S Seminal studies **K** Key studies **R** Reviews **G** Guidance **MORE** Search for more studies
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Drug Treatment Matrix cell A3: Interventions; Medical treatment

S Original methadone maintenance trial (1965). Vincent Dole and Marie Nyswander's report paved the way for the world's most widespread effective treatment for opiate addiction. For related discussion click here and scroll down to highlighted heading.

S Study seen as endorsing switch to methadone in Britain (1980). Unique trial conducted in London in the early 1970s randomly allocated patients seeking injectable heroin prescriptions to their desired treatment or to oral methadone. Results favoured heroin, but not clearly enough to reverse the trend to methadone. See study 1 in linked PDF file. Related study below.

S Methadone treatment saves lives in Sweden (1990). Restrictions on methadone maintenance in Sweden enabled its value to be convincingly demonstrated. The death rate leapt when maintenance was banned and detoxification and drug-free treatment took over. Reviewed with other Swedish studies in The Swedish experience (2000) on p. 6 of linked PDF file. This study and related Scandinavian studies discussed in 'bite' commentary on cell A1. For related discussion click here and scroll down to highlighted heading.

S Even when detoxification hidden from patient, outcomes worse than from maintenance (1979). Patients in Hong Kong maintained on methadone were convicted at half the rate of patients unknowingly detoxified from methadone and then prescribed a placebo. By the end of the three-year study just one of 50 detoxified patients remained in treatment compared to 28 of 50 maintained patients, largely due to persistent heroin use in detoxified patients. Patients who dropped out and were readmitted for methadone maintenance had the same retention-rate as the original treatment group. Similar studies (1 2) and related review below. For related discussions click here and here and scroll down to highlighted headings.

K Lasting benefits but methadone in England could do better (2000 and 2001). Reports from the 1990s NTORS study (still the major English treatment study; see cell A2) confirmed that the benefits of methadone persist to at least two years after treatment entry, though nearly a fifth of patients did not respond well to often ill-defined programmes undermined by under-dosing and poor initial assessment. For related discussion click here and scroll down to highlighted heading.

K Maintenance improves even on 'enriched' methadone-based detoxification (2004). US randomised trial (2000; alternative source at time of writing) tested whether enriching methadone-based detoxification with intensive psychosocial services and aftercare would enable it to match minimal-support methadone maintenance. After detoxification patients had been withdrawn, maintained patients used illicit opiates less often, had fewer legal troubles, and were at lower risk of blood-borne diseases, translating (2004; free source at time of writing) into a low-cost way of extending patients' lives. Similar studies above and below and related review below. For related discussions click here and here and scroll down to highlighted headings.

K Maintain rather than detoxify buprenorphine patients to prevent illegal opiate use (2014). US primary care patients dependent on non-injected prescription opioids were randomly allocated to buprenorphine maintenance or a three-week taper followed by naltrexone to sustain abstinence. Despite a less severe profile than heroin injectors, few detoxified patients stayed in treatment throughout the trial, just two of 57 transferred to naltrexone, and they used more illegally obtained opiate-type drugs than maintained patients. Similar studies above (1 2) and related review below. For related discussions click here and here and scroll down to highlighted headings.

K Methadone's failure respond to prescribed heroin (2010). In the first British randomised trial, a 'continental-style' heroin prescribing programme featuring on-site supervised injecting retained patients and suppressed illegal heroin use much more effectively than oral methadone and somewhat more than injected methadone; broader health, mental health and crime benefits were equivocal. In London concerns about crime and disorder in the clinic's locality proved unfounded (1 2). Related study above.

K Long-acting naltrexone implants help sustain abstinence (2012). Russian study found naltrexone implants preferable to the oral form of the drug for sustaining post-detoxification abstinence. See also similar Australian trial (2009). Russian study's lead author also found (2013) long-acting naltrexone more effective than a placebo. Implants

have been tried with some success in the UK but are not licensed for medical use. More studies of long-acting naltrexone below. For discussion click here and scroll down to highlighted heading.

K Prescribe an opioid or an opioid blocker after detoxification? (2017). Randomised trial in Norway found injections of the opiate-blocker naltrexone (active for four weeks) no less effective than daily buprenorphine, an opiate-type drug. Similar trial in Malaysia (2008) found buprenorphine superior to *oral* naltrexone, largely because more patients stopped taking their naltrexone (risking overdose deaths that might not have happened (2014; free source at time of writing) had they been prescribed an opiate substitute). Normally UK patients are offered these opposing types of treatment on the basis of which seems best for them, not in a blanket or random way. More on long-acting naltrexone above. For discussion click here and scroll down to highlighted heading.

R Medications ease opiate withdrawal but relapse common (Cochrane review, 2012). Review comparing tapering doses of methadone to other medications finds all help complete withdrawal but most patients then return to illegal opiate use, highlighting the need for follow-on treatment or to opt for maintenance (see review below) instead.

R Methadone maintenance on average preferable to detoxification (Cochrane review, 2009). A surprisingly small basket of randomised trials (but confirmed by other studies) supports the superiority of methadone maintenance over detoxification for patients prepared to be allocated to either. See also this later (2014) US-focused review commissioned by the US government. Related studies above (1 2). For related discussion click here and scroll down to highlighted heading.

R Buprenorphine works but methadone works better (Cochrane review, 2012). High-dose buprenorphine curbs illegal opiate use but when the two were compared in randomised trials, longer retention meant methadone was on average more effective. See also this later (2014) US-focused review commissioned by the US government.

R Drug treatments for opiate dependence (2010). Draws together findings from authoritative reviews of research trials conducted for the Cochrane collaboration and later studies concerned with the pharmacological and psychosocial treatment of dependence on opiates, including withdrawal and maintenance.

R What maintenance feels like for the patient (2013). Free source at time of writing. Synthesises findings from studies which asked opiate users about their views and experiences of long-term maintenance, and explores how these might impede recovery. Rare view from the inside of the good and not so good about being on methadone and allied medications in cultural contexts which may denigrate these treatments as second-best to 'full' recovery. For related discussion click here and scroll down to highlighted heading.

R Motivational interviewing is for medics too (2013). Reviews this popular counselling approach (which importantly for non-specialist settings, lends itself to brevity) as applied in medical care settings for drug-related and other conditions. Concludes, "if you can devote a small amount of extra time with your patients to build relationship and evoke change talk [patient's intentions or commitments to change, thought the main way motivational interviewing works], you can expect 10–15% additional improvement." Impacts on problem drinking and cannabis use were among the strongest.

R Decades-long search and still no accepted medication for stimulant dependence (2013). Free source at time of writing. Our title reflects the review's disappointing conclusion. Some medications have shown initial promise, but the difficulty of persuading patients to keep taking them undermines their potential. Counselling and psychosocial therapy remain the dominant approaches.

R G Comprehensive review/guidance from the British Association for Psychopharmacology (2012). Guidance based on review of evidence for drug-based treatments for substance use problems. Covers alcohol, nicotine, opioids, benzodiazepines, stimulants, cannabis, 'club drugs' and the 'polydrug' use of several drugs together, focusing on dependence rather than 'harmful use' or 'abuse'. Sections on patients with psychological disorders, young people, the elderly, and treatment during pregnancy. Book (2014) from the publishing arm of American Psychiatric Association provides a similar but more extended US-oriented account. For discussion click here and scroll down to highlighted heading.

G UK clinical guidelines on treating drug problems ([UK] Department of Health, 2017). Comprehensive, practice-oriented official clinical guidelines including psychosocial aspects of treatment as well as pharmacotherapies.

G Choose substitute drug on an case-by case basis ([UK] National Institute for Health and Care Excellence, 2007, reviewed 2016). After examining the evidence for oral methadone and buprenorphine in the treatment of opiate addiction, the UK's official health advisory authority recommended both substitutes for illegal opiate-type drugs, and said the choice between them should be based on benefits and risks for each individual patient.

G Use methadone or buprenorphine for withdrawal ([UK] National Institute for Health and Care Excellence, 2007, reviewed 2014). UK's official health advisory authority recommends prescribing methadone and buprenorphine to help dependent patients withdraw from opiates, and counsels against anaesthetising or heavily sedating patients to accelerate withdrawal using opiate-blocking drugs.

G Substitute prescribing for opioid dependence in primary care ([UK] Royal College of General Practitioners, 2011). Guidance for GPs in the UK on how to manage the withdrawal of patients dependent on heroin or other opioids, or instead to maintain them by long-term prescribing of legal substitutes. Focuses on the prescribing of methadone and buprenorphine.

G How clinicians can identify and respond to cannabis use problems ([Australian] National Cannabis Prevention and Information Centre, 2009). Evidence-based guidance for all clinicians (but especially GPs), funded by the Australian government. Covers the range of cannabis use interventions from brief advice for users identified by screening through to managing withdrawal and treating dependence.

MORE All relevant Effectiveness Bank analyses.

For subtopics go to the subject search page or hot topics on substitute prescribing, long-acting naltrexone implants and injections, and counselling in methadone treatment.

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- Comment/query to editor
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- Add your name to the mailing list to be alerted to new studies and other site updates

Close Matrix Bite

Links to other documents. Hover over for notes. Click to highlight passage referred to. Unfold extra text

What is this cell about? About the treatment of dependence on illegal drugs in a medical context and/or involving medical care, typically by GPs or at drug treatment or psychiatric clinics in hospitals. Clinical staff are responsible for medications, so the centrality of these to an intervention distinguishes it most clearly as medical. Medications may be intended to help patients withdraw from drugs more comfortably and with a greater chance of completing the process, to sustain longer term abstinence (eg, the opiate-blocking drug naltrexone), or to substitute a safer, legal and medically controlled drug of the same kind the patient is dependent on, but more conducive to social stabilisation, such as methadone for dependent heroin users.

However, medications are never all there is to medical care. Ideally, they promote a stable space free of drug effects, and/or of the need to chase illicit supplies, during which patients can find other ways to cope, and construct lives incompatible with a return to dependent use of illicit drugs. Medication-based treatments also entail potentially therapeutic interactions with clinical and other staff. Arrangements or programmes to help ensure patients take the medications may themselves be therapeutic and enlist family and other associates in the patient's care. Medical treatment for drug dependence may consist entirely of advice and psychosocial support from clinical staff.

Unlike treatment of alcohol dependence, the dominance of opiates among problem substances other than alcohol, and within opiate dependence treatment, the dominance of substitute prescribing, mean that most drug-dependent patients receive medication-based treatments – in England in 2016/17, some 72%.

> *When most of our patients come to us for our expertise, with drug using patients, they are the experts*

The role played by prescribing substitutes for heroin means medications and medical care lie at the heart of how the UK treats dependence on illegal drugs. However, addiction pharmacotherapy is in some ways very different from drug-based treatments of other conditions, because it entails a drug treating a drug problem. How different was powerfully expressed by Gordon Morse, an English GP specialising in addictions. "People who use drugs fascinate us because they pose unique challenges: Where most of our patients need our advice and medical skills, drug users need less advice and more listening, less medical knowledge and more caring. Where most of our patients have problems that we fix with drugs, for them, the drugs are the problem. When most of our patients come to us for our expertise, with drug using patients, they are the experts: they use a language we don't understand, doses of drugs that terrify us, and come from lives that most of us will have little comprehension of. And when most of our patients are terrified of dying, most drug users seem terrified of living."

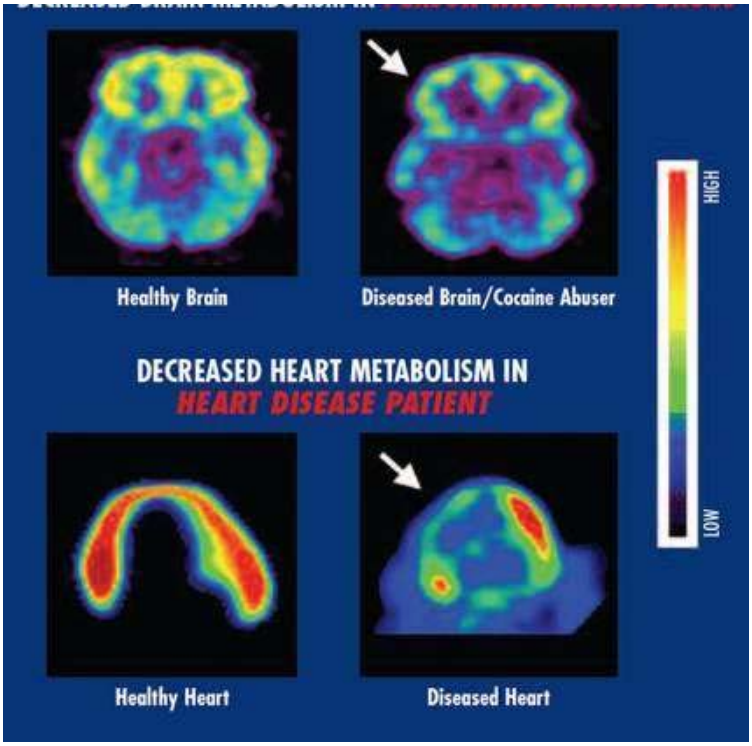
Where should I start? No better introduction than the comprehensive, authoritative and freely available review and guidelines from the British Association for Psychopharmacology. Here we highlight a feature of the guidelines which may not be immediately apparent; that in comprehensively documenting the benefits of medications, they also throw into relief their limitations, deriving from the nature of addiction itself.

Among the illicit drugs, only in respect of dependence on opioids like heroin do the guidelines see medications playing a major and validated role. Best established are approaches which rather than ending dependent use, replace one opioid with a legal supply of the same drug or another which is safer and can form the basis for a life free from crime and reliance on an illicit market – not so much a 'cure' as a "medically advisable" recognition that a cure is for now not possible, the phrasing used when in 1926 this resort was legitimated in a landmark UK report. That leaves other forms of illicit and/or recreational drug use entirely or largely outside the ambit of drug-based treatments, and dependent users reliant on treatments based on human interaction.

Nevertheless, hopes and expectations that chemical techno-medical fixes to addiction will be found remain high, underpinned by the conviction that it is a "disease of the human brain" characterised by progressive "weakening" of neural circuits caused by repeated drug use, changes which limit addicts' freedom to choose not to use – the vision (explored in an Effectiveness Bank hot topic) presented by the head of the US National Institute on Drug Abuse, by far the world's largest addiction research funder.

That vision is challenged by estimates that no matter how long ago someone became dependent, their chances of remission remain the same, seemingly at odds with paradigms which assume addicts become progressively more incapable of stopping drug use. The serially failed search for a drug to normalise the cocaine-addicted brain is perhaps the best example of the brain-disease model sending treatment down a blind alley.

less like a disease than an exaggerated expression of normal human functioning. These include the theory that it results from the same preferences which in everyday life lead us to prioritise short-term and easy-to-reach rewards ('low-hanging fruit') over broader and longer-term benefits, that addiction is a counterproductive but deeply entrenched learned habit, or that because substance use can aggravate the malady (social, psychological or physical) which it temporarily relieves, the user is prompted down an addictive spiral of greater need for substance use generated by substance use itself.



'Diseased Brain' brain scan from the US National Institute on Drug Abuse web site. Caption: "Addiction is a lot like other diseases, such as heart disease. Both disrupt the normal, healthy functioning of the underlying organ, have serious harmful consequences, and are preventable and treatable, but if left untreated, can last a lifetime."

In the end perhaps, all such (and other) explanations fit, even if only at the level of an analogy, some of the people some of the time to some degree. Like a limp, dependence is recognised by a distinctive behaviour, but that doesn't mean there is a correspondingly distinct disease entity. Limps can arise from a poorly fitting shoe, an uneven floor, or a neural disease, be quick or hard to fix, and need different fixes and fixers – cobblers, carpenters, or doctors. Sometimes all it takes is the intention to walk straight plus a little temporary help, sometimes a lifetime of support.

Highlighted study Arguably *the* great divide in opiate addiction treatment is between approaches which withdraw patients and aim for abstinence from all opiate-type drugs, versus those which maintain them on opiate-type medications like methadone. In the recovery era in the UK, that divide has become even more significant; influential visions of 'full' recovery, payment-by-results criteria, and the criteria by which commissioners of treatment systems are held to account, all embody the prioritisation of treatment exit, not prolonged maintenance, yet holding down the rising overdose death rate seems to demand prioritising maintenance over detoxification.

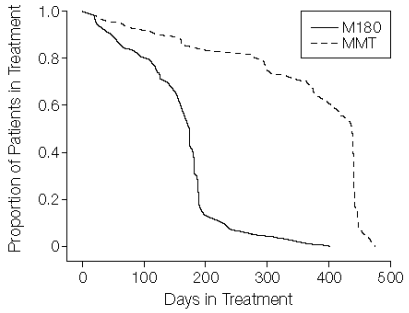
If there is one question protagonists need an answer to, it is which of these strategies works best, but answering this question founders on the difficulty of creating a level playing field between the alternatives. Suitable patients who opt for detoxification differ from those not yet ready to relinquish opiate-type drugs, and the two treatments' aims differ so widely that comparing them seems as nonsensical as comparing palliative care for irretrievably ill cancer patients to surgery for those with cleanly excisable tumours. Yet in everyday practice, people do come to treatment unsure which route to take. What happens if you decide this effectively by a flip of the coin?

Of the few studies to attempt this, the most informative dates from San Francisco in the late 1990s. It recruited 179 patients dependent on opioids (mainly heroin it seems) who agreed to be randomly allocated to maintenance or detoxification. Despite incentives, finding people suitable for and willing to enter either of these opposed treatments proved difficult; most thought eligible for the study rejected it, or in the end turned out to be unsuitable. The minority who did join were allocated either to 14 months of methadone maintenance ('maintenance' patients) or to just four months ('detoxification' patients), both followed by a two-month detoxification when doses were gradually reduced. To help balance the treatment scales, detoxification patients were offered more intensive psychosocial support which continued for another eight months after the scheduled end of detoxification.

That sets the stage for the findings in this freely available report. First to note is methadone's holding power, including its power to engage patients in psychosocial support. Reproduced from the original report, figure 3 shows how retention in treatment fell over time. Note the steep drops as patients entered the detoxification phases of their treatments, until practically none were left. Nearly half the detoxification patients were

discharged prematurely, usually dropping out as they faced the end of their methadone tapers. Figure 2 (not shown here; see original article) shows that while still being maintained detoxification patients attended the extra counselling required for them to stay in treatment, but when the methadone went, so too did the patients, and drug-free aftercare – no longer required to continue on methadone – was largely rejected.

Figure 3. Survival Function by Treatment Group

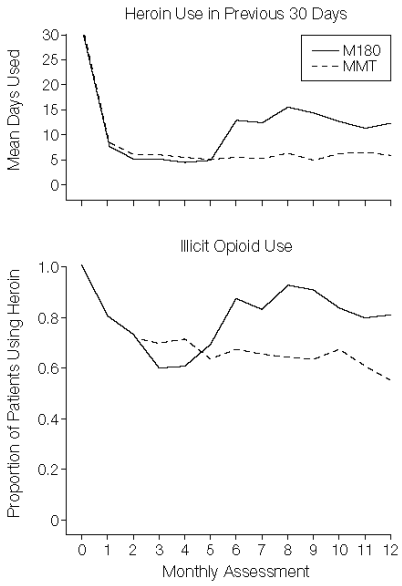


Proportion of study participants in treatment by group over time. M180 indicates 180-day methadone-assisted detoxification; MMT, methadone maintenance treatment. For significant differences between conditions, Wilcoxon χ^2_1, 85.0 ($P<.001$).

Detoxification led to a precipitous fall-off in retention

Now to figure 4 and the clear pattern in heroin use; steep initial drops sustained in the maintained patients but which reversed when detoxification patients were tapered from methadone. Though that bounce-back meant most patients returned to heroin, still across all the detoxification patients they were using heroin on average about half as often as they did at the start of the study; not all the gains of the maintenance period were lost. Maintained patients also had the edge in reductions in crime and risk of becoming infected with HIV.

Figure 4. Proportion of Participants Using Heroin and Mean Days of Heroin Use in Previous 30 Days



M180 indicates 180-day methadone-assisted detoxification; MMT, methadone maintenance treatment. Robust parameter estimates (*P* value, <.001 for all estimates): group, –0.15; assessment, –0.005; and group by assessment, 0.003.

Post-detoxification resurgence in average days of heroin use and proportion of patients using

There have been at least four other similar randomised trials. Their results also supported maintenance over detoxification, but each was less relevant to practice in the UK. Unfold the supplementary text for more on three of these studies before we fast-forward to the latest randomised trial.

Close supplementary text

One was the seminal study listed above. It was conducted in Hong Kong in the early 1970s, when methadone maintenance was still seen to need a placebo comparison to prove its worth, and when ethically, such a study was still possible. Despite stringent precautions to keep patients in the dark about whether they were being prescribed methadone or an inactive solution, nearly all given this solution left or were terminated from treatment, usually due to persistent heroin use, while most given methadone remained in treatment three years later. Effects on crime and illegal opiate use were predictably in favour of maintenance.

Another trial in San Francisco (2008) randomly allocated patients to methadone-based detoxification, or to six months of methadone maintenance with just 15 minutes of counselling a month or at least two sessions a month and more if needed. While maintained, patients used heroin and drank less than detoxified patients, but heroin use returned to the level of the detoxified patients after maintenance ended. Additional counselling led to no further reductions or any other statistically significant differences in outcomes. All the patients had a diagnosis of latent tuberculosis and had agreed to preventive therapy with the medication isoniazid, and had been recruited from an outpatient methadone detoxification programme, features limiting the applicability of the findings to usual caseloads.

A study (1991) conducted in Bangkok was also limited in its applicability because it was confined to male heroin injectors who had tried detoxification at least six times before – not the best candidates for a further attempt at abstinence via detoxification, though all had attended the clinic for just such an attempt. The 240 patients were randomly allocated to a 45-day detoxification or to methadone maintenance. Just a third of the detoxification patients completed their 45-day programme, most leaving within the first month, while at 45 days three-quarters of maintained patients were still in treatment. Even among the detoxified patients who completed their programme, at the end 90% tested positive for illegal opiates compared to just under half the maintained patients.

Close supplementary text

Listed above, it recruited 113 US patients dependent not on heroin, but on opioid medications which can legally be prescribed in the USA. They were attending a primary care clinic specialising in buprenorphine-based treatment of opioid dependence. Another 147 patients had effectively rejected the study's offer of random allocation to a three-week buprenorphine-based detoxification or to buprenorphine maintenance. Even in this relatively (compared to heroin users) less severe caseload, withdrawing buprenorphine simply led nearly all to leave treatment or to have to be switched to maintenance, and along the way they used significantly more illicitly obtained opiate-type drugs than patients on a maintenance regimen from the start.

After both trials the researchers' verdicts were unequivocal: in the San Francisco trial, "[no] support for diverting resources from methadone maintenance to long-term detoxification, no matter how ideologically attractive the notion of a time-limited treatment for opioid abusers"; in the buprenorphine trial, "Buprenorphine taper should be used sparingly, if at all, in primary care treatment of patients dependent on prescription opioids." Is this also how you see it? As the researchers speculated, perhaps in San Francisco the extra support offered methadone withdrawal patients was (in today's language) not sufficiently 'recovery-oriented', failing to address legal, employment, family, and psychiatric issues. And perhaps a halving in the frequency of illicit heroin use is as good – maybe better, depending on your priorities – as the steeper drop achieved with the aid of a daily opiate substitute. *If* one throws prescribed methadone and illicit heroin in the same opioid use bag, frequency of use was probably higher in the maintained patients.

Perhaps the clincher is the estimate (free source at time of writing) that relative to detoxification, in the San Francisco trial maintenance saved lives, a point also made in the report on the buprenorphine trial: "the potential consequences of relapse, including overdose and death, dictate that patients and providers should be aware of the likelihood of treatment failure and use caution when considering a taper." But even this may not be decisive if you feel being tied to a methadone clinic to daily swallow the drug in front of staff and submit to observed urine tests, yielding control of significant parts of your life, is not the best of lives. However, being back on the streets hustling for illicit heroin may not be so grand either, and though required in some jurisdictions, these humiliating and burdensome requirements are not essential to successful maintenance.

In the end, how you weigh the data from these studies depends on your values. Thinking through and discussing what you and your colleagues make of their findings could take you a long way to clarifying your values and those of your service, and the consequences of putting them into practice.

Issues to consider and discuss

▸ **Will maintenance ever be accepted?** Seems a strong question, but for over a century the misgivings have refused to go away and seem as sharp as ever. Ironically, what our starting point review found the most widespread and effective pharmacotherapy for addiction was also the only one about which it felt moved to comment, "Opinions and practice are strongly influenced by political/social context."

We are, of course, referring to treatments like methadone maintenance which 'substitute' (even the terminology is controversial) legally prescribed opiate-type drugs for their illegally-obtained counterparts – in the UK, principally methadone in place of heroin. The default position to which politicians and publics gravitate is that if opiate-type drugs are illegal and bad, giving them to addicts is bad too and should be illegal or at least drastically curtailed. Others see these treatments as 'liquid handcuffs' ensnaring society's pleasure-seekers and rebels. Unfold the supplementary text for a flavour of these at times highly charged attitudes.

Others see these treatments as 'liquid handcuffs' ensnaring society's pleasure-seekers and rebels

Close supplementary text

In 2014 Pope Francis condemned these treatments as compromising with the "evil" of drugs: "Substitute drugs, moreover, aren't a sufficient therapy, but rather a hidden way to surrender … Simply no to every type of drug."

From more radical perspectives, the treatment has been castigated as a "Calvinist-Puritanical project of managing immoral pursuits of pleasure and of promoting personal self-control" – the hobbling of anti-establishment outsiders by chains of dependence harder to break and more damaging than heroin, and which force them to cede control over their lives to authorities they previously challenged, evaded or rejected. Thomas Szasz, a renowned radical American professor of psychiatry, likened methadone maintenance to "the gas chamber to which the Blacks go as willingly as the Jews went in Germany".

Close supplementary text

While methadone is intended to weaken the impetus to seek illicit heroin, today's 'parking' jibe critiques the treatment for also undermining pro-social get-up-and-go, envisaging de-energised patients satisfied with indolent, irresponsible lives: "methadone, booze, benzos and benefits; watching daytime TV while the state takes care of your kids". In 2015 these critics – influential and radical thinkers in the UK addiction sector – acknowledged that "Leaving the protection of methadone maintenance treatment may increase the risk of death," but for them the risk of *no* life was worth taking for the chance of a *better* "brand new life beyond your wildest dreams, where you find jobs, homes and friends".

The title of our hot topic entry, *Prescribing opiate-type drugs to opiate addicts: good sense or nonsense?*, captures the essence of the controversy. For some it goes violently *against* the grain to give addicts the very type of drug to which they have become addicted, but doing this works so well (see review listed above) precisely because it goes *with the grain* of addiction. Rather than attacking addiction head on, it harnesses the patient's dependence to attract and hold like no other treatment, and can then be used to promote or require other therapeutic activities (see *Highlighted study*), or just allow improvements to emerge as patients are relieved of the all-encompassing roller-coaster of addiction to a short-acting, illegally obtained, injected drug.

The hot topic more fully describes the controversy, culminating for the moment with English (1 2) and Scottish expert reports. Among other things, these faced down the strong 'new recovery' drive from the UK government to curtail methadone maintenance. Had this drive succeeded, in all but exceptional circumstances 'maintenance' would no longer be maintenance, but more like the less effective detoxification option in the *Highlighted study*.

Iain Duncan Smith: Conservative critic of substitute prescribing – "perpetuating drug addiction"

Do you agree with the hot topic's conclusion that because opposing camps value different things, evidence alone will not decide the future of maintenance prescribing? Ask yourself, can maintenance ever be broadly accepted unless it becomes seen as a route to abstinence for the majority? Should we relegate its indefinite application to a fallback position when reaching for abstinence seems impossible or too risky? – the line taken by the 1926 Rolleston report which legitimated what we now know as maintenance. Or is indefinite maintenance as valid an outcome as being 'drug-free', one which should "not be considered a failure", in the words of the Scottish report. Perhaps you feel closer to the English version, which saw it as second best in a process which should "move towards a drug-free lifestyle". At the culmination of this decades-long debate, where do you stand?

▸ **Do opiate-blocking implants make things *too* easy?** This section ends with "the curious possibility that precisely because a technology is (relatively) effortlessly effective, it is to that degree under suspicion." Let's see how we get there.

Under *Where should I start?* we spoke of the "hopes and expectations of chemical techno-medical fixes" to addiction, so far largely a series of dead-ends and disappointments. A fundamental limitation is that the more effective a medication is in preventing drug use, the more patients dependent on those drugs simply refuse to take it or quickly abandon the treatment. That has been the fate of naltrexone (see review and study listed above), meaning that in practice this opiate-blocking medication promotes abstinence no better than a placebo.

But what if we can make it *impossible* for patients to stop 'taking' naltrexone, preventing later temptations betraying their initial resolve? That is the promise of naltrexone implants (surgically inserted under the skin) and slow-release injections, which block the effects of heroin for up to several months, and are impossible or extremely difficult for patients to remove.

The fact that Russia outlaws opioid substitute prescribing made it an ideal site for one of the key trials. After detoxification, 306 patients were offered 24 weeks of implants renewed every two months and daily pills. Every patient had to take both, but some had randomly been allocated to active naltrexone implants and inactive placebo pills, some to active naltrexone pills and inactive implants, and some to inactive forms of both.

Check the free report on the trial. You will see that by the end, without an active implant just 13% of the patients were still in treatment and had not relapsed to frequent heroin use compared to 53% with an active implant. Active-implant patients also submitted significantly more urine tests verifying they had not taken

heroin. In contrast, active pills were only marginally more effective than inactive placebos. Results of a similar Australian trial and others cited in our analysis of an earlier Russian study (listed above) confirm the advantages of long-acting naltrexone implants and injections over the oral drug and over no active medication, making these seem a boon for patients motivated to return to a life free of dependence on legal or illegal opiate-type drugs.

That begs the question, 'Why aren't naltrexone implants/injections used more often in the UK?' There are cost, regulatory (they are not approved medications) and some safety considerations, the need for patients to be clear of opiate-type drugs before starting treatment, and antipathy in some quarters and among some patients to taking anything that looks like a drug. However, surely more lies behind the cursory mentions of these technologies in our starting point review and UK clinical guidance.

Is an implant too easy an answer?
Image from the web site of a clinic offering naltrexone implants for opiate addiction

The guidance hints at one reason; opiate-blocking implants/injections might make it *too* easy to stay (more or less) abstinent from opiates. Here's what it says about their possible role in abstinence-oriented rehabilitation programmes: "Is a resident to whom a long-acting naltrexone formulation has been administered somehow going against the ethos – and the interests of other residents – of a programme that lays great store on (and expects of its other residents) strength of will and the ability to resist temptation in the absence of any medicinal support?"

> *Recovery is not signified by easy gains; it will likely hurt and cause pain*

In such reservations, the committee behind the guidance are not alone. Of long-acting injectable naltrexone, the president of the Massachusetts branch of the American Society of Addiction Medicine said: "Its reputation on the street is that it's a silver bullet … But there is no way to heal from addiction without doing the psychological work of recovery." Even patients insist recovery "requires effort and is not signified by easy gains. On the contrary, recovery will likely hurt and cause pain." Explored further in our hot topic on naltrexone implants/injections, a painless fix in the form of a implants or injections seems light-years from understandings of addiction as a deeply rooted physical, psychological, social – even spiritual – condition, requiring effort and life-transforming change to sustainably overcome.

Another term for having "sustainably overcome" addiction is 'recovery', and here too implant-supported remission might be seen as invalid. Against the yardstick of a consensus UK definition, a recovery programme which just stops the user taking their drug of addiction does not qualify as 'recovery' at all. It fails at the first criterion: "voluntarily-sustained control over substance use"; the implant/injection is doing the controlling, not the patient. Also these preparations do not in themselves do anything "which maximises health and wellbeing and participation in the rights, roles and responsibilities of society". In fact, they might make these broader changes less likely, because they are no longer needed to bolster abstinence.

Do we face here the curious possibility that precisely because a technology is (relatively) effortlessly effective, it is to that degree under suspicion? Ironically, this possibility is reminiscent of the reasons which make some suspicious of an opposing technology – long-term maintenance not on opiate blockers, but on opiate-type drugs themselves. Remind yourself of the antipathy to those treatments described above, and consider whether it shares anything with the unease about naltrexone implants/injections. Are either or both justified? Do we implicitly (and do we correctly) believe 'solutions' to addiction must come from the inside, and suspect those seemingly administered from the outside?

Thanks for their comments on an earlier version of this cell to John Strang of the National Addiction Centre in London and to Colin Brewer, both based in England. Commentators bear no responsibility for the text including the interpretations and any remaining errors.

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