Effectiveness of and best practices for using contingency management and incentives for health care issues related to HIV, sexually transmitted infections (STIs), and pre-exposure prophylaxis (PrEP)

Question

What is the effectiveness of and what are the best practices for using contingency management and incentives for health care issues such as HIV, STIs, and PrEP?

Key Take-Home Messages

- Using contingency management and incentives at the different steps of HIV care continuum (such as testing, treatment adherence, viral suppressions) is widely explored and discussed in the literature, whereas the evidence related to other STIs or PrEP is more limited.
- Many interventions have used incentives to increase rates of HIV testing (1–3), treatment adherence (4, 5), and viral suppression among people who use drugs (6), individuals requiring psychosocial supports (7), and hardest-to-reach populations (8).
- Recommendations for organizations considering the use of financial incentives include: incorporating incentives into HIV care programs (9); ensuring incentives meet the needs of the target population; framing incentives so they do not seem paternalistic or condescending (10); targeting individuals facing barriers to HIV adherence; and ensuring acceptance for the use of incentives across the entire organization (9).

Rapid Response: Evidence into Action

The OHTN Rapid Response Service offers quick access to research evidence to help inform decision making, service delivery, and advocacy. In response to a question, the Rapid Response Team reviews the scientific and grey literature, consults with experts if required, and prepares a review summarizing the current evidence and its implications for policy and practice.

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- Small-scale studies found that incentives can encourage STI testing among youth (11) and can improve access to STI testing and treatment among hard-to-reach populations (12).

- A pilot trial in the U.S. examining the use of incentives for PrEP adherence was found to be feasible and acceptable (13) and another trial found that incentives increased PrEP use among participants (14), indicating promise for future larger trials.

- Across the studies, most recipients had positive opinions and high acceptability of contingency management and/or incentives and noted that: it provided them with motivation to adhere to their medication (15), they enjoyed taking the quizzes and having a chance at winning (16), felt that incentives showed that someone cared about them (17), and appreciated a non-stigmatizing, non-paternalistic approach to missed doses of antiretroviral therapy (ART) (18). At the same time, some study participants believe that individuals should be self-motivated to engage in HIV care (15) and noted conflicting feelings of receiving payments for treatment adherence (17). Incentives may have the greatest impact among those starting ART or those without adherence routines, may be insufficient for those facing many barriers, and may not be necessary for those with intrinsic commitment to adherence (19).

The Issue and Why it's Important

Behavioural economics suggests that when individuals make behavioural decisions they take part in a judgement process that considers immediate preferences while discounting long-term benefits, even if the total long-term benefits to health exceed immediate benefits such as an increase in income (20). This phenomenon (know as temporal discounting) poses a challenge to HIV health-promoting strategies that prioritize future outcomes over present needs (20).

Contingency management provides individuals with an incentive or reward upon achieving a specific health-promoting behaviour (21). Overall, there is growing interest in the use of incentives to increase the uptake of specific behaviours to achieve health outcomes at the individual and population level (22, 23). As Operario et al. notes, "HIV prevention research has recently become energized by insights from behavioral economics" in an effort to move beyond psychological approaches to HIV prevention which have not always been sufficient in serving disadvantaged groups (20). Furthermore, incentives have been promoted as "the key to closing the gaps in the HIV Cascade" (22), particularly in low-income settings (24). A qualitative study in British Columbia among health care service providers and key informants found that incentives encourage certain populations to participate in HIV testing, treatment, adherence, and achieving and maintaining viral suppression (22). Opinions in favour of incentives

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for HIV care state that they are appropriate because they "bring the right people through the door" (22). Potential disadvantages of such incentives are that that they are short-lived and do not address the underlying issues and structural barriers to care as incentives "… bring people at risk or living with HIV who experience the most inequities into a system that is not serving them" (22). Various aspects of using financial incentives to influence health behaviours are widely discussed in the literature (25).

This review aims to examine interventions with incentives to promote progress along the HIV care continuum, STI testing, and PrEP use, as well as provide the perspectives of recipients of incentives.

What We Found

Incentives related to the HIV care continuum

Interventions have been using smaller, more frequent incentives to influence behaviour change (26, 27). For example, a qualitative study published in 2020 examined patients' perceptions of incentives provided at the Max Clinic in Seattle, Washington (28). Small, non-monetary incentives included the provision of snacks, food vouchers, no-cost cell phones and bus passes to individuals not engaged in conventional HIV care (28). The study concluded that incentives that attend to basic unmet needs, such as food insecurity and lack of transportation, encouraged clinical care seeking behaviors among patients (28). Studies examining the use of incentives for HIV testing, treatment adherence, and viral suppression are explored in more detail below.

HIV testing

A 2021 systematic review explored the social network strategy (SNS) as an intervention to optimize HIV testing (1). The SNS enlists a group of at-risk individuals who then recruit others in their social network to test for HIV and take part in prevention or treatment (1). This method is rooted in the idea that individuals in the same social network have similar risks for HIV and are more likely to trust one another and potentially adopt behaviours of their peers (1). Fourteen studies published from 2009 to 2018 examined SNS and HIV testing in the U.S.; 13 of them incorporated the use of incentives (1). These incentives were diverse and included cash, gift cards, and transportation vouchers (1). Incentives for recruiters ranged between USD 10–25 for each individual recruited (1). In some studies, individuals recruited also received an incentive when tested for HIV which ranged between USD 5–25 (1). Authors found that incentives: were important to consider for effective recruitment; may unintentionally lead to repeat testers; should meet the needs of recruiters and those recruited (1).

6. Metsch LR, Feaster DJ, Gooden L, Matheson T, Stitzer M, Das M, et al. Effect of patient navigation with or without financial incentives on viral suppression among hospitalized patients with HIV infection and substance use: A randomized clinical trial. JAMA. 2016;316(2):156–70.

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10. Linnemayr S, MacCarthy S, Wagner Z, Barreras JL, Galvan FH. Using behavioral economics to promote HIV prevention for key populations. Journal of AIDS and Clinical Research. 2018;9(11).

A randomized clinical trial examined the effect of small cash incentives and HIV test acceptance (2). Over 8,700 patients were cross-randomized to incentives of USD 0, 1, 5, or 10, as well as to one of three test defaults: opt-in (patients were to let a care provider know if they want an HIV test), active-choice (patients were asked if they would like a test), or opt-out (patients were tested unless they declined) (2). Unadjusted for incentives, patients in the opt-in scheme accepted 43.8% of test offers, followed by 55.3% and 67.7% among those in the active choice and opt-out defaults, respectively (2). The USD 1 incentive increased test acceptance in the opt-in default but not the other default settings, and the USD 5 and 10 incentives were less effective under the opt-out default than the other default settings (2). Among all treatment assignments, opt-out had the largest effect, followed by the USD 10 incentive (2).

The STAR (Seek, Treat, and Retain) study in New York City aimed to engage or re-engage Black, substance-using men who have sex with men and transgender women in HIV care (3). The project used community-based recruitment, online recruitment, as well as respondent-driven sampling to engage participants. Respondent-driven sampling entailed a recruitment method where a selected group of participants are provided with an incentive (USD 5) for every individual they enrolled from their social networks in an effort to engage marginalized and stigmatized members (3, 29). Respondent-driven recruitment began with 20 participants and yielded an additional 643 participants over 39 months through the incentivized respondent-driven sampling, of which only 3.7% tested positive for HIV (3). Community-based sampling recruited 826 participants, of which 10% tested HIV positive, and online recruitment method had only 18 participants recruited, but had the highest proportion of individuals (38.9%) testing positive for HIV. The incentive may have been too small to encourage the referral of new participants, and combining recruitment strategies was more successful than respondent-driven sampling alone (3).

A one-year pilot study called Mobile Technology and Incentives (MOTIVES) at a Los Angeles County HIV service provider aimed to increase HIV prevention knowledge and testing frequency among Latino/a men who have sex with men and transgender women (30). Three groups were examined: an information plus group (n=107), an information only group (n=91), and a comparison group not participating in the intervention (n=540) (30). The information only group received weekly texts related to HIV prevention, while the information plus group also had the chance to win regular prizes such as a USD 50 gift card if they tested for HIV at least every three months (30). The results found that, on average, testing for HIV at 3-month intervals occurred among 24.9%, 22.0%, and 13.0% of participants in each of the aforementioned groups, respectively (30). The difference in testing frequencies between the two intervention groups was found to be clinically important and suggests that incentives may impact prevention behaviours such as participating in HIV testing (30). A follow-up qualitative study found

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the intervention to be both acceptable and feasible (16). A majority of participants noted that they had a good experience with the intervention, and appreciated receiving text messages to get tested for HIV (16). Even though some participants did not completely understand their chances of winning a prize, they enjoyed taking the quizzes and having a chance at winning (16).

Another pilot study called Stick to It examined if elements of gamification can increase routine HIV/STI screening among young men who have sex with men in California (31). The study provided participants the opportunity to earn points through web-based activities that could be redeemed for chances to win various prizes during clinic visits (31). The intervention was based on information gathered from 11 focus group discussions with young men who have sex with men. Common themes identified in the focus groups included preferences for: game content that was fun and lighthearted rather than highly sexualized; polls and quizzes over games; a combination of high-probability small prizes and low-probability large prizes (31). A total of 166 men registered for the intervention, of which 31 (19%) completed at least one online activity in the subsequent six months (32). Reasons for inactivity after registration among some participants included: the benefits of the program were unclear, the website did not provide enough information on next steps after enrollment, the prizes were not well described during the enrollment process (32). Despite moderate engagement, participants provided a positive assessment of the program in interviews, reporting that the inclusion of game elements was motivating (32).

Treatment adherence

A number of studies examined the use of financial incentives to maintain adherence to antiretroviral therapy (ART). This includes a randomized pilot study conducted at an HIV clinic in Philadelphia among 29 participants with an unsuppressed viral load (4). An electronic pill bottle was used to measure daily adherence among all participants in the incentive arm (n=14) and half of participants in the control arm (n=8) (4). Participants in the incentive arm were entered into a daily draw for USD 10 or USD 100 if they opened their bottle the previous day (4). Results found that ≥80% adherence was achieved by 36% of those in the intervention arm and 25% of those in the control arm (4). The intervention was found to be feasible and acceptable by study participants and authors concluded that the daily incentives with adherence monitoring could be used to support adherence among those not virally suppressed (4).

A six-month randomized clinical trial examined the use of a smartphone-based app to measure adherence to treatment among individuals who have a history of drug use in the Baltimore area (5). All participants (n=50) had adherence measured through a special bottle cap that recorded each time they opened their medication bottle (5). Those in the intervention arm (n=25) also received a smartphone to record videos of medication adherence

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for which they could receive incentives up to USD 140 per month for maintaining perfect adherence (5). At six months there was a significant difference in the proportion of participants reaching 95% adherence with just over 20% in the control group and about 60% in the intervention group (5). The authors found the intervention to be feasible and to be a potential method to promote adherence (5).

A study examined the perspectives of 44 individuals living with HIV and used substances to inform the dissemination of behavioural therapies for ART adherence among substance users (15). Focus groups were conducted among these participants at four HIV care settings in the U.S. (15). A common theme identified in the focus groups was related to intrinsic motivation (15). For example, one participant stated that, "*[Contingency management] gives you a reward…when you don't really want to do something anyway, it gives you a reason to do it*" (15). Others raised concerns about receiving incentives for adherence, with a participant stating, "*You can offer incentives and I'll do what it takes to get them, but…the other side of my brain is going 'I shouldn't have to be rewarded to go take my meds*'" (15).

A 2017 study examined perceived facilitators and barriers for HIV testing among 67 Black men living with a low income in rural Florida who were HIV negative or did not know their HIV status (33). Results found that facilitators for testing included: using community locations for testing such as a park, library, or gym; providing incentives such as a free meal or money as an incentive for testing; and having peer-led messaging to access free, rapid HIV testing (33).

Viral suppression

A 2021 systematic review examined the effectiveness of financial incentives on improving HIV care outcomes (34). A total of 22 studies published up to 2019 were included: 10 took place in the U.S., and the remaining 12 in Asian and African countries (34). In a subgroup analysis of the studies conducted in the U.S., results found that study participants had greater chance of achieving viral load suppression in a treatment arm with financial incentives compared with the treatment arm with usual care, with a pooled relative risk of 1.28 ($p<0.001$) (34). The review concluded that incentives can assist with achieving viral load suppression in high-income countries (34).

Various clinical trials examined the use of incentives to support achieving and/or maintaining viral suppression which include:

A 2019 trial randomized participants living with HIV in Baltimore into an incentive (n=52) or control (n=50) group to determine the effects of financial incentives on their viral load (35). Participants in the incentive group could receive USD 10 per day for having a viral load that was undetectable or had decreased since their last viral load assessment; earning up to a maximum of USD 7,300 over two years (35). Results after the first year of the intervention

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found that a significantly greater proportion of participants in the incentive group reported >90% adherence to medication (65.9% vs. 42.5%), and a significantly greater proportion presented with an undetectable viral load (72.1%) than those in the control arm (39.0%) (35). The authors concluded that incentives could lead to increases in undetectable viral loads among those living with HIV (35). A secondary analysis of the data found that both previously incarcerated and never incarcerated individuals in the incentive group had a significantly higher proportion of virally suppressed individuals than those in the control arm, indicating that such incentives can also be useful in increasing viral suppression among those who have been incarcerated (36).

A 2017 randomized trial called HPTN 065 examined the impact of incentives on viral suppression among individuals living with HIV in the Bronx, New York and Washington, DC (37). A total of 37 HIV care sites were included in the analysis for viral suppression; 17 of these sites provided financial incentives and 20 provided standard care (37). Participants (n=9,641) at HIV care sites providing incentives received USD 125 upon linkage to care and USD 70 if they were virally suppressed at each quarterly blood test from 2011 to 2013 (37). Results demonstrated that incentives did not increase linkage to care, but did significantly increase the proportion of patients that were virally suppressed with 3.8% more patients experiencing viral suppression at sites with incentives than sites with standard care (37).

A study examining the perspectives of HPTN 065 participants found that they had an overall positive opinion of the incentivized intervention and felt that it showed that someone cared about them (17). Participants believed that "gift cards for two visits would be sufficient to encourage patients to become more informed about HIV, begin getting care at a clinic, and then remain in care" (17). In general, participants appreciated the financial incentive amount, while some stated they would have appreciated more (17). Despite the overall positive impression of the intervention, about half of the participants were opposed to the concept of paying people to link to care and believed that people should be self-motivated to engage in care (17). Another study found that the effectiveness of HPTN 065 incentives may vary across the stage of change continuum (19). Results found that incentives: have the greatest impact among those starting ART or those without adherence routines; may be insufficient for those facing many barriers; and may not be necessary for those with intrinsic commitment to adherence (19). A follow-up study examined outcomes at nine months after intervention withdrawal and found that those in the incentive group still had a significantly higher proportion of patients continuing care (7.5%) and had a higher proportion of patients (2.7%) that were virally suppressed compared to the standard care sites (38). A follow-up study examining the costs of HPTN 065 found it to be cost-effective from a health care perspective with an estimated cost of USD 49,877 per quality-adjusted life-year (QALY) (39). The trial

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was estimated to be cost-saving from a societal perspective, with "lifetime productivity gains of USD 10,686 per patient" (39).

A 2016 randomized clinical trial called Project HOPE recruited 801 participants from 2012 to 2014 across 11 hospitals in the U.S. to examine the impact of incentives on viral suppression among people who used substances (6). Participants living with HIV and used substances were randomized to one of three treatment groups: patient navigation; patient navigation with financial incentives; or treatment as usual (6). The intervention took place over a six-month period and financial incentives were provided for specific behaviours related to achieving viral suppression (up to USD 1,160) (6). Results after six months found a significant difference in the proportion of participants that achieved viral suppression in the patient navigation arm with financial incentives (50.4%) compared to the treatment as usual arm (38.2%) (6). This trend in viral suppression was not sustained after the discontinuation of incentives at the end of the six-month intervention (6). At the one-year mark, there was no significant difference in the rates of viral suppression across the three groups with 34.1%, 35.7%, and 38.6%, achieving viral suppression in the usual care, navigation only, and navigation and incentive arms, respectively (6). Secondary analyses found that patients in the incentive arm attended a greater number of patient navigation sessions (40), initiated earlier engagement in care, and had a higher average number of HIV care visits (41). Entry into substance use disorder treatment was significantly associated with a higher rate of viral suppression at six months in both of the patient navigation treatment groups (42). A higher percentage of participants in the incentives group entered into substance use disorder treatment (47.6%) compared to those in the patient navigation-only group (25.5%) (42). Therefore, incentives offered with the patient navigation intervention was associated with substance use treatment entry and in turn, participation in substance use treatment was associated with greater viral suppression at the six-month time point (42).

All participants in the Project HOPE trial used drugs (6) while only some participants in the Baltimore trial (36) reported drug use which may explain their differing findings (43). Furthermore, participants in the Baltimore trial were still receiving incentives at the time of the study and the incentives were much higher than in the Project HOPE (6) and HPTN 065 (37) which suggests that the amount of the incentive matters when it comes to influencing health behaviours (35).

A single-center trial in Atlanta, Georgia had participants randomized into one of three arms (44). Participants in the provider visit incentive arm (n=21) received USD 30 after each primary care visit they attended (44). Participants in the incentive choice arm (n=19) could choose to receive either the same benefit as the provider visit incentive arm or choose to receive USD 30 if they also demonstrated that they maintained ART adherence of at least 90% via a dose-

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recording pill bottle (44). The third arm was a passive control arm (n=70), with routine non-incentivized care (44). Results found that both incentive arms had higher odds of viral suppression than the control arm three months after the final study visit, although only the incentive choice arm had a statistically significant difference (odds ratio 3.93; P=0.025) (44). This indicates that incentives combined with individual choice can increase commitment to healthy behaviours even once the incentives are removed (44).

Three small-scale trials were identified among participants who used drugs. This included a 16-week contingency management intervention in the Bronx, New York from 2012 to 2017 (45). Participants in the intervention (n=37) were provided escalating rewards in the form of vouchers for every drug-free urine test completed, up to USD 1,320 and were compared to controls (n=36) who did not receive the incentivized vouchers (45). Results found that the intervention group had a significantly greater average reduction in their $\log_{10}$ viral load than the control group, but as in the Project HOPE (6), this association diminished after the incentives ceased (45). Another trial in San Francisco allocated men who have sex with men and used methamphetamine into a positive affect intervention arm (n=55) where they attended five sessions to gain skills to manage stimulant withdraw and could receive up to USD 330 for stimulant abstinence compared to controls (n=55) attending five sessions with neutral writing exercises and did not have incentives for stimulant abstinence (46, 47). Results found that men in the intervention arm had significantly lower $\log_{10}$ viral loads compared to the control arm at 6, 12, and 15 months after the start of the intervention, indicating support for the intervention's ability to achieve sustained reductions in viral loads among men who have sex with men who use methamphetamine (46). The third study, a pilot trial in Miami among women living with HIV and who used cocaine (n=16), provided participants with incentives for stimulant abstinence for a period of three months, up to a maximum of USD 458 (48). Women were allocated to four sessions of expressive writing (n=9) or neutral writing (n=7) during the contingency management intervention (48). Results found that women in the expressive writing group had lower $\log_{10}$ HIV viral loads at the six-month follow-up than those in the neutral writing group, and displayed a trend towards reductions in cocaine use (48). Barriers to participation in the intervention included participants' perceived inadequacy of the financial incentives; particularly those provided for urine screening visits, experiencing competing demands which made it difficult to prioritize the intervention, and concerns about the emotional distress the writing exercises could cause (48). Identified benefits of participation in the intervention included having social support, the anticipation of receiving a reward, and the persistent follow-up by the intervention team (48). The authors concluded that the intervention was a potential way to address intersecting issues of trauma, stimulant use, and HIV management in women (48).

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41. Stitzer ML, Hammond AS, Matheson T, Sorensen JL, Feaster DJ, Duan R, et al. Enhancing patient navigation with contingent incentives to improve healthcare behaviors and viral load suppression of persons with HIV and substance use. AIDS Patient Care and STDs. 2018;32(7):288–96.

Smaller scale studies examined the use of incentives to support achieving and/or maintaining viral suppression which include:

- The Alexis Project included a contingency management intervention among transgender women of colour in California (21). From 2014 to 2016, study participants (n=139) received sessions with peer health navigators and escalating rewards for reaching various HIV care milestones: up to a maximum of USD 500 in the form of goods and services such as grocery store gift cards (21). Results found that 85% of participants attended their first HIV care visit, 71% received ART, 57% returned for a second care visit, and 24% of participants that enrolled with a detectable viral load achieved viral suppression over the course of the study (21). The study concluded that contingency management may have been a motivating factor for participants to achieve the targeted milestones (21).

- The Undetectables Intervention, developed by Housing Works Community Healthcare and the University of Pennsylvania and implemented in New York, was integrated into six existing HIV organizations from 2014 to 2016 to support individuals with HIV experiencing psychosocial challenges (49). The program included: a social campaign with graphic novels to promote adherence (7), access to adherence support teams, and quarterly financial incentives of USD 100 if participants achieved or maintained an undetectable viral load (<50copies/mL) (9, 49). In a pre-post analysis of 502 participants, the proportion of participants with an undetectable viral load significantly increased from 26% to 46% and the proportion of participants that were virally suppressed significantly increased from 39% to 62% (49). The incentives, when combined with integrated health services, can assist with addressing barriers to viral suppression among marginalized individuals living with HIV (49). A follow-up study examined participants perspectives on the financial incentives provided in intervention (18). The study found that incentives empowered participants and they appreciated the non-stigmatizing, non-paternalistic approach to missed doses of ART (18). One participant stated that, "*It makes me feel like I'm an adult. Not someone who is forgetting and has to be told about it constantly, but someone who is being paid to take the meds. That's cool and makes me ok if I miss it here or there*" (18). Participants found the incentives helpful in maintaining adherence and as a way to resist the illegal market in pills with a participant stating, "*There's always been these pharmacies [that would buy the pills]. This [payment as an incentive] just means that I can make money above the table, and not illegally. This helps*" (18).

42. Stitzer ML, Gukasyan N, Matheson T, Sorensen JL, Feaster DJ, Duan R, et al. Enhancing patient navigation with contingent financial incentives for substance use abatement in persons with HIV and substance use. Psychology of Addictive Behaviors. 2020;34(1):23–30.

43. Pollock S, Toegel F, Holtyn AF, Rodewald AM, Leoutsakos JM, Fingerhood M, et al. Effects of incentives on viral suppression in people living with HIV who use cocaine or opiates. Drug and Alcohol Dependence. 2020;212:108000.

44. Alsan M, Beshears J, Armstrong WS, Choi JJ, Madrian BC, Nguyen MLT, et al. A commitment contract to achieve virologic suppression in poorly adherent patients with HIV/AIDS. AIDS. 2017;31(12):1765–9.

45. Cunningham CO, Arnsten JH, Zhang C, Heo M, Bachhuber MA, Jost JJ, et al. Abstinence-reinforcing contingency management improves HIV viral load suppression among HIV-infected people who use drugs: A randomized controlled trial. Drug and Alcohol Dependence. 2020;216:108230.

46. Carrico AW, Neilands TB, Dilworth SE, Evans JL, Gomez W, Jain JP, et al. Randomized controlled trial of a positive affect intervention to reduce HIV viral load among sexual minority men who use methamphetamine. Journal of the International AIDS Society. 2019;22(12):e25436.

- The Max Clinic in Seattle provides high-intensity support for difficult to treat patients and also incentives for retention in care and achieving viral suppression (8). The clinic offered patients enrolled from 2015 to 2016 with food vouchers, cash incentives for attending blood draws and achieving/maintaining viral suppression, no-cost bus passes, and cell phones (8). A study compared viral suppression among patients at the Max Clinic (n=50) to matched control patients at another HIV primary care clinic (n=100) (50). Results found that viral suppression from 12 months pre- to 12 months post-enrollment significantly increased from 20% to 82% among Max Clinic patients and increased from 51% to 65% among control patients (50). When adjusted for differences such as substance use, the Max Clinic patients were three times more likely to achieve viral suppression than control patients (50). The study concluded that the Max Clinic was successful in improving viral suppression among patients with complex needs (50). Participants viewed the Max Clinic as a place where they were valued, listened to, and treated as an equal (28). Participants appreciated receiving incentives for blood draws and maintaining adherence, with one participant noting that, "*…I've always had problems taking my medication for my whole life…a light bulb just clicked in my head and was like, 'I need that [incentive] money. You need to take your medicine.' So that's what really helped me overcome the pills*" (28). Other participants experiencing homelessness and food insecurity noted the importance of non-monetary incentives such as snacks and sports drinks which allowed them to focus on their health during clinic visits rather than their hunger (28).

- A study examined the effects of a pilot program called Health Models in Louisiana which provided incentives to participants at three specialty clinics to improve rates of engagement in care and viral suppression (51). From 2013 to 2016, a total of 2,076 participants enrolled in the program and earned an average of USD 160.81 in financial incentives (51). At baseline, 70.1% of participants (n=1,456) were engaged in care which increased to 98.6% of enrolled participants at one year (1,299 of 1,317) (51). The proportion of enrolled participants that were virally suppressed significantly increased from 57.8% (1,198 of 2,074) at baseline to 82.7% (1,474 of 1,783) at one year (51). The program was described as a valuable addition to the clinics' services to improve HIV care outcomes (51).

Recommendations for organizations considering the use of financial incentives to support viral load suppression include: incorporating incentives into HIV care programs; ensuring incentives meet the needs of the target population; framing the incentive in a way that does not come across as paternalistic or condescending (10);

47. Carrico AW, Nation A, Gómez W, Sundberg J, Dilworth SE, Johnson MO, et al. Pilot trial of an expressive writing intervention with HIV-positive methamphetamine-using men who have sex with men. Psychology of Addictive Behaviors. 2015;29(2):277.

48. Jemison D, Jackson S, Oni O, Cats-Baril D, Thomas-Smith S, Batchelder A, et al. Pilot randomized controlled trial of a syndemics intervention with HIV-positive, cocaine-using women. AIDS and Behavior. 2019;23(9):2467–76.

49. Ghose T, Shubert V, Poitevien V, Choudhuri S, Gross R. Effectiveness of a viral load suppression intervention for highly vulnerable people living with HIV. AIDS and Behavior. 2019;23(9):2443–52.

50. Dombrowski JC, Galagan SR, Ramchandani M, Dhanireddy S, Harrington RD, Moore A, et al. HIV care for patients with complex needs: A controlled evaluation of a walk-in, incentivized care model. Open Forum Infectious Diseases. 2019;6(7):ofz294.

51. Brantley AD, Burgess S, Bickham J, Wendell D, Gruber D. Using financial incentives to improve rates of viral suppression and engagement in care of patients receiving HIV care at 3 health clinics in Louisiana: The health models program, 2013-2016. Public Health Reports. 2018;133(2_ suppl):75S–86S.

52. Biggs K, Walsh J, Ooi C. Deadly liver mob: Opening the door – Improving sexual health pathways for Aboriginal people in Western Sydney. Sexual Health. 2016;13(5):457-64.

targeting individuals facing barriers to HIV care and not excluding those who have achieved viral load suppression; and ensuring acceptance ("buy-in") for the use of incentives across the entire organization (9).

Incentives related to STI care

A 2019 abstract described an intervention at an STI clinic in Edmonton which aimed to increase access to STI testing among vulnerable populations (12). Study participants could receive a CAD 10 gift card for testing and another CAD 10 gift card for returning for their results and treatment if necessary (12). Over a four-month period 393 tests were conducted among 342 individuals, of which about 60% reported a history of substance use (12). Results found a high positivity rate among those tested: 10.8% for syphilis, 9.5% for chlamydia, 5.4% for HCV, and 4.0% for gonorrhea; indicating that intervention was effective in improving access to testing and treatment among the target population (12).

A health promotion program called the Deadly-Liver Mob in Western Sydney was evaluated in a retrospective study that compared outcomes in the first year of the program to outcomes in the five years prior to the program's implementation (52). The program provided Aboriginal people who injected drugs with education related to STIs and harm reduction and linked them to STI screening (52). The program provided participants with AUD 20 in vouchers for taking part in the education session, AUD 10 incentive for each referral they made to the program with a maximum of three referrals, and AUD 10 for each referral peer-educated by them (52). An additional AUD 10 was given for each of the following: testing for HCV and receiving a hepatitis B vaccination, returning for test results, and returning for a final vaccination, for a total maximum of AUD 110 per participant (52). In the first year of the program, 313 participants attending the clinic identified as Aboriginal, which was ten times more than the 83 Aboriginal participants that attended the clinic in the five years prior, combined (52). The intervention was found to have increased STI screening as a significantly greater proportion of those participating in the program were tested for at least five STIs (85%) than participants in the five years prior to the program (54%) (52). Participants in the program were significantly more likely to have a positive syphilis test results (8.9%) than those in the five years prior (5.6%), and the first year of the program saw a greater absolute number of chlamydia cases (n=15) than in the five years prior (n=11) (52).

Workshops held in Baltimore were conducted among 18 youth, 10 stakeholders, and eight social design graduate students suggested the use of incentives to such as money, food or drinks, coupons, affirmation cards, and raffles to encourage STI testing (11). Publications exploring ways to address the increasing rates of STIs in the U.S. (53) suggest that conditional cash transfers for STI testing

53. Jenkins WD, Vohra S, Grundy S, Choat L. Incentivized screening to reduce sexually transmitted infection risk and prevalence. Sexually Transmitted Diseases. 2019;46(10):654–6.

54. Centers for Disease Control and Prevention. NOFO: PS19-1901 Strengthening STD prevention and control for health departments (STD PCHD). 2018. Available from: http://www.cdc.gov/std/funding/pchd/default.htm Accessed May 7, 2021.

55. Owusu C, Baker KM, Paul R, Curtis AB. Modelling individual vulnerability to sexually transmitted infections to optimise intervention strategies: Analysis of surveillance data from Kalamazoo County, Michigan, USA. Sexually Transmitted Infections. 2018;94(5):353–8.

in the U.S. at the state level could:

- be cost-saving due to prevented STI morbidity (53),
- make use of existing STI prevention infrastructure and be easy to implement within the current federal funding framework (53, 54),
- create an incentive for partners of those frequently re-infected to get STI testing (53),
- encourage incentivized individuals to engage in other screening activities and be referred to other health services (53), and
- engage those who are uninsured and do not regularly seek out primary care (53) as those living in neighbourhoods with a low socio-economic status may be more vulnerable to STIs than those in neighbourhoods with a high socioeconomic status (55).

A small randomized controlled trial called Passport to Wellness in Los Angeles County enrolled Black men who have sex with men from 2015 to 2017 into a peer mentorship arm (n=34) or a non-mentorship arm (n=27) (14). Seventy percent of participants had experienced incarceration and 31% identified as homeless (14). All participants were given a customized wellness plan, identified as a "passport" which included health referrals and support services (14). Participants received incentives in the form of a reloadable gift card (up to USD 200) for accessing these services and for documenting activities into their passport (14). Those in the peer mentorship arm were paired with a peer to provide navigation support and were able to attend social and educational group outings (14). At the six-month follow-up both groups had statistically significant increases in PrEP awareness and STI screening (14). STI screening rates increased from 32% to 88% in the peer-mentorship arm, and 23% to 70% in the non-mentorship arm (14). PrEP use increased from 0% to 22% in the peer mentorship arm, and increased from 0% to 9% in the non-mentorship arm (14). The intervention showed promise for increasing HIV prevention among Black men who have sex with men, but the sample size was too small to find statistically significant differences between groups and recommended larger studies to demonstrate efficacy (14).

A pilot trial in North Carolina tested a mobile-based application called mSMART to examine its effect on PrEP adherence among 10 men who have sex with men already on PrEP (13). The application provided monetary incentives for daily adherence to PrEP which was assessed via a camera-based monitoring tool (13). At baseline, 90% of participants had an acceptable adherence level, and at the end of the trial, adherence levels improved for 30% of the sample and did not decline for any participants (13). The results found the mSMART application to be feasible and acceptable (13).

Factors That May Impact Local Applicability

Most of the studies in this review took place in the U.S. which may not be entirely generalizable to the local setting in Ontario. Studies varied in terms of populations served and amount and type of incentives provided which may need to be adapted to meet the needs of local populations.

What We Did

We searched Medline (including Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE® Daily and Ovid MEDLINE®) using a combination of (text term [contingency management] or terms [incentive* or gift card* or cash or nudg*] in titles or abstracts) AND (text term [HIV] or terms [STIs or STD* or sexually transmitted or PrEP or preexposure or pre-exposure] in titles or abstracts). Searches were conducted on April 26, 2021 and results limited articles published in English from 2016 to present. Reference lists of identified articles were also searched. The searches yielded 240 references from which 55 were included.