increasing treatment efficacy by adding prize-based CM to treatment as usual during a 12-week treatment period.
    - If a clinic was already conducting regular drug testing as part of outpatient therapy, each additional week of continuous abstinence would cost $75.40 per client ($25.13 per month) under prize-based CM.
    - If the clinic was not already conducting drug testing, the expense would be $103.30 per client ($34.43 per month).
    - Sindelar et al. also estimated the cost of a 10 percent increase in the percentage of clients completing a 12-week course of treatment to be $137 per client ($40.67 per month).

Kellogg, S., Burns, M., Coleman, P., Stitizer, M., Wale, J., & Kreek, M. (2005). Something of value: The introduction of contingency management interventions into the New York City Health and Hospital Addiction Treatment Service. *Journal of Substance Abuse Treatment, 28*(1), 57–65. https://doi.org/10.1016/j.jsat.2004.10.007

This article discusses outcomes achieved by use of CM by the New York City Health and Hospitals Corporation (HHC), including (1) increased client motivation for treatment recovery, (2) improved therapeutic progress and goal attainment, (3) improved staff and administrators attitude and morale, and (4) enhanced relationships between clients and staff.

In this paper, researchers report on the impact of the adoption of the CM approach by the Chemical Dependency Treatment Services of the HHC. As a result of this intervention, researchers found that administrators, staff, and clients had a shared sense that the use of CM had (1) increased client motivation for treatment recovery; 2) facilitated therapeutic progress and goal attainment; 3) improved the attitude and morale of many staff members and administrators; and 4) developed a more collegial and affirming relationship not only between clients and staff, but also among staff members. Although this paper did not provide specific costs per participant or agency costs, an additional summary document is located on the NIATx website, which provides additional incentive and and cost details; it is presented in a summary format below.

CM Program Goals	Incentives	Point System	Behavior Benchmarks
Clients become more self-sufficient. Clients get appropriate clothing and skills to look for employment. Clients make good choices when shopping.	Gift certificate from Macy's, Target, Old Navy, Bath & Body Works, Metro cards, and grocery stores Toiletry articles, slippers, mugs, soap, pens, t-shirts, bandanas, and gift cards to McDonald's and the Dollar Store.	Clients start building up points when they come in for their assessment appointment. 5-100 points are offered for different accomplishments: 5 points for keeping an appointment, 10 points for a Saturday appointment. 100 points are awarded for obtaining employment or participating in vocational program. Movie passes require 50 points; $25 gift cards require 100 points.	The behavior for which incentives are given changes over time. Once clients reach a treatment goal, they are offered an incentive for something else; point values increase as they achieve more challenging behaviors, (e.g., adhering to the recovery plan gets more points than just showing up). There are platinum, platinum-plus, and gold levels as they move through treatment, maintain, or resume, etc. As they transition from detox to next level of treatment, incentive is given if they show for their first appointment at next level of care.

Program Start-Up and Cost Considerations

- Consider budget for incentives: $10,000-$20,000 was given to New York programs by the City Council to cover 200 clients, which is approximately $50-$100 per participant.
- Be aware of budget implications: Due to budget cuts, they are now planning on writing grants to fund incentives.
- Plan how to fund incentives so they could be offered for at least 2 years
- Consider opening a vendor account at a discount store for incentives to reduce incentive storage issues.
- Consider a fishbowl approach to control how many pulls are offered and how many grand prizes and other prizes can be offered; always offer “good job” messages or certificates instead of $100 prizes. Do the drawing in a family/community way, so clients feel appreciated.

Appendix D: Additional References

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Appendix E: Acronyms

CM	Contingency management
CRA	Community Reinforcement Approach
Helping HAND	Helping to Advance in New Directions
HHC	New York City Health and Hospitals Corporation
NIDA	National Institute on Drug Abuse
OUD	Opioid use disorder
SAMHSA	Substance Abuse and Mental Health Services Administration
SUD	Substance use disorder
TA	Technical assistance
UDS	Urine drug screen