Role of stimulant replacement therapy in treating stimulant use disorders

Within the context of the COVID-19 pandemic

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Stimulant use disorder (StUD) is an increasingly prevalent public health concern in Canada. To mitigate harm in the context of dual public health emergencies—the coronavirus disease 2019 (COVID-19) pandemic and the opioid crisis—the British Columbia Centre on Substance Use (BCCSU) released interim clinical guidance in March 2020.[1] The document provides guidance for primary care providers caring for people with substance use disorders. It introduces stimulant replacement therapy (SRT) as a reasonable treatment option given the extraordinary circumstances under which health care providers are operating, although SRT has not been considered an evidence-based treatment for StUD. The case we report is one of the first to illustrate the benefits of SRT in this context, demonstrating how it can generate better health outcomes, improve patient engagement with health care, and reduce COVID-19 transmission, hence accomplishing both individual and public health goals.

Case

A 50-year-old male (A.B.) presented to an outreach nurse in the Downtown Eastside neighbourhood of Vancouver, BC, in May 2020, during the first wave of the COVID-19 pandemic. He requested prescription stimulants to mitigate his crystal methamphetamine (known colloquially as crystal meth) use, and was subsequently connected with our primary care and addiction medicine clinic.

His health care interactions were limited and he did not have health care insurance (the British Columbia Medical Services Plan). He had no reported chronic medical conditions, surgical procedures, or psychiatric diagnoses. He was not taking any medications and had no known allergies.

He reported multiple adverse childhood experiences, including physical and emotional abuse. After postsecondary education, he worked in business for 20 years, then transitioned to the food delivery industry. Unfortunately, he lost employment during the pandemic. After several months of homelessness, he was placed in temporary housing.

Stimulants were A.B.'s drug class of choice. At age 30, he started using cocaine via nasal insufflation (snorting) and transitioned to crystal methamphetamine. At presentation, he used 0.5 g of crystal methamphetamine every 3 days via inhalation (smoking), with the occasional binge of 0.5 g. He used crack cocaine via inhalation once monthly. Daily cannabis use started in early adulthood and was ongoing. He did not drink alcohol and reported no opioid use. He reported infrequent γ hydroxybutyrate use. He started smoking cigarettes at the age of 10; at presentation, he smoked 10 cigarettes daily and vaped occasionally.

On examination, A.B. was disheveled but well. He had no track marks on his skin and his speech was normal. His mood was "good" with a euthymic affect. He did not voice any suicidal thoughts and he had good insight into his stimulant use. His cognition appeared intact.

Editor's key points

- Stimulant replacement therapy is a harm reduction technique that could help to mitigate risks that are compounded during a pandemic, according to guidance from the British Columbia Centre on Substance Use.
- Stimulant replacement therapy has the potential to decrease illicit substance use and to improve health care engagement, social support, and overall quality of life.
- Management of stimulant use disorder with stimulant replacement therapy can allow patients to adhere to physical distancing guidelines and could be a crucial aspect of achieving public health goals during a pandemic.

Points de repère du rédacteur

- La thérapie de remplacement des stimulants est une technique de réduction des préjudices qui pourrait contribuer à atténuer les risques qui se multiplient durant une pandémie, selon les conseils présentés par le Centre sur la consommation de substances de la Colombie-Britannique.
- La thérapie de remplacement des stimulants a le potentiel de réduire la consommation de substances illicites et d'accroître l'adhésion aux soins de santé, le soutien social et la qualité de vie en général.
- La prise en charge d'un trouble de consommation de stimulants au moyen d'une thérapie de remplacement des stimulants peut permettre aux patients de se conformer aux directives sur la distanciation physique et pourrait être un élément essentiel de l'atteinte des objectifs de la santé publique durant une pandémie.

A.B. was diagnosed with a severe StUD based on criteria from the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition. According to the BCCSU guidelines, patients with an active StUD are candidates for SRT to reduce COVID-19 exposure risk.[1] Per BCCSU recommendations, A.B. was initially prescribed daily dispensed dextroamphetamine (immediate release formulation) for 4 weeks, up to 15 mg twice daily.[1] He was given a naloxone kit as a routine harm reduction measure.

Two weeks later, A.B.'s crystal methamphetamine use had decreased to one-quarter of what he had been using before starting the dextroamphetamine regimen. He reported his other substance use had also decreased. Over the next 3 months, A.B.'s dextroamphetamine dose was titrated to 20 mg orally twice daily without any adverse effects. He experienced benefits including reduced hallucinations, improved sleep, and better mental health. He was screened for blood-borne diseases, colorectal cancer, and sexually transmitted infections. Test results were positive for chlamydia, for which he was treated. With a social worker's support, he registered for medical insurance, completed a backlog of 10 years of income tax returns, and secured housing. He remains an active patient with the clinic and is stable on SRT.

Discussion

In March 2020, the BCCSU tried to mitigate harm in the context of dual public health emergencies (the COVID-19 pandemic and the opioid crisis) facing people with substance use disorders. The BCCSU released a guidance document to support primary care providers in reducing patients' risks of withdrawal during isolation, exposure to COVID-19, and exposure to toxic illicit drug supply.[1] The guidance recommends SRT with dextroamphetamine or methylphenidate for patients with an active StUD, a therapy that had not been a previously approved option.[1]

Stimulant use disorder is an increasing public health concern. During 2017, 2% of Canadians (714 000) aged 15 years and older reported stimulant use.[2] Of those Canadians, 19% (103 000) reported their use as problematic.[2] Complications of StUD include infectious diseases (ie, HIV and hepatitis C virus infections), cardiovascular disease, poverty and homelessness, and opioid overdose morbidity and mortality associated with adulterated stimulant use.[3-5]

Multiple meta-analyses of trials of StUD management have not yielded any statistically significant, effective pharmacologic therapies with abstinence as the primary end point.[3] Stimulant replacement therapy originated with a 2001 pilot randomized controlled trial by Shearer et al[6] and was later reinvestigated by Grabowski et al.[7] Both studies randomized patients to either placebo or dextroamphetamine.[6,7] The results were statistically insignificant, but trended toward benefit with dextroamphetamine.[6,7] A 2016 Cochrane review by Castells et al demonstrated low-quality evidence to support that psychostimulants improve sustained abstinence from cocaine.[8] In contrast, a meta-analysis by Bhatt et al in 2016 showed that psychostimulants do not provide sustained abstinence or treatment retention.[9] All of these studies used abstinence, determined through negative urine screens, as their primary outcome.

In the current context of dual public health emergencies, the end point of abstinence might be neither practical nor an appropriate first priority for some individuals. This case study highlights other positive impacts that can result from SRT. These factors have not been recognized in the literature, some of which are crucial during a pandemic.

The behaviour associated with illicit stimulant use and the illicit market can potentially sabotage physical distancing principles, which are instrumental in decreasing COVID-19 transmission rates. With health care resources strained during the pandemic, admission to hospital for overdoses must be minimized in order to preserve resources. Prescription stimulants provide a treatment that is of known potency, can potentially reduce risk of overdose, and can enable adherence to COVID-19 physical distancing guidelines. Furthermore, the availability of SRT might encourage vulnerable people to engage with and develop a trusting relationship with health care providers. For the patient in this case, this led to improved health, housing, and finances.

As this was a case study, no effort was made to control for factors that might have influenced outcomes, such as housing or social support. It is difficult to generalize this case to the wider population and its results might not be replicable, as the interventions were recently implemented. However, given the limited amount of current literature on this topic, it is beneficial to provide a specific case study.

Conclusion

This case demonstrates the potential positive effects of prescribing SRT during the COVID-19 pandemic, including better adherence to physical distancing guidelines, improved health care screening and engagement, and improved social support. The outcomes of this case suggest that there might be a role for SRT in patients with StUD after the pandemic. Continued research can be performed to assess the effects of SRT in harm reduction during and after the pandemic.

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Competing interests
None declared

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References

1. Ahamad K, Bach P, Brar R, Chow N, Coll N, Compton M, et al. *Risk mitigation in the context of dual public health emergencies*. Vancouver, BC: British Columbia Centre on Substance Use; 2020. Available from: **https://www.bccsu.ca/wp-content/uploads/2020/04/Risk-Mitigation-in-the-Context-of-Dual-Public-Health-Emergencies-v1.5.pdf**. Accessed 2022 Jan 12.
2. *Canadian Tobacco, Alcohol and Drugs (CTADS) Survey: summary of results for 2017*. Ottawa, ON: Government of Canada; 2021. Available from: **https://www.canada.ca/en/health-canada/services/canadian-tobacco-alcohol-drugs-survey/2017-summary.html**. Accessed 2022 Jan 12.
3. Ronsley C, Nolan S, Knight R, Hayashi K, Klimas J, Walley A, et al. Treatment of stimulant use disorder: a systematic review of reviews. *PLoS One* 2020;15(6):e0234809.
4. *Changes in stimulant use and related harms: focus on methamphetamine and cocaine*. Ottawa, ON: Canadian Centre on Substance Use and Addiction; 2019. Available from: **https://www.ccsa.ca/sites/default/files/2019-05/CCSA-CCENDU-Stimulant-Use-Related-Harms-Bulletin-2019-en.pdf**. Accessed 2022 Jan. 12.
5. Fleming T, Barker A, Ivsins A, Vakharia S, McNeil R. Stimulant safe supply: a potential opportunity to respond to the overdose epidemic. *Harm Reduct J* 2020;17(1):6.
6. Shearer J, Wodak A, Mattick RP, Van Beek I, Lewis J, Hall W, et al. Pilot randomized controlled study of dexamphetamine substitution for amphetamine dependence. *Addiction* 2001;96(9):1289-96.
7. Grabowski J, Rhoades H, Schmitz J, Stotts A, Daruzska LA, Creson D, et al. Dextroamphetamine for cocaine-dependence treatment: a double-blind randomized clinical trial. *J Clin Psychopharmacol* 2001;21(5):522-6.
8. Castells X, Cunill R, Pérez-Mañá C, Vidal X, Capellà D. Psychostimulant drugs for cocaine dependence. *Cochrane Database Syst Rev* 2016;(9):CD007380.
9. Bhatt M, Zielinski L, Baker-Beal L, Bhatnagar N, Mouravska N, Laplante P, et al. Efficacy and safety of psychostimulants for amphetamine and methamphetamine use disorders: a systematic review and meta-analysis. *Syst Rev* 2016;5(1):189.

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