Opioid substitution therapy (OST) for HIV prevention

KEY POINTS

- Opioid substitution therapy (OST) offers people who are opioid dependent an alternative, prescribed medicine, most typically methadone or buprenorphine.
- OST is effective in enabling people to reduce or cease injecting drug use, greatly reducing their risk of HIV infection.
- Despite World Health Organization advice that OST should be prioritised for people who inject drugs, fewer than half of the countries where injecting drug use is evident offered OST in 2018.
- Low financial and political investment in OST programmes, coupled with over regulation, discriminatory treatment from providers, police harassment and geographical barriers all impede treatment access.

Explore this page to find out more about the benefits of OST, how opioid substitution therapy programmes are delivered, coverage of programmes across geographical regions, barriers to accessing these programmes and the future of opioid substitution therapy.

Opioid substitution therapy (OST) is a type of harm reduction initiative that offers people who are dependent on opioids (such as heroin) an alternative, prescribed medicine – most typically methadone or buprenorphine – which is swallowed rather than injected.

In 2005, the World Health Organization (WHO) added both drugs to its Model List of Essential Drugs, and in 2009 it released guidance advising all countries to make OST the key focus of treatment for people who inject opioid drugs.1
However, despite injecting drug use being evident in 179 countries as of 2018, only 86 offer OST.2

There is strong evidence that OST is effective in enabling people to reduce or cease injecting drug use, greatly reducing their risk of HIV infection.3 Methadone maintenance therapy has been associated with a 54% reduction in the risk of HIV infection among people who inject drugs.4

OST has also been found to have wider health, economic, psychological and social benefits. WHO and the United Nations (UN) recommend that OST be provided as part of a comprehensive package for the prevention, treatment and care of HIV among people who inject drugs, along with the following eight interventions:

- Needle and syringe programmes (NSPs)
- HIV testing and counselling
- Antiretroviral therapy (ART)
- Prevention and treatment of sexually transmitted infections (STIs)
- Links to other HIV prevention interventions such as pre-exposure prophylaxis (PrEP) and condom programmes for people who inject drugs and their sexual partners
- Targeted information, education and communication for people who inject drugs and their sexual partners
- Vaccination, diagnosis and treatment of viral hepatitis
- Prevention, diagnosis and treatment of tuberculosis (TB)5
The benefits of opioid substitution therapy (OST)

The benefits of OST are far reaching and have been demonstrated in a variety of low-, middle- and high-income countries. It is estimated that 130,000 new HIV infections outside of sub-Saharan Africa could be prevented every year if access to OST was sufficient.6

Alongside its effectiveness in reducing HIV infection, OST has also been shown to decrease hepatitis C infection, increase adherence to HIV treatment and reduce opioid overdose. Many injecting drug users first make contact with healthcare through OST programmes then go on to access other services.7 8

OST has also been found to reduce the risk of HIV transmission between pregnant women who inject drugs and their infants.9

Because it frees people of the need to regularly obtain and pay for an ongoing supply of illicit drugs, OST can also ease financial and other stresses on individuals and their families. For this reason, it has been associated with a decrease in crimes committed by people who inject drugs.10 It has also helped to strengthen the ability of people who inject drugs to get more involved in the HIV response, resulting in better, community-led HIV and harm reduction programming.11

The benefits of OST are particularly felt when OST programmes are supported by structural changes, such as a shift away from punitive drug policies and laws towards public health.

Opioid substitution therapy retention rates

Evidence suggests that remaining on OST for 12 months or more leads to better long-term health and social outcomes. However, retention rates remain low in many countries. A 2014 evidence review found OST programmes in low- and middle-income countries had an average one-year retention rate of around 50%.12

Studies have found a difference in adherence between those on methadone and those on buprenorphine. One randomised trial reported a 76% completion rate among those on methadone, compared to 46% among those taking buprenorphine. It also found that sexual risk behaviours decreased equally among women on both treatment regimes but increased for men on buprenorphine yet decreased for men on methadone.13

In some countries, including Switzerland, Austria and Slovenia, people may be treated with slow-release morphine instead of methadone in order to increase adherence.14 15 Heroin-assisted therapy, the prescription of medical heroin (diamorphine), is also available in a handful of countries, mainly in Europe. It is used for people who have found adhering to other forms of OST particularly difficult.16

How opioid substitution therapy (OST) is delivered

Different countries and even areas within countries vary in their requirements for how OST is delivered. The main settings in which OST is offered are described below.

Outreach, particularly peer-led, plays an important role in that it can help to link people to OST, which is generally dispensed under medical supervision, with the exception of ‘take-home’ services.17
Primary care

Integration of OST into primary care settings (the first point of contact in the healthcare system, normally a general health centre) can help to increase its accessibility, although it may not be possible in all settings.

Primary care practitioners will usually need support from those with specialist training on opioid use to deliver OST effectively, and increasingly there are calls from civil society for people with experiences of injecting drugs to be involved in OST primary care programmes.18

Delivering OST in primary care settings has the advantage of reducing the fear of stigma that can prevent some people from accessing specialist harm reduction or HIV services. However, access to primary healthcare is often limited for people who inject drugs, stemming from their social marginalisation and criminalisation. Many seek care at emergency departments instead of attending healthcare centres.19

Specialist clinics

Providing OST in a specialist clinic enables a range of harm reduction and other targeted health and psychosocial services to be brought together, which can be greatly beneficial to people who inject drugs.20

Because accessing OST at most specialist clinics is free, many have long waiting lists. For example, in 2018 the average waiting time in Belfast was 29 weeks.21

Specialist clinics may also be less geographically accessible for people than primary care or pharmacy settings as there are fewer of them.22

Sometimes, specialist clinics also dispense OST in community settings in order to improve access.23

Pharmacies

Pharmacies are often the main form of delivery for OST services, especially in rural or suburban areas where access to specialist clinics may be limited. For example, 89% of OST in Australia was delivered by pharmacies in 2016/17.24

Pharmacy-based OST is particularly utilised for people who have shown good adherence to OST, who are then transferred from specialist clinics. This relieves workload and costs on specialist clinics and frees up space within clinics for people who are just beginning on OST.25

From the perspective of people who inject drugs, pharmacy-based OST is more flexible and generally more accessible. However, as pharmacists are unable to offer comprehensive harm reduction services there is a concern that dispensing in this way means other opportunities to reduce the risk behaviours of people who inject drugs and improve their health could be missed. There are exceptions to this. For example, UK pharmacists are increasingly offering other healthcare services to people accessing OST.26

Dispensing fees have been identified as an important barrier that prevents some people from accessing pharmacy-based OST. Discriminatory and judgemental attitudes from some pharmacists is also an issue.27
‘Take-home’ OST

Take-home or take-away OST involves doses of methadone or buprenorphine which people are allowed to take home to ingest without supervision. Where available, it is generally offered to those who have been adhering to OST for a number of months. For example, in Australia take-home OST is only available after at least three months of therapy, often longer.28

A challenge with take-away doses is that these drugs are sometimes sold illegally instead of being used as treatment by the person to which they have been prescribed.29 However, research indicates that take-home unsupervised buprenorphine-naloxone is effective in maintaining people in OST, and poses less of a risk of diversion or unsafe use than methadone.30

As a lack of trust between service providers and people who inject drugs presents a major barrier to OST access, the distinct advantage of take-home dosing is that it greatly reduces the need for contact, enabling people who use drugs to access OST in an environment in which they feel comfortable.

Opioid substitution therapy coverage

Despite evidence of the effectiveness of OST, 93 countries and territories that report injecting drug use did not have OST programmes as of 2018. That said, the number of countries implementing OST is rising, increasing from 80 to 86 between 2016 and 2018 alone. OST remains illegal in a number of countries, most notably Russia, a country with high levels of injecting drug use and rising rates of HIV infection.31

Asia and the Pacific

Just under half (46%) of the total global population of people who inject drugs live in Asia.32

As of 2018, 15 out of 25 countries in Asia offered OST, although coverage between countries varies greatly. China has the highest number of OST sites at 767, followed by Malaysia (466), Vietnam (285), India (212), Taiwan (162), Indonesia (92), Myanmar (51), Nepal (15), Afghanistan (8), Bangladesh (5), Macau (4) and Cambodia (2). In Hong Kong and the Maldives, OST programmes operate despite the absence of needle and syringe programmes (NSPs).33
In China, Malaysia and Vietnam, where there is high prevalence of both HIV and injecting drug use, adherence to OST remains problematic, with an overall retention rate of around 40%. This may be due in part to extenuating factors such as geographical barriers to services, discrimination from providers and low investment in OST programmes.

Opioid substitution therapy in Vietnam: a regional force

Vietnam has demonstrated strong political will to implement and expand OST programmes. OST was first piloted in Hai Phong province in 2008. By 2016, 57 provinces were offering OST, reaching 44,480 people.

In a number of provinces, OST programmes charge prescription fees, although people identified as living in poverty or with a disability are exempt. This co-payment scheme can place significant financial burden on people who inject drugs, with implications for adherence and enrolment. In some provinces, people also have to travel long distances to access OST, preventing some from accessing treatment.

OST has proven to be extremely cost-effective in Vietnam when compared to the costs of rehabilitation facilities that provide generally ineffective abstinence-only treatment. Based on data from 2012 to 2015, funding a person who injects drugs to stay in a rehabilitation facility costs the local government 2.5 times more than providing OST to one person for over a year, with OST more likely to result in a reduction in injecting drug use.
Few Pacific Island countries and territories report any injecting drug use, with the exception of Australia and New Zealand, both of which offer extensive OST services. In Australia, around 50,000 people access OST, two-thirds of whom are men.36 In New Zealand, OST is also provided free, but people risk losing access to the therapy if they continue to use other drugs (including alcohol) in a way deemed unsafe by service providers.37

Eastern Europe and Central Asia

Injecting drug use remains high in this region, and has been closely linked to HIV epidemics in many countries. People who inject drugs account for 39% of all new HIV infections in the region as of 2017.38

OST is available in the vast majority of countries but coverage is generally poor. Punitive policies and practices towards drug use means OST is prohibited in Russia, Turkmenistan and Uzbekistan.39

Ukraine has the highest number of sites at 174. Most other countries have less than 20, resulting in inadequate coverage. For example, less than 0.3% of the estimated number of people who inject drugs in Kosovo receive OST.40

Western and Central Europe and North America

OST is available in all Western Europe and North America countries.41

In the European Union and Norway, 636,000 people were receiving OST in 2016, equivalent to around half the people who are opioid dependent in these countries.42

Many OST programmes in the region continue to focus on abstinence from rather than harm reduction, which means they are less effective. Migrants frequently experience difficulties in accessing OST, although there are some exceptions to this. For example, in 2017 Italy included OST in its basic medical care guidelines, meaning it is now available to non-citizens and undocumented migrants.43

North America is home to 17% of the global population of people who inject drugs, yet its provision of OST is inadequate. For example, around 2.1 million people in the US used medically prescribed or illicit opioids in 2015 but only 411,300 people accessed OST.44

Access to OST in the US broadened in 2016 when nurses and physician assistants were granted permission to prescribe buprenorphine. However, 28 states say that nurses must work with a doctor who has a federal licence in order to prescribe, and half do not have a single physician with such a licence.45

In Canada, OST is widely available (although there is no national-level figure for the total number of sites across the country). In Ontario, Canada’s largest province, the number of people receiving OST increased from 6,000 in 2000 to over 40,000 in 2016, reflecting the way in which OST services have rapidly expanded in the country.46

Latin America

Latin America has one of the lowest levels of OST provision per person who injects drugs in the world,
reflecting the low prevalence of opioid use.47

OST is available in Colombia, Mexico, Costa Rica and Argentina, with Colombia and Mexico having the greatest need and the more established programmes. In Colombia, OST provision is inadequate, leading to long waiting lists. It is also increasingly being used as part of detoxification process rather than for harm reduction, suggesting it will be less effective. In addition, the need to have state health insurance to access OST also prevents people from receiving treatment.48

In Mexico, OST can only be purchased privately and is only available at six centres in the cities of Tijuana, Mexicali and Ciudad Juárez where injecting drug use is most concentrated.49

**Caribbean**

Puerto Rico and the Dominican Republic remain the only territories in the region where injecting opioid use is regularly reported.50

Just 8% of people who inject drugs in the Caribbean are enrolled in OST. This may be a reflection of the fact that cocaine is the most commonly injected drug in the region, rather than opioids.51

**Middle East and North Africa**

Between 349,500 and 437,000 people inject drugs in the Middle East and North Africa, 96% of whom inject opioids. Provision of OST is low, found in just seven out of 19 countries, and coverage varies widely.52

Prior to 2010, Iran and Israel were the only countries in the region that provided OST. Morocco initiated OST in 2010, followed by Lebanon in 2012, Palestine in 2014 and Kuwait in 2015. In 2016, Bahrain launched an OST pilot which is yet to go full-scale.53

In 2011, Lebanon adopted a take-home buprenorphine pilot programme. However, provision is limited to authorised psychiatrists working in pre-registered treatment settings.54

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**Opioid substitution therapy in Iran: leading the way**

Iran incorporated OST into its national policy in 2003 and is leading the way in service provision in the region, with over 7,000 centres providing OST to more than 650,000 people.

The main barriers to OST in the country include a lack of access for people living in rural areas and costs incurred with accessing the service, although since 2010 insurance coverage for OST has been provided for under national law.

The Iranian Ministry of Health is now steadily expanding the number of publicly funded, methadone maintenance therapy services it offers. OST is increasingly available in drop-in centres and services are low threshold, meaning enrolment requirements are kept to a minimum in order to encourage access.55

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**Sub Saharan Africa**

In 2017, injecting drug use was found in 36 countries in sub Saharan Africa, and the region is thought
to be home to between 645,000 and 3 million people who inject drugs.

OST services are increasing, with seven countries providing OST for people who use or inject opioids. Zanzibar began offering OST in 2015, and Abidjan in Côte d’Ivoire established a new OST service in 2018.56

Where it exists, OST is mainly provided in directly observed treatment settings. However, take-home dosing has been successfully implemented in South Africa, and is beginning on a small scale in Tanzania.57

OST is expanding significantly in Kenya, although still only reaches around 10% of people who inject drugs in the country. Barriers to accessing OST include lengthy distances for people to travel to receive daily doses and limited uptake by people from marginalised groups such as people with a disability.58

OST is available on a smaller scale in Senegal, the Seychelles and Uganda and is likely to become available in Mozambique in 2019/20.59

OST remains unavailable in Zimbabwe and Nigeria, despite significant populations of people who inject drugs and high HIV prevalence in both countries. However, the Nigerian government has begun to develop guidelines on the use of methadone for drug rehabilitation treatment and has also created a task force on harm reduction.60

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Barriers to accessing opioid substitution therapy

Criminalisation

Opioid substitution therapy remains illegal in a number of countries. For example, it is forbidden by law in Russia, which has one of the highest rates of opioid use in the world.61 In their pursuit of a “drug-free world,” Russian authorities promote abstinence-based treatment, which has very low success rates for people who inject drugs.
Russia retains considerable influence in Eastern Europe, with OST also prohibited in Turkmenistan and Uzbekistan and in the Crimea following Russia’s annexing of the territory in 2014.62

In Asia, punitive laws and policies towards people who use drugs are growing with Bangladesh, the Philippines and Sri Lanka all shifting towards harsh criminalisation of people who inject drugs, away from public health approaches. In total, 10 countries in Asia prohibit OST.63

In some countries that offer OST, police reportedly arrest people as they leave or enter services or subject them to extortion, abuse and other forms of rights violations.64 65 For example, reports from Georgia, Ukraine and Kyrgyzstan document how police frequently monitor sites where they can easily catch people who may be in possession of small amounts of drugs.66

Legal and regulatory barriers

Even when OST is permitted, a number of legal and regulatory barriers exist that prevent people from receiving treatment.

For example, in 2016 the newly elected Mauritian government moved OST from health centres to police stations, and the number of people accessing services plummeted.67

A total of 29 countries place age restrictions on accessing OST, despite evidence that injecting drug use often begins during adolescence in some settings. Even in countries with no legal age restrictions on OST, other requirements such as mandatory parent/guardian consent may limit or complicate access.68

[Under-18s] can go [to harm-reduction services], but only with their parents – their father or someone who is over 18 must go with them. They cannot go by themselves.

- Young person who uses drugs, Mexico69

Sometimes, barriers stem from bureaucratic, over-regulation of OST services. For example, in Lithuania OST can be prescribed via specialist centres and psychiatrists, and the person receiving treatment must have health insurance.70 Rigid regulations in many countries also prevent the implementation of take-home dosing.

Financial barriers

The cost of OST can prevent people from accessing it. For example, in Australia, OST is available for free but most people access it as private clients at a minimum cost of AU$35 per week. This deters enrolment and retention among people on low incomes.71

In South Africa, OST is available in Pretoria, Cape Town, Durban and Johannesburg. However, as services are not subsidised and there are no generic products available, one of the main barriers to accessing treatment remains the cost of medication.72
Stigma and discrimination

People who inject drugs are heavily stigmatised. This is reflected by public misunderstanding and distrust toward OST in some countries and communities, based on the misguided assumption that OST promotes illegal drug use and increase violence and crime.

In Canada, a survey of 114 people on OST found 78% had negative experiences while accessing treatment. Many described hearing condescending or distrusting remarks from pharmacists and other healthcare workers, and said dispensing spaces made them feel humiliated and scrutinised. Between 28% to 56% said these experiences led to a reluctance to start, access or continue OST, and a distrust in the healthcare system.73

A lack of specialised and accessible services for certain groups such as women, sex workers, migrants and men who have sex with men also acts as a barrier to services.74 This is linked to the multiple experiences of stigma and discrimination these groups face, stemming from their identities, both as people who use drugs and as belonging to other marginalised groups.

In particular, women are reported to face more restrictions than men when it comes to accessing OST. This includes a lack of childcare at OST services and hostile and judgemental attitudes from health professionals.75

Lack of political support and funding

Based solely on its ability to reduce HIV infections, OST has been shown to be cost effective. When wider health, economic, psychological and social benefits are considered, its cost-effectiveness becomes even greater.76 Despite this, political and financial support for OST is seriously lacking.

International donors provide the majority of funding for OST in many regions, although this is not the case in all parts of the world. For example, many Asian governments fully fund OST, despite some refusing to fund needle and syringe programmes (NSPs).77

Most international donors provide OST through the harm reduction component of HIV budgets. However, they tend not to disaggregate data for each harm reduction intervention, making it difficult to report on how much is spent on OST alone.78 For example, funds for NSP and OST together represents about one-third of Global Fund spending on harm reduction.79

Some international donors such as PEPFAR are increasing the proportion of harm reduction money spent on OST80 but, overall, international funding for harm reduction has stagnated or reduced in recent years and domestic funding tends to be unable or unwilling to fill the gap.

For example, reduced Global Fund spending and limited domestic support in Kazakhstan means OST is available to less than 1% of people who use drugs. In 2018, the Kazakhstan government threatened to close the country’s OST programmes entirely, although the response from civil society appears to have suspended this decision.81

Physical and geographical barriers

The scarcity of OST facilities acts as a geographical barrier in many parts of the world. In some cases, the barrier stems from a lack of approved prescribers, as in Germany and the United States.82
A 2015 study in Thailand found a quarter (24.5%) of participants had difficulties travelling to OST clinics due to long distances, long travelling times and lack of a private vehicle. Around 24% of participants also faced difficulties with the clinic's opening hours and 28% were unable to pay for the cost of travel.

The future of opioid substitution therapy (OST) provision

Although OST is clearly effective in reducing HIV infection and improving the health and wellbeing of people who inject drugs, with wider benefits for others in society, fully realising the potential of this intervention will take renewed political and financial support.

Encouraging more countries to provide OST requires ongoing and determined, evidence-based advocacy. The collection of aggregated data on injecting drug use and the impact of OST delivery will be key to helping this process. The likelihood is that change will continue at a slow pace but the recent introduction of OST into countries as diverse as Uganda and Bahrain shows it can be done.

For those countries in which punitive approaches to drug use are deeply embedded or are growing, showing the effectiveness of human rights and health-based approaches for reducing HIV infection and improving other health outcomes will remain key. As countries that shun these approaches experience resurging HIV and other disease epidemics, the hope must be that the evidence on OST and harm reduction will become too compelling to ignore, and the lives of millions of people will improve as a result.

*Image credit: Courtesy of colorofpain.org*

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12. Feelemyer, J et al. (2014) ‘Retention of participants in medication-assisted programs in low-
and middle-income countries: an international systematic review’, Addiction, Vol 109, Issue 1, p.20–32.


23. Ibid


27. Ibid


33. Ibid

34. Ibid


43. Ibid


48. Ibid

49. Ibid


53. Ibid

54. Ibid


Urine testing, whereby people on OST are only allowed to continue treatment if they test negative for illicit substances, also prevents people from accessing or remaining in services. See examples from Lebanon and Tanzania in Harm Reduction International (2018) ‘The Global State of Harm Reduction: 6th edition’, p.151 and p.165 [pdf]

69. Ibid

Last full review: 15 February 2019
Next full review: 13 February 2022