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cooperation, Early warning system, fentanyl, harm reduction, supply reduction, take-home naloxone programme

**DECLARATION OF INTERESTS**

None.

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# What lessons from Sweden's experience could be applied in the United States in response to the addiction and overdose crisis?

*Sweden's experience of opioid agonist treatment (OAT) can inform US decision-making. After 2006, an increase in methadone-related deaths has been observed outside treatment parallel with new OAT regulations with less restrictions. Considering this, a balance between access to treatment and safe administration of methadone with low risk for diversion is recommended.*

Sweden has the highest mortality rate in the European Union (EU), according to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) [1]. Data from the Organization for

Economic Co-operation and Development (OECD) indicate that opioid-related deaths increased both in Sweden and the United States during the period 2011–16, but decreased or stabilized in most other OECD countries [2].

The increase in drug-related deaths in Sweden started in 2006, but in contrast to the United States the increase was mainly due to poisonings with methadone and buprenorphine, which are primarily used for OAT in Sweden.

Although OAT with methadone was introduced in Sweden in 1966 it was, and to some extent still is, controversial and therefore associated with many restrictions. For the small number in treatment, early studies showed reduced mortality, for instance in HIV-infected patients

[3]. Another study of the methadone programme in Stockholm, the largest in Sweden, from 1988 to 2000 showed reduced mortality and no methadone intoxications among patients in treatment and only a small number of methadone intoxications in the population in Stockholm, indicating low diversion from the programme [4].

In 2006 new regulations for OAT were introduced in Sweden and many restrictions were removed. In parallel to the expansion of the treatment there was an increase in the number of methadone-related deaths in the population. A study of all 269 methadone-related deaths in Sweden during 2006–15 in individuals aged 15–29 years revealed that only 10 individuals had been prescribed methadone during the year before death, indicating that most deaths occurred in people not currently receiving OAT [5]. Most deaths occurred during sleep with a time lag from ingestion of methadone, which indicates that they were unexpected. A high and increasing proportion of methadone poisonings in Sweden after 2006 has also been shown in another study [6].

In the United States, before the opioid overdose epidemic during the last decade, methadone was implicated in one-third of opioid-related overdose deaths, although the drug represented fewer than 5% of the opioid prescriptions dispensed at that time [7]. There are now suggestions to make the relaxations in methadone treatment implemented in the United States as a response to the COVID-19 pandemic permanent, and allow reductions in in-person dosing and attendance requirements based on short-term mortality data [8]. Considering the experiences of increased methadone-related mortality described above over longer time-periods in Sweden, and also other countries in Europe with supervised versus non-supervised methadone treatment [9], caution and collection of more long-term data from the United States before making these policy changes permanent can be advocated.

Drug-related deaths not caused by methadone during the last decade differ between Sweden and the United States. There has been a small increase in oxycodone-related deaths in Sweden but to a much lesser degree than in the United States, and the number of heroin-related deaths has been relatively stable since 2006 without any increasing trends.

The development of fentanyl-related deaths is also different in Sweden compared to that in the United States. From 2015 to 2017 there was a marked increase in fentanyl-related deaths, most probably due to the introduction of illicit fentanyl analogues sold over the internet, and during these 2 years fentanyl was the major opioid in poisoning deaths in Sweden. A court case ruling of aggravated involuntary manslaughter against one of the sellers in May 2018 caused the supply of illicit fentanyl to cease practically overnight [10]. This nationwide effect of a single court case would not be observed in the United States due to the size of the market for illicit fentanyl in that country.

A general lesson from Sweden's experience of drug-related deaths is the importance of a register based on forensic examinations. Statistics based on forensic toxicology are more complete, provide more detail on used substances and are usually available earlier than national mortality register-based statistics. The

epidemiological studies of drug-related mortality mentioned above are based on a central forensic database, and through the personal identification number the cases can be linked to registries of the official causes of death based on certificates, pharmaceutical prescriptions as well as previous hospital or outpatient treatment episodes. This enables studies of trends and causes of both general drug-related deaths but also, as described above, alerts related to deaths caused by particular substances such as methadone or fentanyl.

## KEYWORDS

Fentanyl, forensic toxicology, methadone, mortality, opioid epidemic, opioid medication assisted treatment

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None.

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## What lessons from France's experience could be applied in the United States in response to the addiction and overdose crisis?

*French drug policy can hardly be considered a success story. Compared with its European counterparts, France still stands out for its high levels of cannabis use, particularly among young people, as well as its high prevalence rates of cocaine use. However, in light of the American crisis, the French nexus between a strongly institutionalized harm-reduction model and an enduring repressive legal framework may well prove inspiring.*

From the French point of view, the opioid crisis is an American disaster. Next to the 8300 drug-related deaths in the European Union in 2018, the 100 000 fatal overdoses attributed to opioids in the United States in the last 12 months illustrate the grim severity of the American situation. In contrast, drug-related deaths in Europe have remained stable over the last decade, mainly affecting an ageing cohort of heroin users, with little evidence of an increase in initiation [1]. The situation in France is in line with this evolution. The range of drugs used today are becoming more diverse, but the number of fatal overdoses from acute intoxications—which peaked in the 1990s then quickly decreased—is now considered stable. The figures even tend to decrease among people aged under 49 years [2].

This is no reason to be complacent. French drug policy can hardly be considered a success story. Compared to its European counterparts [3], France still stands out for its high levels of cannabis use, particularly among young people, as well as its high prevalence rates of cocaine use. However, in light of the American crisis, the French nexus between a strongly institutionalized harm-reduction model and an enduring repressive legal framework may well prove inspiring.

Harm-reduction measures emerged in France at the margins of legality in the 1980s. As the AIDS epidemic was raging, drug use began to be viewed as a public health issue rather than a criminal problem. Under the pressure of social movements and in the light of its neighbours' experience, the French government was forced to

adapt its enforcement strategies to prioritize treatment of drug-related harms over punishment [4]. Needle and syringe exchange programmes in low-threshold services, opioid substitution treatments and flexible prescribing of methadone were progressively introduced and quickly ramped-up. This shift in policy was followed by a substantial reduction in HIV prevalence and deaths from overdoses among injecting drug users. Eventually, harm reduction policies convinced even the most reticent members of parliament and the prevention of 'the social and psychological damages associated with addiction' was incorporated in the law in 2004. This legal recognition of the health and mental risks associated with addiction was a paradigm shift in French drug policy, as it privileged safe practices for drug use at the expense of abstinence by way of detoxification [5]. This legal evolution was later consolidated and paved the way for experimenting with drug consumption rooms without, however, renouncing the criminalization of drug use. This overall policy approach assumes that drug use is not, as was thought in the 1970s and 1980s, some sudden fever that could be 'knocked out' of the 'patient' but indeed a lasting anthropological fact in western societies, and that not only its causes, but also its risk-heavy consequences, should be dealt with.

Can the French experience have lessons applicable to the US context? There is little doubt that much can be learned from the diversity of drug policies and from the best (and worst) practices implemented around the world. Comparative studies expand the agenda of 'thinkable' possibilities, but it is unclear how much of this comparative knowledge can be of direct use. In matters of drug policy, there may be much to learn from elsewhere but not so much to transfer, especially when historical, institutional and cultural legacies determine the extent of the drug problem more than any public policy [6].

That the opioid crisis is confined to the United States and has not (yet?) reached France provides a telling example. One could have expected both countries to be engulfed in a similar crisis as they went through parallel pain-management histories. In the 1990s, French