issue 8 spring 2003

DRUG & ALCOHOL FINDINGS

linking **practice** to **research** **research** to **practice**

what works
what doesn't
what could be done better

DRUG & ALCOHOL FINDINGS

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DRUG & ALCOHOL FINDINGS

Objectives To improve Britain's response to drug and alcohol problems by disseminating practice-relevant evaluation findings on the effectiveness of interventions including prevention, community safety and treatment.

Readers Workers involved in a specialist or non-specialist role in interventions addressing drug or alcohol problems in the United Kingdom, including drug and alcohol service practitioners, planners, managers, and commissioners, those whose responsibilities include these functions, and researchers working in these fields.

The FINDINGS partnership Alcohol Concern • National Addiction Centre • DrugScope • Mike Ashton

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issue 8 spring 2003

Nuggets

Recent evaluations of interventions selected for their particular relevance to UK practice

NUGGETTES

Evaluations that didn't quite qualify as Nuggets; mini-jewels with practice implications for Britain

OFFCUTS

Shavings too good to leave on the floor: ideas, arguments, resources, themes

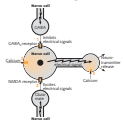
THEMATIC REVIEW

Start of a major new series. From FINDINGS, the first UK assessment of what it will take for needle exchanges to step up to the challenge of hepatitis C.

Main theme – brief interventions. They reduce drink-related risks in needle exchange attenders and in A&E and primary care patients, and help stimulant users cut down. At the other end of the spectrum is a major trial of heroin prescribing. In between are ways to save money and work better, especially with offenders. Support, too, for understated European-style drug education.

THEMATIC REVIEW

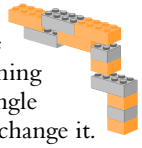
Let a trio of US experts led by Hugh Myrick guide you through the pharmaceuticals now making the headlines in alcohol treatment.



KEY STUDY

It gained pride of place in an official US guide, was the original model for the new national English drug education trial, and received the accolades of experts – yet the Midwestern Prevention Project was fundamentally flawed. A FINDINGS special.

IN PRACTICE



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hepatitis C and needle exchange

Part 1 of a major new series on needle exchange sizes up the challenge posed by hepatitis C and finds it huge. To come – how exchanges here and overseas have measured up.

by **Mike Ashton**

editor of Drug and Alcohol Findings, phone/fax 020 8888 6277, e-mail da.findings@blueyonder.co.uk.

This and later articles are extracted from a review available on request from the author. The review was compiled with the assistance of Neil Hunt of the Kent Institute for Medicine and Health Sciences; Ali Judd of the Centre for Research on Drugs and Health Behaviour; Duncan Stewart of the National Addiction Centre; Anita Morrison of the Scottish Substance Misuse Effective Interventions Unit; Laurence Gruer of the Public Health Institute of Scotland; Jim Camp and Terry Shields of the National Needle Exchange Forum; Lawrie Elliott of the University of Dundee; Clare Sears of the University of California; Hilary Klee of Manchester Metropolitan University; Amina Lahrichi of the Addaction Harm Reduction Team in London; Shaun Speed of the University of Manchester; and Bobby Smyth. Though they have enriched it, they bear no responsibility for the final text.

To come ...

Case studies detailing how needle exchange can be thwarted by inadequate support and counterproductive regulation.

The British record including new light on the influential early evaluations.

What it will take for exchanges to curb spread of hepatitis C.

Needle exchange has a history of under two decades and in Britain about 15 years.[1] Rushed through to forestall replication of the HIV disasters in Edinburgh and Dundee,[2] exchanges in Britain had little to guide them. To this day there is neither a solid body of evidence nor an expert consensus on which practices work best. Trial and error, local reports, and an active network of exchange workers, have been the main vehicles for progress.

Recent studies from North America and continental Europe casting doubt on needle exchange's value are one reason to reconsider the British experience, but the more important reason is the challenge of hepatitis C. Continuing spread of this virus reveals weaknesses which HIV does not, exposing minimal HIV spread as a false reassurance.[3 4 5] Britain and other countries are only now coming to grips with this disturbing revelation.[6]

The consequences of failing to stem hepatitis C are severe. After 20 years about 1 in 6 infected patients develop serious chronic liver damage and may die of complications or require a liver transplant.[7 8] After another ten years nearly a quarter are likely to be at this stage.[9] In Australia it has been estimated that each hepatitis C infection will eventually cost the health service over £5000.[10] Plus social costs the bill is nearer £7000 or nearly £17,000 without discounting later expenditures.[11]

Though pharmacy exchange is important, this review focuses on standalone exchanges or those based in drug services. Greater investment and expertise mean the expectations are greater – they have more to prove.

Litmus test for infection control

What makes hepatitis C so hard to control is the degree of behaviour change needed to intercept its transmission. Reductions in risky sharing of injecting equipment can be enough to minimise the spread of HIV. For hepatitis C, the emphasis is less on reduction, more on elimination,[12] and this applies to all sorts of equipment, not just needles and syringes.[9 14 15] Across the world, what has worked tolerably well in curbing HIV spread has not worked for hepatitis C.[9 12 16 17 18 19 20 21 22 23 24 25] Nowhere has a public health system been able to hold levels of hepatitis C among injectors down to 5% or less, a level commonly bettered for HIV.[4]

The challenge posed by the virus arises from a combination of robustness, infectivity and prevalence.[12] Hepatitis C lasts much longer than HIV in blood and very little blood is needed to spread it.[19 26] As a result, it is more easily spread through sharing other injecting equipment ('paraphernalia') as well as needles and syringes.[9] An analysis of equipment used by hepatitis C-infected injectors (or groups including an infected person) revealed that the virus had contaminated about 7 in 10 syringes and swabs and from a quarter to 40% of filters, spoons and water samples.[27]

These properties contribute to a much higher prevalence of infection among injecting drug users than HIV[4 28] – across Britain, about 40%.[29 30] Especially in London, infection rates can be much higher: three-quarters or more in methadone[31] and needle exchange[32] samples. Hepatitis C reached these levels partly because the virus took hold before anyone knew it existed and well before anti-infection measures were implemented in response to HIV.[2 4 25] The upshot is that in Britain and similar countries, after ten or more years of injecting – sometimes far fewer[33] – infection is the norm.[7 34 35 36] Once someone is infected, typically they remain infected and infectious for decades.[20 21]

Prevalence, robustness and transmissibility interact to elevate risk.[17 26] On the basis of Australian infection rates (not very different from the UK), sharing injecting equipment is 150–800 times more likely to spread hepatitis C than it is to spread HIV.[19] As a result, hepatitis C spreads through an injecting population 10–100 times more rapidly.[21]

Why focus on needle exchange?

The argument that needle exchange is critical to containing hepatitis C rests partly on eliminating the alternatives. An effective vaccine is not on the horizon.[7 21] Post-infection treatment can reverse the disease in a substantial minority, but it's feared (probably mistakenly[37 38]) that drug injectors will not comply with the onerous regime[35] and will in any event become re-infected. For these reasons, UK guidelines say current injectors should normally not be offered the most effective of the treatments.[7] Sexual spread[8 39] and mother-child transmission[12] are rare. By default, the spotlight is left on preventing infection among injectors.

Among established services, only methadone maintenance and needle exchanges attract large numbers of injectors. Methadone has a convincing

record on HIV[40 41] but has yet to be shown to significantly curb hepatitis C.[12 13 14 23 25 42 43 44 45] Usually it is entered too late to prevent most patients already being infected[3 12 46] and has at best only a moderate impact on risk behaviour.[25 46 47 48 49 50 51]

Prescribing heroin for injection under supervision can rapidly reduce risk behaviour and cut (without eliminating) spread of hepatitis, but by the time this more radical treatment is resorted to, few patients are free of infection.[52] That leaves needle exchange. Exchanges cannot reverse the epidemic on their own or without support, and nor should they be expected to.[2 7 9 30] But, as the new English hepatitis C strategy acknowledges,[6] they are the key players.

The nature of the evidence

If hepatitis C is the challenge and needle exchange the main player, what do we know of how well it performs? Evidence can be found at three levels. The first two are the subjects of this article. First, if the virus is spreading rapidly, this constitutes proof that *something* is lacking in infection control practices ◤ *Virus spreading rapidly*. Second is the question of whether networks of harm reduction services featuring needle exchange have at least been able to restrain the spread ◤ *Harm reduction curbed spread*. At these levels we can use data on trends in whole populations of injectors on the assumption that needle exchange played its part. The third level – covered in later issues – relies on data directly from needle exchanges and their users. At this level the focus will be on *case studies of failures*.

Case studies because exchanges vary on many dimensions which interact between themselves and with the surrounding environment, processes best witnessed through a rounded picture of the few well-documented exchanges. *Failures* (or partial successes), because these throw into relief what makes most exchanges work. Also cited are all the studies which have directly evaluated the impact of needle exchange on hepatitis C. This meagre data is supplemented with data on HIV and hepatitis B (if these are spreading then almost certainly so too is hepatitis C) and with information on the behaviours known to spread viral infection.

No UK exchange has been documented in sufficient detail to be form a case study. Instead, all available scraps of evidence from Britain are brought together including evaluations of the first UK exchanges, still the most thorough studies.

Though relevant data was conscientiously sought, the extended review underlying this and later articles was not a comprehensive and systematic review of everything known about syringe exchange effectiveness. The focus was on hepatitis C and on studies which shed light on what sometimes makes needle exchange *not* work.

Virus spreading rapidly

Arguments that more needs to be done to combat hepatitis C rest on *incidence* data. Evidence that many injectors *are* infected (prevalence) could just be a historical legacy. What matters is whether today's services are preventing *new* infections (incidence).

The contrast with HIV is instructive. By the late '90s virtually no infections were recorded among newer injectors[28 54] or in blood submitted by injectors in Scotland,[55] yet hepatitis C was spreading rapidly. After up to three years' injecting about 1 in 10 injectors seen at drug services in England and Wales are infected[28] and by five years a quarter.[29] Over a similar period, in England's north west a third were infected[56] and in Glasgow 43% (but in Edinburgh 'just' 13%).[57] Demonstrating the potential for very rapid spread, in Glasgow in the first half of the 1990s, within two years 42% of injectors were infected.[58] Across the UK, in the 1990s the numbers of infections identified by laboratories rose by multiples of ten.[55 59 60]

Other countries have seen even more rapid spread, a warning of what can happen. Within a year it is not unusual to find a substantial minority[15 19 23 25 61 62 63 64] of injectors infected and sometimes, as at one stage in Vancouver,[65] the majority.[66] Most dramatically, in Belgium in 1995, within a month of starting to inject nearly half of a sample of heroin addicts had become infected; within a year, over three quarters.[44] Needles and syringes can freely be bought from Belgian pharmacies but even in the late '90s needle exchange provision remained patchy.[67]

In populations where new HIV infections have been effectively suppressed, hepatitis C can still be spreading rapidly.[65] An Australian HIV prevention service had its intended effect on HIV with just 0.17% of clients per year becoming infected, but 21% became infected with hepatitis C.[23]

However, as in the UK, there can remain a window several years wide when most new injectors are free of hepatitis C infection and could potentially be kept that way.[45 62 64 68] For example, in Australia, on average it takes about seven years to become infected.[25]

Broadband transmission aids spread

Some of the factors which influence the risk of hepatitis C infection (such as imprisonment[3 23 25 45 56 61 69]) are beyond the reach of needle exchanges, but others may need to be taken into account in service planning.

Sharing uncleaned syringes and needles is a well-known risk factor, but sharing other equipment or 'cleaned' syringes have also emerged as major transmission routes. Nearly 90% of infected patients at a London methadone service denied ever having shared a 'dirty' needle and syringe.[31] However, two-thirds had shared these after cleaning and 80% other injecting equipment, in both cases significantly more often than among those not infected. Similarly in North America,[4 65 69] Australia,[23] and Belgium,[44] sharing implements such as 'cookers' or filters has been

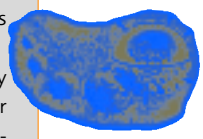
Preview of conclusions

An advanced sketch map of where this multi-part series is heading will help readers assess signposts to the conclusions reached in subsequent issues.

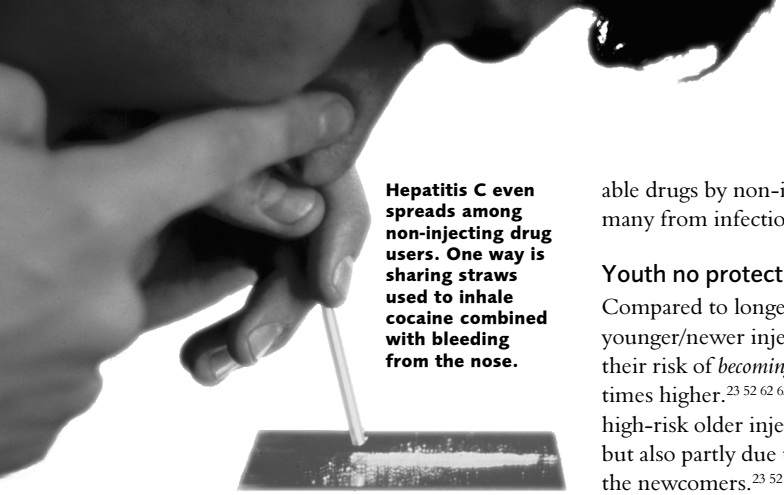
In this issue it's established that hepatitis C has already infected a substantial minority of British injectors and is spreading rapidly due to continued 'sharing' – shorthand for the various practices which risk blood-to-blood contact mediated by materials and equipment used to inject. Without harm reduction measures such as needle exchange, its spread might have been even worse,[7 20 28] but their impact has been nowhere near enough to prevent the hepatitis C epidemic. Given current services, progress has plateaued at a level which leaves HIV a potential threat[53] and hepatitis C leaking in volumes through the gaps.[22]

In later issues it's argued that rising above this level will require more intensive and extensive service provision and a determined strategic focus on eliminating risk behaviour. In this exchanges will be pivotal, but success is not guaranteed. Exchanges do not automatically reduce risk behaviour or eliminate the potential for epidemic viral spread;[1 18] it all depends on the volume and nature of the service. In Britain, evidence for effectiveness in reducing risk behaviour or curbing infection is extremely limited. Across the world, studies have generally yet to prove effectiveness against hepatitis C.

Rather than these findings casting doubt on continuing with needle exchange, the overriding conclusion is that we need far *more*. Exchanges should be the vanguard of a harm reduction effort of sufficient volume to safeguard the health of the vast majority of injectors (and their associates), not just those looking for ways out through treatment. More resources and support could also pave the way for a proactive working style which maximises the opportunities for intervention. With the core exchange function optimised, attention could be turned to extensions which harness drug user networks and take exchanges closer to a one-stop, comprehensive harm reduction service.



Not a pretty sight: the hepatitis C virus.



Hepatitis C even spreads among non-injecting drug users. One way is sharing straws used to inhale cocaine combined with bleeding from the nose.

implicated in infecting up to a third or more of injectors who denied syringe reuse. Sharing out drugs by 'backloading' (drawing up the solution from one syringe into another) is also an established risk factor.[68]

The more people you share with, the greater the chance of infection.[42 44] Polydrug use and especially injecting cocaine or cocaine/heroin mixtures ('speedballs') is commonly[52 62 65 68 69 70 71] but not universally[13 63] found to elevate risk of infection by hepatitis C, and the same has been found for HIV.[72 73]

This is partly because the short-acting cocaine is injected more often, but also because some patterns of drug use are markers of a disordered lifestyle which features risky injecting. In one British study, this seemed to apply to injecting cyclizine, benzodiazepines or pharmaceutical opiates;[56] in another, polydrug use generally and specifically injecting temazepam.[74] Elsewhere, injecting cocaine[62 71 75 76 77 78 79] is commonly implicated, but sometimes too supplementing your main injecting habit (usually heroin) with cocaine[139] or crack,[68] tranquillisers,[51] or heavy drinking.[139]

Dabbling still a risk

Much more so than for HIV, infrequent injectors are still at substantial risk of infection with hepatitis C.[44 45 62 65 68 70] For example, in Belgium over half the occasional injectors in a sample became infected and once other factors had been taken into account, injecting infrequently was no protection.[44]

This happens because occasional injectors are less likely to have their own equipment and more often reuse other people's. As a result, the protection afforded by fewer injections is counteracted[51] by the fact that each injection is more likely to involve a syringe, spoon or filter which might have become contaminated – in Dublin, six times more likely.[80]

Even among what seem (sometimes this is questionable[81]) to be *non*-injecting drug users, hepatitis C infection can be substantial. A possible mechanism applicable to 'snorting' cocaine is sharing straws used to inhale the drug combined with the common experience of bleeding from the nose.[82 83] However, the risk for non-injectors is far less than for injectors.[66 84] Opting to take injectable drugs by non-injecting routes saves many from infection.[14]

Youth no protection

Compared to longer-term injectors, fewer younger/newer injectors are infected[25 70] but their risk of *becoming* infected can be several times higher.[23 52 62 63] This is partly because high-risk older injectors are *already* infected, but also partly due to greater risktaking by the newcomers.[23 52]

Local British studies have found that injectors with shorter careers are the ones most likely to have recently shared injecting equipment.[56 85 86] Nationally, new injecting clients aged under 20 seen by drug services or GPs are most likely to have recently shared, those aged 30 or more least likely.[55 87] A similar pattern was apparent at Australian exchanges.[45] Newer and younger injectors are more likely to rely on older and potentially infected injectors for equipment or for help with injecting. In Baltimore, people initiated into injecting by someone at least five years older were most likely to become infected, a finding attributed to the greater chance that older injectors will themselves be infected.[63] Newcomers will also tend to be less aware of risks and how to avoid them.[88]

Harm reduction curbed spread

Rapid spread of hepatitis C signifies that anti-infection strategies have not been effective enough, not necessarily that they have been *in*effective. Without measures such as needle exchange and methadone maintenance, the virus might have spread yet more rapidly.[7 89] For this there is indeed some evidence,[20] but even where harm reduction measures are well established and widely accessed, they are not making sufficient impact.

Some of the evidence comes from the history of the hepatitis C epidemic in England and Wales. Data from a national sample composed mainly of injectors in treatment is consistent with a downturn in new infections from the mid-'80s when anti-HIV measures started to be implemented.[29] Other English studies tell a similar story for hepatitis C[56 90] or B.[31] Though the timings are different, data from Edinburgh and Glasgow (which account for most of Scotland's infections[30]) also suggests that new infections fell around the times when syringe exchange and methadone services became widely established.[57]

Drawing on data from 101 cities in five continents, the Australian health department has compared trends in hepatitis C in cities with and without needle exchanges.[91] On average needle exchange was associated with a reduction in prevalence in injectors of around about 2% year – worthwhile, but not as great as for HIV. When incidence was analysed it was indeed lower in cities with exchanges, but still high (16% versus 25% per year) and the difference made by exchanges was neither large nor statistically significant.

Services now making more impact?

Recent awareness of hepatitis C as a risk in its own right may have further dented its spread. In Britain this could be the message of reductions seen (in the late '90s) in the proportions of injectors who tested positive for hepatitis C.[28 30] Similarly, at a London methadone clinic, only among the most recent initiates to injecting in the late '90s was there a drop in the infection rate so steep that it could not be explained by differences in how long people had been injecting.[31]

In other countries, too, recent falls in what remains rapid spread may reflect intensified anti-infection measures. In Dublin in the 1990s, implementation of extensive harm reduction services coincided with a fall from nearly two-thirds to under 40% in the proportions of new (up to two years) injectors who became infected with hepatitis C.[92] The fall was seen mainly in the newest (up to a year) injectors. Among those injecting for one to two years, at 57% the infection rate approached pre-harm reduction levels, suggesting that the main effect of service provision was to delay infection.

In Australia the infection rate among newer injectors seen at syringe exchanges nearly halved in the two years from 1995, a period when harm reduction was adopted as national policy and hepatitis C became a recognised problem.[45] In contrast, earlier anti-HIV measures including syringe exchange seem to have curbed the spread of hepatitis B but not of hepatitis C.[15 25]

Risky injecting remains common

Underpinning continuing spread of hepatitis C is the continuation of behaviours capable of transmitting the virus. Most worrying is a recent rise in the proportion of injectors interviewed at drug services or genitourinary clinics in England and Wales who admit in the last month having passed on or received used needles and syringes.[28] Up to 1997 typically under 20%, in London this proportion doubled to over 40% in 1999 and 2000. Outside London it rose to about 30%. The increase remained when the focus was narrowed to newer and younger injectors.

This picture was replicated in assessments made in England[87] and Scotland[55] of new or returning clients seen at drug services or by GPs. There were substantial rises in the years leading up to 2000/01 in the numbers injecting and in the proportion of injectors who admit having recently shared – in England, from 12–13% to 20–21% over the '90s. The same type of statistics show that in England and Wales recent sharing of injecting equipment (not just needles and syringes) is the norm among new drug injecting clients.[28]

Britain is not alone in finding that relatively extensive harm reduction services can still leave high levels of risky injecting. The same was found in Dublin,[92] but there the extensions left the supply of sterile equip-

ment short of need and not sufficiently accessible.[80] After an initial reduction, in Amsterdam sharing has remained sufficient to spread HIV to 3–4% of injectors a year[51 93] and hepatitis C to many more.[13] In Europe's Maas-Rhein region, drug subcultures and insecure living conditions have limited the impact of service provision: though over 90% of injectors saw fresh equipment as easily available, nearly half usually shared syringes with a partner or friend.[94]

Official statistics underestimate sharing

Official British statistics are worrying enough but do not tell the whole story. In 1998, 1214 injectors not currently in treatment were interviewed in seven English cities.[90 95] Detailed questioning revealed higher sharing levels than the brief enquiries used to generate official statistics. In the last four weeks, 78% had injected in ways which might spread infection. Just over half had reused or passed on used needles and syringes. Three quarters had shared materials such as filters, spoons, water or bleach, which were also shared more often. The saving grace was that sharing was typically confined to two friends or partners rather than strangers.

It was a similar picture in the south west of England where in the past month 40% of a sample composed mainly of heroin injectors had shared syringes/needles and 85% other equipment.[96] On nearly 1 in 5 occasions the injecting partner was an 'acquaintance', not a friend. In London, 62% of heroin injectors interviewed in 1994 had in the past year shared equipment of some kind.[97] Syringe reuse tended to be restricted to close friends and partners, but about a quarter had reused spoons or water after (and nearly a third before) a casual acquaintance.

A US study has calculated that injectors who had reused both needles/syringes and other equipment had exposed themselves to infection 79 times in the past month, of which 51 were due to reusing cookers, filters or water.[98] Where, as in the UK, syringes are more easily available,[99] the balance of risk occasions is likely to be weighted even further towards injecting paraphernalia.

Some attempt to clean needles and syringes before reuse is the norm, but studies in London[85] and the north west of England[100] suggest that only rarely is this adequate to kill HIV, let alone hepatitis C. In the latter study the false reassurance generated by cleaning seemed to encourage syringe and needle sharing.

Why sharing persists

Scarcity remains a major reason why syringes are shared, but in legislatures such as the UK, often this is scarcity at the *micro*-level – a new set not being to hand at the time and place when immediate use is prompted by withdrawal symptoms, the desire or opportunity to take drugs, or the need to consume quickly to avoid detection.[102] The strength of these urges may be why some British studies have found that the greater their dependence on drugs, the more likely injectors are to share syringes.[74 96 101]

It's a friendship thing

As significant as equipment shortages are the social interactions through which risks are recognised, given weight, and accepted or avoided. Even when fresh supplies can be had, personal closeness may be seen as mandating closeness in the form of sharing a syringe.[2 103] Where less intimate sharing has given way to anti-HIV messages, intimate sharing persists. In the UK[32 95 101 104] and other countries with developed harm reduction services,[80 94] most injectors now share syringes only with one or two partners and friends and tend not see this as an infection risk.[101 105 106] British studies have found injecting with friends closely related to sharing.[74] Where young injectors have grown up or initiated drug use together, perception of risk may be low ('I know where you've been') and sharing levels high.[74 88]

Given these ties, challenging sharing may be interpreted as a challenge to the relationship itself. What from the outside is 'risk behaviour', for the participants serves to symbolise and maintain the social ties on which they depend.[105] Social relationships are also power relationships, most evident in male-female sexual partnerships (within which resisting sharing can risk violent repercussion)[103] but also in the initiation of younger by older and more experienced injectors. Some British studies have found that the more an injector allows another injector to take the lead in the acquisition, preparation and administration (as in injecting them) of drugs, the more likely they were to have reused injecting equipment.[96 100]

Such ties circumscribe each individual's freedom to take or not to take risks. As a result, networks of drug users tend to jointly develop risky practices[88] and also to reduce risk together through example, influence and changing social norms.[107] What is seen as a risk is itself socially defined, not just in terms of the people with whom sharing is considered too risky, but also the risk practices which the network and its opinion leaders dismiss or see as beyond the pale.[105]

Partners in adversity

The process of obtaining drugs can itself generate sharing liaisons – business partnerships but with the emotional closeness lent

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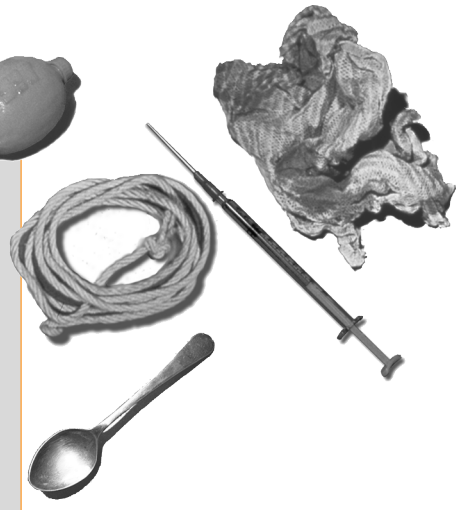
Platform to build on

The weight of international evidence is that exchanges have reduced behaviours which spread blood-borne disease and reduced HIV spread without increasing the number of injectors or the frequency with which they inject.[121 122 123 124 125 126] This evidence is sufficiently persuasive to be acknowledged by major international[127] and national[128 129 130] authorities, even in the USA[8 17 120 131] where federal opposition to funding needle exchange remains unyielding. In Britain, an early harm reduction-oriented public health response to HIV, in which needle exchange was important both as a symbol[74] and a contributor,[2] is credited with helping to avert the epidemics seen in legislatures which denied sterile injecting equipment to drug injectors.[2]

The most recent evaluation published late in 2002 is from the Australian health department.[91] It replicated and extended an earlier study[124] comparing trends in HIV prevalence in cities with and without needle exchange programmes. The conclusion was that on average HIV prevalence decreased 18% each year with exchanges but increased 8% without them. The advantage was so great that it was very unlikely to have been due entirely to other services implemented alongside needle exchange.

North American[132 133 134] and Australian[91 135] analyses based on the health care costs of treating HIV infection (and a New Zealand report which also took hepatitis C treatment costs into account[136]) suggest that even with this limited accounting of benefits, needle exchanges save far more money than they cost. In one analysis cost-savings continued to accrue until nearly 90% of injectors' syringe needs were met by a combination of needle exchange and pharmacy distribution.[137] In some scenarios, HIV would best be prevented by allocating the bulk of anti-HIV funding to syringe exchange.[138]



After an injecting episode involving an infected person, hepatitis C contaminated 7 in 10 syringes and swabs and a large minority of filters, spoons and water samples.

Mined, refined, assayed and set in context – nuggets of data with weighty practice implications

Nuggets features recent evaluations of interventions selected for their particular relevance to UK practice. An attempt is made to balance studies relating to alcohol and illegal drugs, and to prevention, community safety, and treatment. Studies are sourced mainly through Britain's national drug and alcohol information services (DrugScope and Alcohol Concern) and through our network of research contacts.

Entries are drafted after consulting related papers and seeking comments from the lead authors and members of FINDINGS' advisory panels or other experts. They have generously enriched our understanding but bear no responsibility for the published text. Though not individually acknowledged, we particularly thank the study authors for their work and for helping us interpret it.

Each entry is structured as follows:

Findings The most practice relevant findings for the UK and the main methodological characteristics of the featured studies.

In context Brief comments on the featured studies' methodology and findings set in the context other related studies.

Practice implications Suggestions about how the implications of the featured studies might be put into practice in the UK taking into account related research and the UK policy and practice context. The suggestions are intended to inform decisions over policy and practice but *do not constitute a sufficient basis for taking those decisions*, which should be more widely based on research, experience and expert opinion.

Featured studies References to the evaluation(s) described in **Findings**.

Additional reading Optionally, a selection of documents drawn on in drafting the entry. Full references on request.

Copies of cited documents may be available from the author ◤ **Contacts** or for a fee from Alcohol Concern (020 7928 7377) or DrugScope (020 7928 1211); check before ordering. In case of difficulty contact the FINDINGS editorial office on 020 8888 6277.

Contacts Where available, contact details of the lead author(s) of the featured studies. These may not be current and do not imply that the author has agreed to enter into correspondence over the study.

Links Cross reference to related items in current or past issues of FINDINGS. A Nugget entry referred to as '**1.2**' is the second entry in FINDINGS issue 1.

8.1 Health funders cut their own costs by commissioning substance misuse treatment

Findings Treating substance misuse problems saves health service costs by reducing the need for future inpatient stays and emergency department visits. For health funders, commissioning this treatment can be considered 'spending to save'.

Over 1000 patients enrolled in a comprehensive private US health plan were admitted to two eight-week outpatient addiction treatment programmes. Most were dependent on alcohol and many also used stimulants or cannabis. The health plan's records were used to track medical care costs for the 18 months before treatment and the same period after it was due to have ended.

LINKS Nuggets **4.2 4.1 3.4 3.3 1.3**

Due to a reduction in hospital admissions/stays and emergency departments visits, post-treatment costs for the substance use patients fell significantly more than for other health plan members of the same age and gender. Inpatient and emergency costs both fell by just over a third, but, because in $ terms these were much greater, the fall in inpatient costs accounted for most of the savings. Non-emergency outpatient visits and associated costs remained stable.

In context The study adds to a substantial body of evidence that addiction treatment in general, and outpatient alcohol treatment in particular, creates cost savings for society. Its significance is that it shows these savings also benefit the service (ie, the health service) which funds the treatment. A full accounting taking in outcomes such as reduced third-party injuries would almost certainly record even greater savings for the funder. For drug addicts, too, regular outpatient treatment reduces the need for hospitalisation to deal with alcohol, psychiatric or physical problems.

The data derived from a study comparing intensive day hospital against routine outpatient care (visits three times a week), both supplemented by up to 10 months of aftercare. Across the treatments abstinence outcomes differed little, suggesting that the savings can be set against the costs of the cheaper option. On this basis the health plan would have recouped treatment costs within four to five months and then started to accrue net savings. In this study and in an earlier one of other units in the same health plan, alcohol treatment reduced the need for 'crisis' care (hospitalisation and emergency visits) but patients maintained outpatient contact, a pattern which should help prevent problems escalating and create greater long-term savings. However, part of the savings could have been due to the resolution of a climax in the patient's substance use which would have occurred without treatment.

Most patients had been randomised to the two treatments. A more rational allocation might have increased savings. Though they cost more, for the most problematic patients extensive/intensive treatments create greater savings than routine care. For the remainder, short-term inpatient or routine outpatient care is most cost-beneficial. Encouraging use of self-help aftercare groups might also have cut costs. In one US study this greatly reduced mental health care costs without affecting substance use and other outcomes.

Practice implications As an incentive to invest in substance misuse treatment, evidence that the authority which funds the treatment reaps some of the savings is likely to be more persuasive than savings less close to home. Such evidence is now emerging from comprehensive US health providers. The margin for error is so great that savings are likely also to be seen in Britain. If so, health authorities can be encouraged to provide addiction treatment as a means of reducing costs or releasing funds for other patients, as well as for the direct benefits to the patients and to society from outcomes such as reduced crime and restored productivity. Funders should budget for at least a temporary increase in aftercare costs, but this does not outweigh savings elsewhere and probably helps reduce long-term costs by preventing relapse. Encouraging participation in self-help groups can reduce aftercare costs with no loss of benefit.

Featured studies Parthasarathy S. *et al*. "Association of outpatient alcohol and drug treatment with health care utilization and cost: revisiting the offset hypothesis." *Journal of Studies on Alcohol*: 2001, 62, p. 89–97. Copies: apply Alcohol Concern.

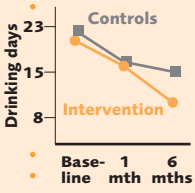
Contacts Constance Weisner, Kaiser Permanente, 2000 Broadway Avenue (3rd Floor), Oakland, CA 94612, USA, e-mail Constance.Weisner@kp.org.

8.2 Addressing heavy drinking by needle exchange users could reduce infection risk

Findings Offering two alcohol harm-reduction sessions totalling under two hours is one way needle exchanges could further reduce the risk of infection or overdose and of aggravating hepatitis infection.

Adverts at three US needle exchanges invited visitors to call researchers who checked whether they were heroin or cocaine injectors with currently untreated alcohol problems. 262 callers met these and other criteria and 187 (mainly heroin users) came for assessment. This was how the session ended for the 92 randomised to the control group. The other 95 then had their first motivational interview. Using feedback on their risk and drinking behaviours, they were led to set goals for reducing alcohol-related harm and in particular HIV risk.

Subjects were asked to return a month later for a follow-up assessment, when intervention subjects also received a 'booster' session. Virtually all returned then and six months after intake for the final follow-up. Reports on drinking (❶) and HIV risk (❷) document substantial reductions in both groups, but the intervention did create extra gains. Drinking reductions were concentrated among the heaviest drinkers. After assessment the half who had been drinking most frequently were now abstaining on seven more days a month; an extra three days were added by the intervention. The half who had drunk most on each drinking day had reduced intake by an extra two UK units a day. Intervention subjects had also made greater (and almost statistically significant) reductions in how often they used heroin. There was no evidence that those who now drank less had compensated by using heroin more.



HIV risk was assessed in the 109 subjects who at baseline had recently re-used used injecting equipment. From an average of 13 days, at six months controls were now running this risk just four days a month, a record barely improved on by the intervention. However, each intervention subject was significantly more likely to have reduced risk: for example, 70% had not shared at all compared to 53% of controls.

In context The researchers had previously found that exchange attenders who drank excessively or abusively were much more likely to share injecting equipment. Heavy drinking is also a major factor in opiate overdose and in the aggravation of hepatitis infection, both common in British exchange attenders. Many (in one study, a third) also have alcohol problems. Such statistics suggest that reducing alcohol-related risk is an important task for needle exchanges.

Though it offers one way to tackle this task, the study was not a test of how the intervention might work if applied routinely to heavy-drinking exchange visitors. Subjects who responded to the adverts may have been unusually motivated to do something about their drinking. How visitors would react to an uninvited approach is unknown. Lengthy research assessments may have contributed to the intervention and to the outcomes. The intervention was conducted in a research setting rather than a service whose main function (exchange) might have to take priority. Improvements were seen only after the second assessment and booster session, but arranging re-contact may be difficult.

LINKS Nuggets **5.8 1.8 1.7** • *Hepatitis C and needle exchange*, issue 8

Practice implications A new English strategy encourages needle exchanges to further reduce risk of infection with hepatitis C. To do so they must achieve far greater reductions in sharing. Interventions of the kind investigated in the featured study are one way forward. Adequate resourcing will be essential. Exchanges have been funded as a simple transaction mechanism rather the core of an extended risk reduction service. Exchange staff may also need help to develop the skills and confidence to tackle risk behaviour in ways which do not alienate the service's users. The skills are probably similar to those developed for brief interventions in other settings where the caller is, from their point of view, attending for another purpose.

Featured studies ❶ Stein M.D. *et al*. "A randomized trial of a brief alcohol intervention for needle exchangers (BRAINE)." *Addiction*: 2002, 97, p. 691–700 ❷ Stein M.D. *et al*. "A brief intervention for hazardous drinkers in a needle exchange program." *Journal of Substance Abuse Treatment*: 2002, 22, p. 23–31. Copies: for both apply DrugScope.

Contacts Michael Stein, Division of General Internal Medicine, Rhode Island Hospital, 593 Eddy Street, Providence, RI 02903, USA, e-mail mstein@Lifespan.org.

8.3 Injury rate cut in heavy drinking A&E patients

Findings A brief intervention with accident and emergency department (A&E) patients reduced alcohol-related harms including injuries, but only when reinforced with a booster session.

539 of 921 patients approached in A&E on the basis of admission records proved eligible and entered the study. All were injured adults dealt with as outpatients, with a history of risky drinking or who had recently taken alcohol but were not (still) drunk. After baseline assessment they were randomised either to normal discharge (the control group), to an immediate intervention lasting up to an hour, or to this plus a booster 7–10 days later. Both sessions were motivational interviews which aimed to reduce alcohol-related harms identified by the patient. Patients left with a written action plan. Over the following year only booster patients experienced significantly fewer alcohol-related harms than controls. They had improved more in social and personal wellbeing and had suffered 64% fewer alcohol-related injuries than in the previous year, compared to 34% fewer in controls. Gains were concentrated in the 69% who actually returned for the booster. The intervention was just as effective when the original injury was not alcohol-related.

LINKS Nuggets **8.4 6.1 3.10 3.3 2.8 2.6** • *How brief can you get?*, issue 2 • *Investing in alcohol treatment: brief interventions*, issue 7

In context The study is one of the very few to have tried alcohol interventions in an A&E department. Other such studies include one at a busy London unit. Referrals for alcohol counselling increased markedly when a rapid screening test was used and a specialist worker was on hand to do the counselling, but doctors still referred very few patients. Like the featured study, a US study of teenage A&E patients documented reductions in alcohol problems and injuries but not in drinking. Other brief intervention studies conducted in the relative calm of an inpatient ward or outpatient clinic have recorded reductions in drinking, heavy drinking, alcohol problems, injuries and re-admissions. Among them was a British study of young men referred to an outpatient clinic a few days after attending A&E with a facial injury. Impacts have been greatest and most consistent from motivational interviewing interventions. As in the featured study, multi-session interventions have more effect than a single session.

Question marks relate mainly to feasibility in normal practice. Routinely implemented interventions which use hospital staff have rarely been studied and as yet there is no convincing evidence of effectiveness. In the current study, few patients were identified and fewer still accepted counselling. Given this throughput, the intervention may not be considered a cost-effective use of skilled staff. Finding suitable staff to work at nights and weekends was very difficult.

Practice implications A&E units should consider screening for alcohol problems using a screen rapid enough to be applied across the board, if practicable, one built in to routine assessments. Unless regularly monitored and encouraged (eg, by feeding the results back to staff), screening may be applied haphazardly and infrequently.

After a positive screen a follow-up letter to the GP should be routine and would pick up on patients for whom intervention had proved impractical. Patients with moderately severe drinking problems should be targeted for an immediate brief motivational intervention aimed at alcohol problems rather than drinking per se. Using a dedicated worker avoids staff being diverted by other pressures and may improve effectiveness. Later booster contact (in person, by phone, or by letter) means outcomes can be monitored and are also improved. More dependent patients require referral to treatment, preferably pursued then and there and followed up to maximise uptake. In costing these programmes, authorities should bear in mind the potential savings due to reduced re-admissions and inpatient stays.

Featured studies Longabaugh R. *et al*. "Evaluating the effects of a brief motivational intervention for injured drinkers in the emergency department." *Journal of Studies on Alcohol*: 2001, 62, p. 806–816. Copies: apply Alcohol Concern.

Additional reading Hodgson R. *et al*. "The FAST alcohol screening test." *Alcohol & Alcoholism*: 2002, 37(1), p. 61–66. Copies: apply Alcohol Concern. Evaluates a rapid screening test tailored to British A&E departments.

Contacts Richard Longabaugh, Center for Alcohol and Addiction Studies, Brown School of Medicine, Box G, Providence, Rhode Island 02912, USA, e-mail Richard_Longabaugh@brown.edu.

Thanks to Nick Heather of the Northern Regional Drug & Alcohol Service for comments.

8.4 Family doctors' alcohol advice plus follow up cuts long-term medical and social costs

Findings A rare long-term study of brief alcohol interventions by family doctors found drinking reductions over four years leading to substantial health and social cost-savings.

Nearly 18,000 US general practice patients waiting for routine care completed a health screen with questions about drinking. 774 recent heavy drinkers (but with no history of alcohol withdrawal or treatment) were randomly assigned to intervention or control groups. Controls were handed a health booklet and advised to consult their doctor over any concerns. The same booklet was handed to intervention patients but they also spent 15–20 minutes with their doctor and were scheduled to return a month later. During these sessions they were led through a workbook about problem drinking and drinking cues, leaving with diary cards on which to record their drinking and a prescription-type agreement to moderate it. A reinforcing phone call was made by the practice nurse two weeks after each session.

Six months later intervention patients had made 15–30% greater reductions in drinking (consumption, 'binge' drinking, and proportion of risky drinkers) than controls, which were broadly maintained through to four years. Other statistically significant gains included 20% and 37% greater reductions in days in hospital and emergency unit visits and fewer drink/drugs offences and deaths. The intervention group was also involved in 41% fewer traffic accidents causing injuries or death. Largely as a result, the intervention saved society at least five times more than it cost; the best estimate was 39 times more. For health care costs alone, the savings to cost ratio was four to one.

In context Among brief intervention studies, the featured study is almost unprecedented in combining length of follow-up with breadth of application. Other long follow-up studies were not set in primary care and most involved restricted populations recruited for the study rather than 'intercepted' while attending for routine care. They found that intervention reinforced by later contact created substantial reductions in drink-related problems, days in hospital and sick leave over the next four or five years. Reinforcing re-contacts probably make a major contribution. A compilation of relevant studies found that (when patients actually return for them) multi-session brief interventions have more impact than a single session, as did a study which tested both on emergency patients. However, unless very brief and non-intrusive, repeated contact can be counterproductive if patients see no need for this degree of attention.

LINKS Nugget **8.3** • Offcut p. 24 issue 7

In one respect the study departed from normal practice. Normally a patient's doctor would be informed of health screen results and would respond in the usual way. Had this been done for the controls, their outcomes might have been closer to those of intervention patients.

Practice implications The featured intervention seems feasible in everyday practice and applicable to a wide range of moderately heavy drinking patients and primary care practices. For primary care trusts, embedding alcohol screening and intervention in general practice offers a way to improve patients' health and to make savings in hospital and emergency care costs which greatly outweigh the initial costs. A one-off motivational interview reaps some benefits but larger and longer term changes are most likely when this is reinforced by monitoring and further brief motivational inputs. These would occur most naturally if the intervention is integral to the practice's preventive health care programme, but for workload reasons it may be more feasible to refer positive screen patients to an alcohol specialist in the surgery. Screening should be universal using a brief standard test, otherwise only more extreme cases are identified. Implementation, health gains and cost-savings are optimised when training and continued support from brief intervention specialists upgrade the skills and confidence of the entire primary care team and enlist their support.

Featured studies Fleming M.F. *et al*. "Brief physician advice for problem drinkers: long-term efficacy and benefit-cost analysis." *Alcoholism: Clinical and Experimental Research*: 2002, 26(1), p. 36–43. Copies: apply Alcohol Concern.

Additional reading Alcohol Concern Primary Care Information Service. Press the Primary Care button at www.alcoholconcern.org.uk.

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Thanks to Bob Purser of Aquarius Action Projects for his comments.

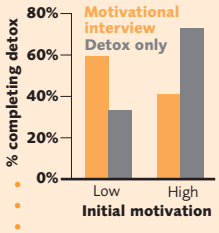
8.5 Motivational interviews as a standalone or treatment-entry response to stimulant use

Findings Short motivational interventions hold promise as a standalone response to stimulant use in settings such as needle exchanges and methadone programmes as well as reinforcing stimulant-specific treatment.

LINKS Nuggets **7.7 5.11 3.6**

In Australia (study 1) 64 regular amphetamine users who contacted researchers were randomly allocated to a control group or to either a two- or four-session intervention. A third were on methadone and needle exchanges were among the recruiting sites. After baseline measures all were given a self-help booklet. For the control group this was how the session ended. The other 32 went on to a motivational interview aimed at reducing amphetamine use. Scheduled next was either one or three sessions of cognitive-behavioural relapse prevention therapy. Six months later over twice as many (14 v 6) intervention as control subjects were no longer using amphetamines, including five of the eight who had not returned for therapy. Frequency of use had also fallen much more in the intervention group.

In study 2 about half of a sample of 105 US patients undergoing cocaine detoxification were randomly allocated to two interviews to build motivation and plan for abstinence. These significantly improved the completion rate among subjects low in motivation, but had the opposite effect in subjects highly motivated to reduce drug use. More of the motivational interviewing group started post-detoxification therapy with cocaine-free urines (88% v 62%) and they had more cocaine-free tests across the 12 weeks of therapy (82% v 64%).



In context Brief motivational interventions consistently moderate drinking in heavy drinkers but have rarely (as in study 1) been tried as a standalone response to illegal drug use. Further trials are needed, but the study suggests that a motivational interview can help curb amphetamine use. It also gives little support to multi-session cognitive-behavioural therapy in users not actively seeking treatment.

For illegal drug users, such interventions have been used instead to enhance addiction treatment. As in study 2, in this role they have been found most effective among less motivated patients. Findings

NUGGETTE

In larger and more rigorous studies, two research teams failed to replicate their previous positive findings on **acupuncture**. The first mounted a new study of "sufficient power and clarity to answer definitively whether auricular acupuncture is effective in the treatment of alcohol dependence".[1] Over 500 US patients were randomised to treatment as normal or to this plus one of three forms of acupuncture: needles inserted in sites recommended for addiction, in nearby 'sham' sites, or in sites tailored to the patient's current symptoms. The latter was important because this is normal practice. Half the acupuncture patients said it curbed their desire to drink but over the 12-month follow-up neither on this measure nor on alcohol consumption was any acupuncture option better than treatment as normal, and more acupuncture patients dropped out of treatment. Similarly, US research at a single clinic had found that acupuncture improved cocaine abstinence among methadone patients. A later multi-clinic replication was "designed to optimize methodologic rigor".[2] It added post-treatment follow-up measures and included primary cocaine as well as methadone patients. Neither at the original clinic[3] nor in the study as a whole did acupuncture at 'real' sites reduce cocaine use, craving, or addiction-related problems more than insertion at 'sham' sites or the same time spent watching relaxing videos.

LINKS Nuggets **5.7 3.8**

1 Bullock M.L. *et al*. "A large randomized placebo controlled study of auricular acupuncture for alcohol dependence." *J. Subst. Abuse Treat.*: 2002, 22, p. 71–77.
2 Margolin A. *et al*. "Acupuncture for the treatment of cocaine addiction. A randomized controlled trial." *JAMA*: 2002, 287(1), p. 55–63.
3 Margolin A. *et al*. "Interpreting conflicting findings from clinical trials of auricular acupuncture for cocaine addiction: does treatment context influence outcome?" *J. Alternative and Complementary Med.*: 2002, 8(2), p. 111–121.

include improved treatment uptake, retention and outcomes in drug users coerced into treatment or who score low on a motivation scale. The improved pre-therapy abstinence rate in study ❷ is important because 'starting clean' is consistently associated with good cocaine treatment outcomes. Reasons for the counterproductive impact on more motivated subjects are unclear. Possibly the extra time commitment led more to drop out.

Some features of the studies may limit everyday applicability. In neither did subjects enter treatment in the normal way and many would not have sought help outside a research context. In both the originator of the therapy manual supervised the therapists, expertise which cannot be expected everywhere.

Practice implications Assessment plus a brief motivational intervention offers a way to respond to stimulant use identified in settings such as methadone and needle exchange services. Especially for less motivated clients, similar interventions also form a valuable front-end to longer term treatment. For the follow-on treatment, stimulant users benefit particularly from cognitive-behavioural techniques. These elements provide a basis for a potentially attractive service for amphetamine and polydrug use problems, both undertreated relative to opiate addiction.

In Britain motivational and cognitive-behavioural approaches are widely deployed but rarely according to an explicit protocol, making it difficult to improve practice by identifying the active ingredients. Manuals developed for the featured studies (◤ *Contacts*) and others (◤ *Additional reading*) could help services develop their work with stimulant users. Implementation will require initial training and continued monitoring and supervision.

Featured studies ❶ Baker A. *et al*. "Randomized controlled trial of brief cognitive-behavioural interventions among regular users of amphetamine." *Addiction*: 2001, 96, p. 1279–1287 ❷ Stotts A.L. *et al*. "Motivational interviewing with cocaine-dependent patients: a pilot study." *Journal of Consulting and Clinical Psychology*: 2001, 69(5), p. 858–862. Copies: for both apply DrugScope.

Additional reading Carroll K.M. *A cognitive-behavioral approach: treating cocaine addiction*. US National Institute on Drug Abuse, 1998. Copies: download from www.nida.nih.gov/DrugPages/Treatment.html.

Contacts ❶ Amanda Baker, University of Newcastle, University Drive, Callaghan, New South Wales 2308, Australia, e-mail amanda.baker@newcastle.edu.au ❷ Angela Stotts, University of Texas Medical School at Houston, 1300 Moursund Avenue, Houston, Texas 77030, USA, e-mail Angela.L.Stotts@uth.tmc.edu.

Thanks to Mike Blank of the Surrey Alcohol & Drug Advisory Service for comments.

NUGGETTE

In its *Models of Care* guidelines the English National Treatment Agency identifies **culturally competent services** as an essential ingredient of effective drug treatment. The same concept was stressed in a recent report on services for ethnic minorities published by the Drugs Prevention Advisory Service. While there are theoretical reasons for believing such approaches should improve outcomes for minority clients,[1] there is also the argument that illegal drug users have almost by definition moved away from norms derived from religion or heritage. A rare attempt to operationalise the concept and to test it on substance users has recorded disappointing results.[2] Interviews with leaders of a representative sample of US outpatient treatment agencies were used to test the prediction that cultural competence would improve outcomes by improving take-up of health and psychosocial services. The results were "in contrast to what would be expected theoretically". Just six out of 20 possible ways culturally competent practices might affect service take-up were statistically significant, and one of these was in the wrong direction. There was no evidence that agencies characterised by several such practices had higher take-up or that these practices had greater impact in agencies with a high proportion of minority clients. The results gave some backing to single race therapy groups but none at all to offering clients a same-race counsellor. The latter confirms findings from other research ◤ *Links*.

1 Brach C. *et al*. "Can cultural competency reduce racial and ethnic health disparities? A review and conceptual model." *Medical Care Research and Review*: 2000, (suppl. 1), p. 181–217.

2 Campbell C. *et al*. "Culturally competent treatment practices and ancillary service use in outpatient substance abuse treatment." *Journal of Substance Abuse Treatment*: 2002, 22, p. 109–119.

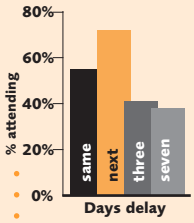
LINKS Nugget **7.4**

8.6 Engaging crack addicts: time is of the essence

Findings Next-day appointments meant more people turned up after contacting a US cocaine service. The results offer a way to help meet national waiting list and treatment uptake targets.

Despite calling for an appointment, half the people who phoned a US outpatient cocaine clinic failed to turn up. One of the few related factors was the delay between call and appointment. An initial study tested this relationship by randomly allocating patients to same-day or normal (one to seven days) appointments; almost twice as many offered same-day appointments turned up.

The featured study went further by randomly allocating 116 problem cocaine users to intake the same day (within 24 hours), the next day (about 24 hours later), three days later, or seven days later. Callers who could not make the appointment were offered an alternative. In practice delays were close to those scheduled. Callers were mainly single young men, probably mostly unemployed and smoking crack. 72% of next-day appointees turned up compared to about 40% scheduled for later. Attendance for same-day appointees (55%) was intermediate and not significantly different from the groups either side. Adjusting for differences in cocaine and heroin use, next-day appointees were more than four times as likely to attend as those scheduled for later.



In context In the featured study and its predecessor, the key factor was the *offer* of an early appointment, so the results may apply even to people unable to attend at short notice.

Other studies involving different treatments and caseloads confirm that rapid treatment entry means fewer clients drop out early without damaging longer-term retention. For example, a US methadone programme accelerated assessment so patients could start on methadone within 24 hours; 4% failed to make it to the first dose compared to 26% when assessments were spread over a fortnight. At a US community drug service, phone callers were told to come as soon as possible the same day or given an appointment on average 10 days later. 60% of the first group turned up, 38% of the second.

Practice implications The English National Treatment Agency has set a target of two weeks from referral to the start of treatment for counselling services of the kind featured in the study. Also relevant is the UK-wide target of doubling the participation of problem drug users in treatment by 2008. Rapid intake can help meet both targets and cut time wasted due to unfulfilled appointments.

If delay is unavoidable, making the referral contact double up as a short motivational interview encouraging treatment entry works when motivation is the main blockage. Mental health and alcohol agencies (and in one study, a service for teenage substance abusers and their parents) have found that pre-appointment reminder calls or letters improve attendance. Reminders which incorporate motivational elements (eg, 'We are looking forward to seeing you'; stressing the suitability of the therapy) and are more personal in their approach have the best record. Especially when waits are long, the NHS recommends giving the patient a rough indication, then agreeing a mutually convenient slot nearer the time. Compared to fixed appointments, this reduces no-shows and cancellations on both sides ◤ www.doh.gov.uk/pspp/psppguide.htm#Step5.

When addicts are keen to enter treatment but their attendance is threatened by an unstable lifestyle, lack of resources, or the severity of drug or other problems, treatment uptake is greatly increased by assigning them a personal 'minder' who advocates for the client, monitors their progress towards treatment entry, and proactively clears away the obstacles, psychological, social and practical.

Featured studies Festinger D.S. *et al*. "From telephone to office. Intake attendance as a function of appointment delay." *Addictive Behaviors*: 2002, 27, p. 131–137. Copies: apply DrugScope.

Additional reading Stark M.J. "Dropping out of substance abuse treatment. A clinically oriented review." *Clinical Psychology Review*: 1992, 12, p. 93–116. Copies: apply DrugScope.

LINKS Nuggets **7.3 6.6 5.11**

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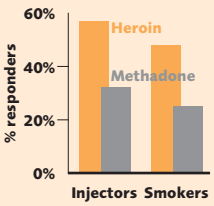
Thanks to Professor Jan Keene of the University of Reading for her comments.

8.7 First large-scale randomised trial boosts case for heroin prescribing

Findings Where oral methadone maintenance has failed, prescribing heroin can greatly reduce crime and improve health and social functioning. These Dutch findings are the best guide so far to what can be expected from the planned expansion of heroin prescribing in the UK.

The study involved long-term addicts who had been treated repeatedly with at least 60mg daily of oral methadone (50mg for heroin smokers) and were enrolled in a methadone programme, yet used heroin daily or near daily and evidenced poor physical, mental, or social functioning. In separate studies for injectors and smokers, 430 were randomly allocated for 12 months to oral methadone only, or to this plus heroin injected or smoked under supervision at a clinic three times a day. Heroin doses were capped at 1000mg daily. They averaged about 550mg supplemented by 60mg oral methadone. The methadone-only group were prescribed up to 150mg daily, averaging about 70mg. To attract and retain patients, Dutch methadone services generally avoid prescribing such high doses that patients can no longer experience heroin. In contrast, the aim (one largely achieved) in the heroin group was to adjust doses to eliminate illicit heroin use. Patients who recorded at least a 40% improvement in one of the areas where they were functioning poorly at intake – without deterioration elsewhere – were considered to have responded well to treatment.



At the 12-month follow-up, about half the heroin patients had responded well, 24% more than on oral methadone only. The remainder had at least done no worse than on oral methadone. Improvements on heroin were evident across physical, mental, and social functioning but on methadone were much more limited. Some of the largest gains were in reduced criminality. However, cocaine use and contact with non-drug users improved little. Fewer of the heroin patients (70% v 86%) completed the 12 months of treatment but those who left more often did so for positive (treatment success or progression) reasons, and at 12 months most were responding well to treatment. After the trial ended, patients who had stayed on heroin for 12 months were transferred to oral methadone. Two months later over 80% who had responded well to heroin had relapsed to their poor pre-treatment levels of functioning.

In context The limited evidence suggests that, prescribed flexibly and at adequate doses, heroin can attract and retain opiate addicts who do not benefit from oral methadone, achieving large reductions in drug use and crime and improvements in health and social stability. However, the comparison has usually been with routine oral regimes rather than regimes engineered and resourced to maximise outcomes. On the other hand, there is a limit to how far methadone can be 'pushed'. Patients often resist very high doses, frequent therapeutic contact, or highly structured regimes. Heroin's holding power makes intensive intervention more feasible. In the featured study, this potential advantage was not capitalised on. Equalisation of psychosocial inputs to the generally low Dutch uptake level could be why many heroin patients remained immersed in a drug using lifestyle.

The study involved a highly selected and self-selected set of patients (◤ flow chart below) likely to be especially motivated to enter heroin treatment. It showed what can happen when heroin maintenance is withdrawn and such patients are forced to revert to oral methadone. Heroin was tapered and methadone doses increased, and a personal treatment plan aimed to help patients manage. Still, relapse was the norm. With the other findings, this constitutes strong evidence that the treatment received at the heroin clinics (and almost certainly the drug component) caused the improvements.

The study also provides the most comprehensive method yet for selecting patients: at least five years' heroin addiction, continued daily use despite adequate oral methadone treatment, and severe drug-related problems as measured by standard assessment tools. These criteria minimised the number prescribed heroin who would have done well on oral methadone. By the end of the study, only 1 in 8 or 1 in 10 of the methadone patients had improved sufficiently (on the study's own criteria) to no longer be considered for heroin.

Supervision requirements and drug costs mean heroin regimes are more expensive than methadone, but savings in suitable patients are also much greater and substantially outweigh the costs. Heroin's attractions risk prolonging treatment, but where regimes insist on supervised consumption, there are attractive and effective treatments to move on to, and patients can revert to heroin if these fail, the Swiss experience is that most leave after a few years and are no longer involved in an addicted lifestyle.

Practice implications Ideally, heroin prescribing would be additional to oral and injectable methadone regimes which have been optimised and made easily accessible. About a fifth of English methadone patients do not gain from current treatments and may be candidates for heroin. From these could be subtracted patients who would do well in improved oral treatment or on injectable methadone, leaving a residue who will only do well on heroin. To these must be added an unknown number who would enter and/or stay in treatment only if heroin were available.

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Whether this potential demand materialises in patient numbers will depend partly on the restrictions placed on heroin patients due to concern over diversion on to the illicit market. Clinics which require long-term supervised consumption can find it hard to recruit patients. Such regimes are also costly, limiting caseloads. Insisting that used ampoules are returned is a cheaper and less intrusive anti-diversion measure. The inconvenience of on-site consumption can be mitigated by allowing patients to skip visits and take oral medication instead. By law heroin prescribing is virtually restricted to specialist hospital units. Requiring on-site consumption would limit their catchment areas, making the treatment unavailable to many patients.

Therapeutic and cost considerations dictate that explicit criteria be used to select patients based on lack of response to adequate oral regimes. Similar criteria can be used to assess progress to justify continuing on injectables or to adjust the treatment. Cost-effectiveness will be higher if patients are encouraged to try oral methadone first but it is counter-productive to persist with this if illicit drug use and crime continue unabated. Fears that patients will deliberately fail on oral methadone to qualify for injectables seem unfounded.

The local service network should ensure seamless transfer between oral and injectable regimes in both directions, most easily achieved when these are provided by the same service. Acceptable drug-free treatments to move on to and the option to return to heroin if these fail are also likely to be important ways to prevent patients getting 'stuck' on heroin.In Britain a major rationale for prescribing heroin is to prevent illicit heroin use. Monitoring this requires urinalysis equipment capable of distinguishing illicit from prescribed heroin; such tests are feasible but require further development.

Featured studies Central Committee on the Treatment of Heroin Addicts. *Medical co-prescription of heroin: two randomized controlled trials*. Central Committee on the Treatment of Heroin Addicts, 2002. Download from www.ccbh.nl/ENG/index.htm.

LINKS Nuggets **5.10 3.2 1.5**

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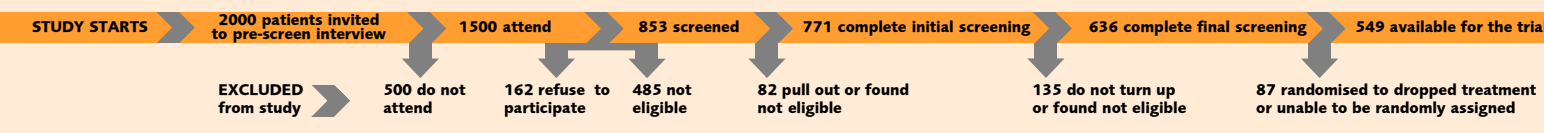
Thanks to John Witton of the National Addiction Centre, Wim van den Brink of the Amsterdam Institute for Addiction Research, and Duncan Raistrick of the Leeds Addiction Unit for their assistance and comments.



8.8 Lofexidine safe and effective in opiate detox

Findings Lofexidine has been confirmed as the preferable non-opiate alternative to methadone for opiate detoxification.

The featured study reviews trials of a class of non-opiate drugs known as alpha2 (or 'α_2') adrenergic agonists. These are thought to suppress a neural network whose rebound over-activity in withdrawal causes symptoms such as chills, cramps, and diarrhoea. Clonidine and lofexidine are the major agents. Three studies comparing them found that the time course (typically peaking at two to four days), intensity (not very severe), and pattern of withdrawal symptoms were similar. However, side-effects from lofexidine were fewer, less serious (especially drops in blood pressure) and required less intervention. If anything, detoxification retention and completion rates were better with lofexidine, but there was very little data.

These findings suggest lofexidine will perform at least as well as other α_2 agents (clonidine has been studied most) as an alternative to tapering doses of methadone. In ten comparitive studies, withdrawal severity was similar or slightly greater on these agents but symptoms peaked within a few days while on methadone the peak was around or after the taper reached zero, usually at least 10 days. Compared to methadone, similar or slightly fewer patients successfully completed detoxification. Clonidine caused greater blood pressure reductions than methadone but this was not a problem with lofexidine.

In context Alternatives to methadone have generally been tried on patients taking relatively low doses of opiates and/or after intake has been moderated through lead-in methadone prescribing. The review included outpatient and inpatient regimes but in Britain outpatient procedures are much more common, and one of lofexidine's main advantages is that safety and low abuse potential permit less close supervision. Documented British experience with outpatient lofexidine is mixed. In one study 71% completed detoxification and were opiate-free but in another just 37%. In the first patients were stabilised on methadone beforehand, screened more stringently for motivation, and frequently supported through home visits. In a survey, UK drug dependency units reported a 60% completion rate but the clinics and the patients may not have been representative.

British inpatient studies have tested compressed four or five day regimes. These start with high doses and may combine lofexidine with naltrexone to precipitate withdrawal. Completion rates were around 80% and symptoms remitted more quickly than on conventional lofexidine regimes. Since this works well with clonidine, there seems no reason why the lofexidine/naltrexone regime cannot be conducted on an outpatient basis with close medical supervision for the first day, a procedure tried successfully in Italy.

Buprenorphine is another alternative to methadone. In terms of comfortable completion of withdrawal it seems preferable to clonidine but it is unclear whether it will also better lofexidine. However, its abuse potential may be seen as requiring supervised consumption.

Practice implications Lofexidine is effective and safe in inpatient or outpatient detoxification and can be given in high starting doses with or without naltrexone to reduce the medication phase to a few days. It is particularly suitable for patients prepared to abruptly stop opiate use without inpatient support and (because it creates an opiate-free gap of a few days) lends itself to longer term naltrexone prescribing to prevent relapse, especially if the detoxification itself involved naltrexone. Supervised consumption is not necessary on safety grounds or to prevent diversion or abuse. Screening for suitability, prior stabilisation on methadone (which may also be used to reduce opioid intake to more manageable levels), and frequent patient support (perhaps best achieved through home visits) are probably important ways to maximise completion rates. For other patients, reducing doses of buprenorphine or methadone may be preferred, especially if the chances of abstinence are low. In these cases patients can seamlessly transfer to substitution treatment using the same drug.

LINKS Nuggets **7.1 5.5**

Featured studies Gowing L.R. *et al*. "α_2-adrenergic agonists in opioid withdrawal." *Addiction*: 2002, 97, p. 49–58. Copies: apply DrugScope.

Additional reading Strang J. *et al*. "Lofexidine for opiate detoxification." *American Journal on Addictions*: 1999, 8, p. 337–348. Copies: apply DrugScope.

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8.9 Systematic but simple way to determine who needs residential care

Findings A US study has created a protocol to determine who to recommend for residential as opposed to non-residential rehabilitation. The *Client Matching Protocol* first identifies people excluded from one or other setting on practical or safety grounds ('exclusionary criteria'). Then allocation is based on problem severity ('clinical criteria'). The first version distilled current practice from nine centres offering a therapeutic community programme in both residential and non-residential settings. Piloting refined it down to the 30 questions in four 'domains' which best distinguished who would stay longer in one setting than the other. According to the protocol, residential care is only considered if the client's drug problem is relatively severe *and* stretches back at least four years without a break of a year or more. It is chosen if there are also either poor social indicators (crime or lacking a drug-free home or social circle) or poor employment prospects (lack of education, skills, training or experience).

Two sets of drug- and alcohol- dependent clients referred to the nine centres were allocated using normal procedures, but also completed the protocol. Its clinical criteria were tested on the 725 left after application of the exclusionary criteria. The 7 out of 10 allocated in line with the protocol ('matched' cases) did significantly better while in treatment than 'mismatched' cases. In the first set of patients nearly 20% more matched clients (47% v 28%) were still in treatment at follow up or had completed it and far fewer (10% v 28%) had to be discharged. The second set confirmed matching's retention/completion benefits. Rather than the individual domains, it was how they were combined in the protocol which made the difference. Matching was most important for moderately well motivated clients: those very highly or poorly motivated tended to do well or poorly irrespective of matching.

LINKS Nuggets **7.6 4.7 4.2 4.1**

In context That the protocol made a worthwhile difference is all the more remarkable since several factors worked against it. Most notably, it crystallised what can be expected to have been expert practice yet still bettered the uncrystallised starting point. Whether the criteria which emerged are duplicated elsewhere will depend on the range of problems in the caseload and the treatments on offer. If available, intensive non-residential programmes (but not routine outpatient care) may almost match residential care, even for severe cases. Several criteria seen in the study as precluding residential care seemed about what the services felt they could handle (or risk) in terms of medical need, transmissible disease, mental illness, and the potential for violence or suicide. These may have excluded the clients who might have gained most. For example, in one study suicide risk emerged as the key indicator for residential treatment.

Other studies generally confirm that only the more problematic clients especially benefit from residential care. As in the featured study, sometimes a constellation of factors (eg, severe psychiatric problems *plus* severe employment or family problems) seem decisive.

Practice implications There is a strong case for making the allocation criteria for different treatments explicit by systematising current practice and/or by drawing on relevant research. This protocol can then be refined in the light of experience (even if this is limited to progress in treatment and how it ends), providing a methodology for improving outcomes and cost-effectiveness. Factors indicative of residential care probably include severe drug abuse or dependence, psychiatric problems, lack of support for non-use (or non-problem use) in the home and in the client's family and social circles, homelessness, and the client's inability to support themselves in the community. How severe and multiple these problems need to be to justify residential care will depend partly on the intensity and adequacy of non-residential alternatives. Within the NTA's *Models of Care* framework these issues could form part of the comprehensive assessment for entry to tier 4a residential services. They have more research support than the criteria recommended in the framework.

Featured studies Melnick G. *et al*. "A client-treatment matching protocol for therapeutic communities: first report." *Journal of Substance Abuse Treatment*: 2001, 21, p. 119–128. Copies: apply Alcohol Concern.

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8.10 Arrest referral tackles drug-driven crime

Findings British arrest referral schemes are making a substantial contribution to engaging drug-driven criminals in treatment and contributing to reductions in drug use and crime. The findings come from an interim report of the first national evaluation.

In its first year (October 2000 to September 2001) a monitoring system for England and Wales recorded 48,810 detainees who agreed to be screened by the schemes. Half were referred to drug treatment; most notable among those not referred were female prostitutes using crack. Another 12% were already in treatment. A fifth were taken on as a case by the worker or referred to services such as prison CARAT teams. Very few (1% or 2%) were referred to vocational, housing or social services. At least 22% of those referred to treatment (5520 individuals) attended, but not necessarily as a result of the referral.

Screened detainees generally used heroin and/or crack and typically spent £90 a week on drugs. Among treatment attenders the typical spend was £160, mainly derived from prolific shoplifting. 4 in 10 had never before been in treatment. Far fewer black or Asian than white detainees followed through on the referral (respectively, 10%, 13% and 23%). Also disproportionately missing were older non-injecting crack and heroin users and young male street robbers using crack.

Substudies attempted to assess outcomes. In London 71% of a sample of contacts were interviewed six months later. The proportions using heroin or crack had halved and average use days had been cut from nearly 20 a month to four. Virtually none were now committing burglary, fraud or street robbery and the proportion shoplifting had fallen from 53% to 23%. Contacts referred to treatment in Manchester were arrested a third less often in the six months after referral than before.

In context Perhaps 8500 detainees a year now enter treatment after arrest referral. Since many are imprisoned, among those who can attend the attendance rate after referral is probably about a third. Attenders consist disproportionately of the high-crime offenders from whom treatment reaps the greatest social cost savings. However, the scope for higher throughput is indicated by the fact that perhaps 180,000 problem drug users are arrested each year and that each worker on average screens less than one person every working day. As many more may be contacted but refuse screening. A study of all London schemes confirmed the national picture and also found that workers were contacting a higher proportion of black and crack users than treatment services but that these were also the ones least likely to attend treatment after referral.

LINKS Nuggets **2.11** **2.10** **1.9**

Across relevant studies, methodological gaps (primarily the absence of comparison groups) mean the evidence for crime and drug use reductions is weak but sufficiently consistent to suggest a real effect.

Practice implications The report suggested many improvements. Only a few can be mentioned here. Stressing confidentiality should increase the contact rate among people worried about becoming known to the police as a drug user, particularly important for black and Asian users. Most referral contacts are made unsolicited by the worker, suggesting the need to be in the custody suite during peak times. Since most detainees have never before been assessed, comprehensive assessment including issues such as alcohol and housing should be the norm. Passing the results on to other agencies (including criminal justice) will help ensure needs are addressed. A motivational interviewing approach should maximise behaviour change and treatment uptake. Making intake appointments at the time and if necessary following them up will promote attendance. Lack of rapidly accessible services and of services for crack users are major obstacles, the latter disproportionately affecting black detainees. Especially as a safety net for contacts who do not enter treatment, assessment should incorporate a brief harm reduction intervention.

Delivering this package requires time, high levels of skills and knowledge, and good links with local services. However, staff turnover is high and arrest referral is often seen as a low status post. Career development is an important infrastructure issue.

Featured studies Sondhi A. *et al. Arrest referral: emerging findings from the national monitoring and evaluation programme*. Home Office, 2002. Copies: download from www.drugs.gov.uk.

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NUGGETTE

The US version of a **drug education** programme once popular (and probably still influential) in Britain has been shown to modestly retard growth of substance use in 12–13-year-old school pupils. The first rigorous follow-up study of *Skills for Adolescence* randomly allocated 34 schools matched for initial substance use levels to either undertake the programme or to continue as usual.[1] Lessons focus on lifeskills generally and managing the transition to the teenage years as well as drug-related skills. From the full set of 40 lessons, programme schools undertook to deliver at least eight 'key' sessions to seventh-grade (age 12–13) pupils. Preliminary results are available from over 6000 pupils followed up at the end of that year. Among children not using these drugs the year before (the great majority), fewer from programme schools went on to smoke cigarettes (3% v 4% in past month) or try cannabis (9% v 12%, borderline significant). No impact was noticeable on drinking except for Hispanic pupils, among whom initiation of drinking was retarded on all three measures (ever, recent, binge). There was no impact on use levels among pupils who had already used drugs the year before, but some transitions to more 'advanced' forms of drug use (eg, from past-month drinking to past-month smoking) did occur less often after the *Skills for Adolescence* lessons. Though unusually rigorous, the study could only test the programme in schools willing to undertake a heavy drugs teaching commitment and may not be a guide to how it would work if more broadly implemented. Also nearly 1 in 3 pupils were not given parental consent to participate in the study. Further follow-ups are planned.

1 Eisen M. *et al*. "Evaluating the Lions-Quest 'Skills for Adolescence' drug education program: first-year behavior outcomes." *Addictive Behaviors*: 2002, 27, p. 619–632.

NUGGETTE

A natural experiment in Australia can be seen as a test of what might happen if **police and customs** succeed in dramatically reducing heroin supplies in a country with what up till then was a thriving heroin market patronised by an established population of heroin addicts. Enforcement successes may indeed have contributed to the heroin drought experienced in Australia after Christmas 2000, when the price of heroin rose sharply as purity and availability fell.[1,2] The result was that in Sydney's main drug market (the Cabramatta district) gram-quantity buyers found themselves paying over twice as much for pure heroin. Heroin arrests and drug tests on people arrested locally indicated that many users had responded by dropping out of the heroin market, while interviews with those who persisted showed they used less often and had cut their spending on heroin. Because of the drop in purity, they will also have used less heroin on each occasion. Fewer users and less use seem the most likely explanations for a sharp drop in the number of heroin overdoses in the same area and in New South Wales as a whole. Confirming this theory, in earlier years the reverse relationship had been noted – a rise in heroin-related deaths in Cabramatta and Sydney as heroin purity levels rose, and in Australia as a whole as increased availability of cheap and relatively pure heroin enticed new users into the market. However, there was a downside to the drought. Most users who experienced heroin shortages responded by increasing their use of other drugs, notably cocaine and benzodiazepines. The net result appears to have been no reduction in the crimes most closely related to drug use and instead a transitory increase in robbery and in breaking and entering in the months following the start of the drought.

LINKS Nuggette p. 15 issue 6 • *Overdosing on opiates. Part I: causes*, issue 4.

1 Weatherburn D. *et al*. "Supply control and harm reduction: lessons from the Australian heroin 'drought'." *Addiction*: 2003, 98, p. 83–91.
2 Day C. *et al*. "Decreased heroin availability in Sydney in early 2001." *Addiction*: 2003, 98, p. 93–95.

8.11 Drug court passes rare randomised trial

Findings The first randomised evaluation of a drug court outside the USA has confirmed that they reduce reoffending compared to normal adjudication. In such courts specialist judges determine and monitor the treatment of drug-related offenders and impose sanctions and rewards. The ethos is cooperation to secure the common objectives of rehabilitation and avoiding prison. Successful completion leads to discharge of the original offence.

Three reports assess a court which opened in 1999 in Sydney. Treatment started with detoxification in prison. When beds were short applicants were selected at random, producing 309 drug court participants and 191 controls returned for normal adjudication. Most had substantial criminal histories. New theft and drug prosecutions were tracked for between three and 20 months. By the end, 12 of the drug court sample had completed the programme, half remained in it, and 4 in 10 had been removed, disproportionately offenders with short (under six months) sentences hanging over them.

LINKS Nugget **3.11** • *First test for the DTTO*, issue 6 • *Force in the sunshine state*, issue 4 • *Pressure pays*, issue 2

Despite more opportunity (they spent less of the follow-up in custody) drug court participants reoffended no more than controls, and when not in prison were significantly less likely to reoffend, especially with respect to the main targeted drug (heroin) and crime (shoplifting). After 300 'free' days 3% had been prosecuted for opiate use compared to 10% of controls. For shoplifting, over 250 days the figures were 9% and 20%. For theft in general differences were small. Fewer offences meant the drug court cost £1752 less than normal adjudication to achieve a day free of shoplifting prosecutions, £6778 less for opiate use. Gains were usually seen only in those who stayed on or completed the programme. They also substantially cut their (presumed drug-related) spending. Removed participants did no better and often worse than controls.

In context Study ❶ was driven to use a per day cost when the cost of the programme was more relevant. Prosecution as an indicator of recidivism leaves the study vulnerable to bias. Nevertheless the findings echo the mainly US evidence base and extend it to more serious offenders facing imprisonment. US studies indicate that relative to normal sentencing, drug use and recidivism are lower among drug court samples both during and (here the evidence is weaker) after the programme. Though of sufficient bulk to be persuasive, the quality of the evidence is poor with few randomised or long-term trials, and most studies are of new courts whose early outcomes may be atypical. A recent US study is the only other randomised comparison of an adult drug court versus normal adjudication. As in Sydney, the study effectively tested what happens when eligible offenders who would have opted for the drug court are instead normally processed. Again recidivism was reduced, in this case especially violent or sex offences.

Within the range seen by drug courts (excludes the severely criminal) gains are concentrated among more serious offenders or those with at least a moderately high risk of recidivism. For socially integrated offenders, tight court control is unnecessary and even disruptive.

Practice implications As shown in Glasgow, with some important limitations drug courts can be implemented in the British system. It is important for courts to consistently deploy a range of rewards and sanctions short of termination, see offenders often enough to apply these swiftly in response to progress, have a strong and sure ultimate sanction, make these consequences clear to offenders, have rapid access to a range of treatments, and to maintain continuity in the judge dealing with the case. Willingness to continue despite initial offending makes the structure enforced by close monitoring a positive feature rather than one which leads most offenders to fail. Experience in Sydney led to additional recommendations to improve cost-effectiveness such as focusing on offenders facing longer sentences and an induction period to avoid later drop/throw-out.

Featured studies ❶ Lind B *et al*. *New South Wales drug court evaluation: cost-effectiveness* ❷ Freeman K. *[NSW] drug court evaluation: health, well-being and participant satisfaction* ❸ Taplin S. *The [NSW] drug court evaluation: a process evaluation*. All NSW Bureau of Crime Statistics & Research, 2002. Copies: ◤ *Contacts* or download from www.lawlink.nsw.gov.au.

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Thanks to Philip Bean of the Midlands Centre for Criminology and Criminal Justice for his comments.

8.12 UK-style school drug prevention programme helps prevent regular drinking

Findings A programme routinely implemented in Dutch secondary schools reduced drinking and had some impact on smoking. The study indicates that programmes of the intensity and type normally implemented may have a modest beneficial impact.

The Healthy School and Drugs programme starts at age 12 with three lessons about tobacco then over the next two years three each about alcohol and cannabis (plus ecstasy and gambling). Aims are to improve knowledge, decision-making and drug refusal skills, and to develop a healthy attitude to drug use. Other strands help schools identify and support pupils with drug problems, establish school rules about substance use, and involve parents. Each school has a coordinating committee of school and health officials and parents.

1156 pupils from nine programme schools were interviewed before the lessons and then annually for three years. They were compared with 774 from three schools in the same areas which agreed not to implement the programme. By year three (age 15), only with respect to alcohol had substance use consistently and substantially risen less in programme than control schools. The effect was apparent in year one and maintained through to year three when, for example, 33% were drinking weekly compared to 46% of controls. After the year one tobacco lessons significantly fewer programme pupils had tried smoking (9% v 13%) but this gap later narrowed. However, by year three there were slightly fewer daily smokers in programme schools. Impacts on cannabis use were inconsistent and minor. After the year in which the drug was covered (for tobacco, also in the other years) programme pupils were more aware of that drug's impact on health.

In context Though impacts in this study were modest, they were comparable to those from 'state-of-the-art' intensive programmes implemented with the help of research teams. Most disappointing is the lack of impact on smoking, where other projects have recorded their greatest potential health gains. Perhaps one reason is that the programme (as described) lacked a focus on how (un)common drug use is among the pupils' peer group. Perhaps too the tobacco lessons should have been reinforced in year two, when the greatest escalation in use occurred. The most intensive cannabis use level reported on meant pupils might have used just once a month. In the Dutch context, the programme's aim to foster 'healthy attitudes' to drugs is unlikely to have translated into a stress on absolute non-use.

The main methodological flaw is that schools were not randomly assigned. Programme schools may have prioritised drug prevention more than the controls, which were prepared to wait another three years to implement the programme. This is compounded by the fact that there is no description of what was happening in the control schools, leaving it unclear what the programme was being compared against. Follow-up rates were high but in the last year a programme school dropped out. This does not seem to have seriously biased outcomes. Since schools were allocated to the programme there is an argument for analysing the results in terms of schools; this would probably have rendered the benefits insignificant.

LINKS Nuggets **4.14 1.13** • *The American STAR comes to England*, issue 8 • *The danger of warnings*, issue 1

Practice implications Though the confidence we can have in the findings is limited, they are a rare indication that a real-world, school-based drug prevention programme occupying just a few lessons a year can retard growth in substance use, especially regular drinking and to a lesser extent regular smoking. The components were similar to those called for in British national policies. Unfortunately, there is no way of telling which were the active ingredients, but in a similar US programme the lessons seemed the major factor. The message of the study seems to be that less intensive programmes can create worthwhile prevention gains if they take a whole-school approach, pick up on individual problems as well as providing universal education, are well-structured but flexible, based on research, and aim for realistic objectives.

Featured studies Cuijpers P. *et al*. "The effects of drug abuse prevention at school: the 'Healthy School and Drugs' project." *Addiction*: 2002, 97, p. 67–73. Copies: apply DrugScope.

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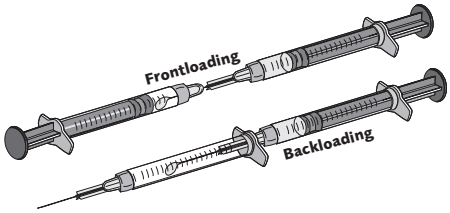
page 7

by sharing the threats posed by illegality, a closeness which spills over into other forms of sharing.[108] On the margins of society, under attack and despised, lacking material resources, and subject to the fluctuations of the illicit market and official suppression, addicts close in on themselves and develop mutual support mechanisms.[88]

Social etiquette, reciprocation and the display of trust may demand that sharing extends to drugs and injecting equipment.[103] Reciprocity seems apparent in the very strong tendency for injectors who reuse used syringes also to pass on their own syringes within their social circle.[51 77] More directly, poor injectors commonly pool money to buy drugs and sometimes jointly commit the crimes which fund those purchases.[88] Group-based purchase encourages group-based use and the sharing of injecting equipment.



The most convenient and 'fairest' ways of sharing out drugs also share out hepatitis C if the virus is present.

Adversity not shared can also precipitate risk. In open drug markets subject to intense police pressure, addicts are reluctant to carry syringes and anxious to consume drugs rapidly. Many resort to using whatever equipment is to hand and to other practices (eg, mouth-to-mouth transfer of drugs) which could spread infection.[88 109 110]

In the USA,[75 76 111 112] Canada,[113] Ireland,[80] the UK,[104] and the Netherlands,[71] indicators of social exclusion and deprivation such as homelessness, poor education, parental unemployment, and poverty are linked to unsafe injecting. Lack of a secure home base may be partly why in the north west of England, heroin/polydrug injectors who injected in the street or in public were more likely to reuse other people's syringes and needles and to pass on their own.[100] Deprivation and high levels of dependence, psychiatric problems and depression also obstruct risk reduction efforts.[114] It is, for example, very difficult to follow hygiene guidelines when injecting in public or in abandoned buildings with no water supply.[88]

The risk of becoming infected must also be placed in the context of a lifestyle imbued with risks such as fatal overdose, which to the drug user may seem more immediate, more probable and more serious.[105]

Incentive to share paraphernalia

Paraphernalia sharing often continues even when normally a new syringe is used for each injection. Social norms and reciprocation play their part, as in the donation of used filters (from which drug residues can be extracted) to occupants who allow their premises to be used for injecting, and many injectors are unaware of the risks from sharing spoons, filters and water.[88 115 116 117]

There is also a practical incentive. Reused syringes clog and reused needles lose their edge, making injecting painful and difficult. Purely in terms of getting a problem-free and rapid hit, the incentive is to use a new set.[102 118] No such incentive promotes avoidance of reusing spoons, filters and water. Instead, the incentive can be to share.

The risk arises especially when injectors share jointly purchased drugs.[88] In some cases, too, business cooperation in drug dealing is remunerated by drugs which the partners divide up and inject together. The most reliable, the quickest, and what may also be seen as the fairest ways to prepare and parcel out the drug involve collective use of equipment, risking contamination of each injector's syringe and needle.[88 102 117 118] Among these are drawing up quantities from a common pool or using one syringe to squirt measured amounts into the others. Filters too will be shared and may later be recycled to extract drug particles.

Except in the (for hepatitis C) unlikely event of a stable, infection-free injecting network,[119] eliminating viral spread might virtually demand that injectors inject in isolation, no matter how close their relationships, a socially and practically difficult objective.

1 Stimson G.V. *et al*. "Health promotion and the facilitation of individual change: the case of syringe distribution and exchange." In: Rhodes T. *et al, eds. AIDS, drugs and prevention.* Routledge, 1996, p. 10–21.

2 Stimson G.V. "AIDS and injecting drug use in the United Kingdom, 1987-1993: the policy response and the prevention of the epidemic." *Soc. Sci. Med.*: 1995, 41(5), p. 699–716.

3 Loxley W. "Doing the possible: harm reduction, injecting drug use and blood borne viral infections in Australia." *International J. of Drug Policy*: 2000, 11, p. 407–416.

4 Hagan H. *et al*. "HIV and HCV infection among injecting drug users." *Mount Sinai J. of Medicine*: 2000, 67 (5–6), p. 423–428.

5 Mele A. *et al*. "Considerations on markers of hepatitis B, C and HIV as indicators of risk behaviour in intravenous drug users." *J. of Public Health Medicine*: 1993, 15(1), p. 112.

6 *Hepatitis C strategy for England*. Dept. of Health, 2002.

7 Department of Health. *Hepatitis C – guidance for those working with drug users*. 2001.

8 *National Institutes of Health consensus development conference statement. Management of hepatitis C: 2002*.

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Interesting times in the pharmacotherapy of alcohol dependence

by **Hugh Myrick, Kathleen Brady & Robert Malcolm**

An expert guide through all that's new in drug-based treatment of alcoholism.

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Neuroscientific underpinnings and pharmacotherapeutic treatments of substance use disorders are rapidly developing areas of study. In particular, there have been exciting new developments in our understanding of the involvement of the opiate and serotonin neurotransmitter systems involved in alcohol withdrawal and dependence, and in subtypes of individuals with alcoholism. This article reviews these new developments, focusing on the post-withdrawal phase of treatment.[1]

Opiate antagonists

Half a century after disulfiram, the opiate antagonist (drugs which block and reverse the effects of opiates) naltrexone became the second drug the US Food and Drug Administration has approved for treating alcoholism.

Studies of naltrexone and its fellow antagonist naloxone had suggested that this class of drugs reduces alcohol consumption in 'alcohol dependent' animals.[2] More recently, three out of four placebo-controlled clinical trials of the treatment of of alcohol dependence with naltrexone have demonstrated a reduced relapse rate, fewer drinking days, longer periods of continuous abstinence, and less craving for alcohol compared to placebo.[3 4 5 6]

One of the studies found compliance critical; differences between naltrexone and placebo were seen only in subjects who took 90% or more of their medication.[5] In all the trials, an intense 'dose' of high-quality psychosocial therapy was administered prior to and throughout the course of medication. Side effects were modest but included nausea, vomiting, abdominal discomfort, daytime sleepiness, and nasal congestion.

Across these studies the efficacy of naltrexone versus placebo is modest but consistent. The studies cited above were 12-week trials; recent work indicates that taking naltrexone for up to six months can produce continued gains in drinking outcomes.[7]

The fact that compliance appears critical has prompted investigation of longer acting forms of naltrexone which need to be administered less often.[5] Preliminary work with an injectable, sustained-release form is promising.[8] In one small study, compared to placebo subjects receiving this medication had significantly fewer heavy drinking days while the injections were active and during the follow-up period. Side effects were comparable to oral naltrexone. Concentrations of naltrexone and its active metabolite in the blood appeared to be maintained at clinically effective levels for several weeks. A larger clinical trial is underway.

Nalmefene is an opiate antagonist with some potential advantages over naltrexone. It is absorbed better when swallowed and dose-related liver toxicity has not been reported. In addition, nalmefene is active not only at the same neuronal receptor sites as heroin/morphine, but has antagonist effects at other opioid receptors. In a recent placebo-controlled trial, 20 and 80mg doses of nalmefene were both more effective than placebo.[9] Relapse to heavy drinking during the 12 weeks of treatment was over twice as likely for the placebo group. No study has yet directly compared nalmefene and naltrexone. A large multi-centre placebo-controlled trial of nalmefene is in progress.

Acamprosate

Acamprosate probably counters alcohol's impact on a neurotransmitter system in the brain (the glutamate system) which excites neural activity and is implicated particularly in the symptoms of alcohol withdrawal.[10]

It has about an 18-hour half-life and blood levels build up to a steady state over five days. The fact that it is not broken down by the liver but is primarily excreted unchanged by the kidneys means that patients with liver disease can take it without difficulty, though it is not recommended in cases of impaired kidney function. Acamprosate does not affect the action of opiate-type drugs or the body's own opiate-like substances, making it suitable for alcohol-dependent patients on opiate maintenance therapies. Poor absorption[11] means acamprosate is generally given in high doses, about 2gm per day. Clinical trials have generally adjusted dose to body weight.

Animal studies have consistently shown that acamprosate decreases alcohol consumption and that the effect is greater with greater

Golden Bullets

Essential practice points from this article

- Opiate, serotonin and glutamate neurotransmitter systems are involved in alcohol withdrawal and dependence; drugs affecting these systems are being tried as a way to treat alcohol dependence.
- The opiate antagonist naltrexone modestly but consistently reduces drinking in alcohol patients, as long as they take the pills. To improve compliance, long-acting forms are under investigation.
- Acamprosate affects the glutamate system. It improves treatment completion and abstinence rates, is acceptable to patients, and can be used in cases of liver impairment.
- Most trials find drugs which target the serotonergic system no better overall than placebo, though they may be useful for certain types of alcoholics.
- Buspirone may be effective in highly anxious alcoholics, serotonin reuptake inhibitors such as fluoxetine in patients with major depression or in certain types of alcoholics.
- Combinations of drugs with different actions could hold promise but have rarely been studied.

Alcohol typologies

	Type 1	Type 2	Type A	Type B
Age of onset	**Late**	**Early**	**Late**	**Early**
Gender split	**Equal**	**Men dominate**	**Equal**	**Men dominate**
Sociopathy	**Low**	**High**	**Low**	**High**
Polydrug use	**No**	**Yes**	**No**	**Yes**
Severity of dependence	**Low**	**High**	**Low**	**High**

Two similar ways of classifying alcohol dependent patients have been used to match them to different treatments. Serotonin reuptake inhibitors were expected to be more effective for type 2 and type B but that's not always how it worked out.

doses.[12 13 14] In France, since 1989 the drug has been available on prescription for the treatment of alcohol dependence. A recent review summarised 16 controlled clinical trials involving over 4500 alcohol-dependent outpatients.[15] In 14 of the trials, groups treated with acamprosate had higher rates of treatment completion, longer times to first drink, and higher abstinence rates compared to placebo. The studies generally showed a favourable effect (if one of variable size) on most primary outcome measures. Compliance measures indicated that the medications were well tolerated and that the dosing schedules were acceptable to patients.

In the United States a 21-site, six-month, double-blind, placebo-controlled trial of acamprosate in alcohol dependent outpatients has recently been completed. Preliminary results presented look promising.[16]

Serotonergic agents

Studies on animals and on people outside the context of alcohol treatment have shown that the brain's serotonergic neurotransmitter system is involved in alcohol consumption as well as in mood disorders and impulse regulation. Acute administration of alcohol causes serotonin (also known as 5-HT) to be released, while chronic administration decreases serotonin levels in a part of the rat brain involved in motivation and reward.[17 18] 'Alcohol-preferring' strains of rodents show serotonin deficits in several brain regions.[19 20] Animal studies have also consistently demonstrated reduced alcohol intake after administering a variety of serotonergic agents, including the medications sertraline and citalopram. These belong to a class of drugs – the serotonin reuptake inhibitors – which increase the availability of serotonin at neural junctions in the brain.[21 22]

Unfortunately, clinical trials using drugs which target the serotonergic system have not consistently confirmed that the system has a role in the treatment of alcoholism. Most trials in the 1990s on alcohol-dependent or alcohol-abusing individuals found serotonergic medications no better overall than placebo,[23 24 25 26 27] though they may be useful for certain types of alcoholics.[28 29 30 31] These findings and specific agents and studies are discussed below.

Ritanserin and buspirone

Ritanserin, which counters the effect of serotonin, was found to decrease drinking in a small trial involving alcohol-dependent individuals who knew what they were taking,[32] but not in two later placebo-controlled trials involving patients without substantial psychiatric comorbidity.[23 32]

Buspirone, a drug approved for treating generalised anxiety disorder, has some excitatory effects at a particular type of neural serotonin receptor. It has demonstrated mixed effects on alcohol consumption in alcohol-dependent subjects. Two placebo-controlled, double-blind trials found that it reduced consumption more than placebo in patients with high levels of anxiety.[33 34] In two other placebo-controlled studies, one of which did not specifically recruit anxious subjects and another which did, buspirone did not affect consumption.[25 35] Matching different drugs to drinkers with different psychiatric profiles may be a strategy particularly applicable to serotonergic agents.

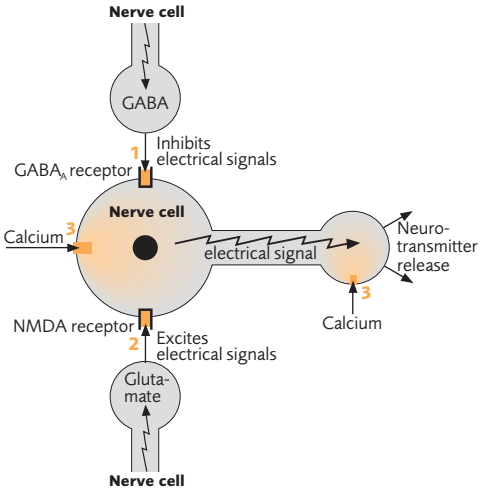
Serotonin reuptake inhibitors

In the United States serotonin reuptake inhibitors such as fluoxetine are now the most commonly prescribed drugs for mood and anxiety disorders. Early studies, particularly with non-dependent heavy drinkers, indicated that they also held promise for alcohol use disorders.[24 27 36] Unfortunately, several placebo-controlled, double-blind studies of alcohol-dependent subjects without psychiatric comorbidity failed to show that fluoxetine reduced drinking.[26 37]

However, the effectiveness of these drugs in common psychiatric disorders raises particular interest in matching their use to subtypes of patients. Disturbance of the serotonin system is thought to be involved in conditions such as depression, anxiety, eating disorders and compulsive and/or impulse regulation disorders. Presumably by helping to correct this disturbance, serotonin reuptake inhibitors are effective in conditions including depression, panic, social phobia, and post-traumatic stress.[38 39 40] A potential for treating alcohol dependence and abuse is suggested by their strong associations with several emotional and anxiety disorders.[41] Also, alcoholics often exhibit traits such as impulsivity thought to be linked to serotonin dysfunction.

Inconsistent findings on the effectiveness of serotonin agents in alcohol dependence may themselves be related to inconsistencies in the populations under study. Despite disappointing results overall, there may yet prove to be a role for these agents in the treatment of alcoholics with the hallmarks of serotonin abnormalities. For instance, one double-blind, placebo-controlled study of alcohol-dependent patients suffering from major depression recorded significantly greater improvements in depressive symptoms and larger decreases in alcohol consumption in the fluoxetine group.[30]

These thoughts raise the issue of how to categorise alcohol-dependent individuals in order to match them to the best treatment. Several approaches have been tried. Babor and colleagues' two-factor typology[42] (types A and B) has been shown to predict treatment outcomes[43 44] ◤ *Alcohol typologies*. Characteristics associated with serotonin dysfunction (depression, anxiety, aggression, and personality disorder) are clustered in type B. As such, serotonin reuptake inhibitors can be expected to be more effective for type B than for type A. The same can be



■ Marks where alcohol exerts effects on the brain's nerve cells. Modifying these effects may be how drugs help in treatment.

1 Increases the effects of the neurotransmitter gamma-aminobutyric acid (GABA) which inhibits electrical signaling through the nerve cell.

2 Further decreases electrical activity by inhibiting the excitatory neurotransmitter, glutamate.

3 Alters the flow of calcium through channels at the cell body and terminal, where calcium is necessary for neurotransmitter release.

LINKS Nuggets **7.2 6.4 5.2 5.1** • *Disulfiram treatment of alcoholism*, issue 6

expected of type 2 versus type 1 in a roughly equivalent typology.[45]

Several studies have explored this possibility. One 12-week, placebo-controlled trial which divided patients into type 1 and type 2 found citalopram no more effective for one type than the other.[28] Another reanalysed data from a negative placebo-controlled trial of fluoxetine by dividing the alcohol-dependent subjects according to Babor's typology.[29] Contrary to expectations, it found that on fluoxetine type B alcoholics drank *more* during treatment than on placebo. Similarly, a 12-week, placebo-controlled trial of sertraline in alcohol dependent individuals found that the drug reduced drinking in type A subjects but had no effect on type B.[30]

In conclusion, there may be a role for serotonin-specific agents in treating alcohol dependence, and subtyping by psychiatric disorder and other characteristics shows promise, but much work remains to be done.

Combination pharmacotherapy

Combination pharmacotherapies are effective in the treatment of several common psychiatric disorders. Animal studies suggest that the same may be true of alcohol disorders. For instance, one study of 'alcohol-dependent' rodents found that two agents acting together on different parts of the serotonin system had a greater effect than either alone.[46] Many drugs known to reduce drinking in alcohol-dependent individuals act by distinctly different mechanisms (eg, naltrexone and acamprosate), making it likely that they can act together in an additive or even synergistic fashion. There are no specific toxic interactions between these agents, suggesting that they can safely be administered together.

Very few clinical studies have explored this potential. One pilot study did investigate the opioid antagonist naltrexone in combination with sertraline, a serotonin reuptake inhibitor. It documented a trend toward longer retention in treatment and more days abstinent.[47] In another pilot, patients who had not responded to the opioid antagonist nalmefene had sertraline added to their treatment. Compared to the pre-treatment period or to nalmefene alone, the combination was associated with significant decreases in alcohol consumption.[48]

Two double-blind, placebo-controlled trials have investigated the combination of acamprosate and disulfiram. One found a statistically significant advantage in cumulative abstinence in patients receiving both compared to those receiving either alone,[49] but another similar comparison found no added benefit from the combination.[50] Recently, the US National Institute on Alcoholism and Alcohol Abuse has initiated a large multi-site trial comparing acamprosate, naltrexone, and a combination of the two, which should provide valuable information.

Exciting developments

Several avenues could profitably be explored in the pharmacotherapeutic treatment of alcohol disorders. Growing knowledge about the part played in these disorders by opioid and excitatory neurotransmitter systems in the brain has led to successful exploration of agents (naltrexone, nalmefene, acamprosate) which exert therapeutic effects through these same systems. Matching serotonergic agents to subtypes of alcohol-dependent patients also shows promise. Finally, combination pharmacotherapies have theoretical and preclinical support but are under-investigated in clinical populations. In all, this is an extremely exciting and hopeful time.

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The American STAR comes to England

A curriculum based on selected US models is to be tested in England's first national evaluation of substance use education. The choice is critical – poor outcomes could undermine support for drug education in Britain. How solid is the US foundation?

by **Mike Ashton**
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FINDINGS is grateful to Professor Mary Ann Pentz and colleagues at the University of Southern California for document supply and to Dr Niall Coggans of the University of Strathclyde, Paul Baker of the Home Office Drugs Strategy Directorate, Charlie Lloyd of the Joseph Rowntree Foundation and Adrian King of InForm for their comments. Comments were also sought from Professor Pentz.

The British Home Office and the Department for Education and Skills have joined forces on an ambitious new project involving up to 50 secondary schools, the first time the UK government has tried to construct and test its own school-based drug prevention programme.

The project is based on two unusually well researched US models. They received the accolade of being the only ones selected by experts on the University of Colorado's *Blueprints* panel – why *Blueprint* became the name for the British project. The panel set out to identify ten "truly outstanding" programmes on which to base a US anti-violence strategy. With drugs in America so closely linked to violence, drug prevention came within their remit. The programmes they chose were Life Skills Training and the Midwestern Prevention Project.[1]

Elements may be taken from elsewhere and adaptations are inevitable, but the chances of the new English project countering pessimism over preventive education depend crucially on the suitability of these US models. Life Skills Training was investigated in issue three and found unconvincing in its claims to reduce illegal drug use.[2] Now we turn to the Midwestern Prevention Project, implemented in Kansas City as Project STAR and in Indianapolis as I-STAR, and investigated by a team led by Professor Mary Ann Pentz. Starting lessons in the first year of secondary school, STAR has school work at its core, but also extends its reach to parents and the wider community ◤ *The STAR programme* p. 24.

The British team had good reason to light upon STAR. A Health Education Authority review had found just five methodologically sound drug education studies which reported drug use reductions over follow-ups of at least two years.[3] Two involved STAR and in both the impact was at the top end of the range.[4 5] In the USA the project is seen as the closest yet to a model programme[6] and takes pride of place in an official drug prevention guide.[7] How does the project match up to its billing? First we bring together all the results we could find then probe what seems an obvious weakness in the methodological foundations of an impressive superstructure.

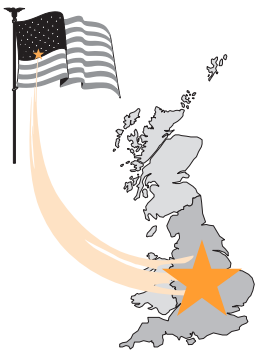
Kansas City leads the way

In 1984 Kansas City became the first trial site for the programme. The most comprehensive report of how it worked is a 1989 account of smoking, drinking and cannabis use after the first year,[8] when only the mass media and school-based elements had been implemented. Community leaders had been trained, but had yet to mobilise the wider community. This training and the mass media elements were also applied to the comparison

Golden Bullets

Essential practice points from this article

- The Midwestern Prevention Project is one of the two models for the English national evaluation of drug education. It combines school, parental, and community mobilisation elements.
- The project was trialed among first-year secondary school pupils in Kansas City and Indianapolis and found to reduce tobacco, alcohol and cannabis use. There was also some evidence of long-term impact through to early adulthood and of reductions in other forms of illegal drug use.
- Impacts were most consistent and generally most impressive for cigarette smoking.
- Non-random allocation of schools in Kansas and incomplete reporting of the randomised Indianapolis evaluation leave doubts over the validity of the findings.
- Probably the project's impact was partly due to the enthusiasm and flexibility of the schools which opted to take it on and partly to the curriculum which provided a structure for their efforts.
- Full implementation is expensive and requires community commitment. Areas in greatest need may be least able to implement. Cost and commitment are more justifiable if other youth problems are also addressed.
- The project provides well-constructed models for orchestrating school and community mobilisation and for evaluating their impact.



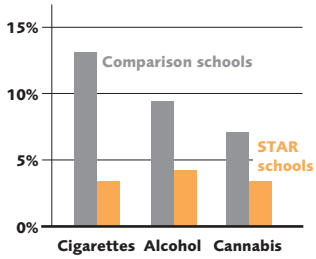


Figure 1
In Kansas City at the one year follow-up the growth in the proportion of pupils using at least monthly had been significantly held back in STAR schools.[8]

schools in the same areas.[4] This means that if there were greater drug use reductions because of STAR, it could only be due to the school-based components.

First-year outcomes are also primary because they represent the most clear cut test of STAR versus no STAR. In later years, delayed implementation of STAR in the comparison schools (they waited a year) could have affected even the pupils who had missed out on the lessons.

All Kansas City's 50 junior high or middle schools formed the baseline sample. 5065 of their first-year pupils (roughly aged 11–13) were assessed before the lessons started. A year later 42 schools could be matched with the baseline sample. The key question was whether drug use in first-year pupils rose less in the 24 which implemented STAR, compared to the 18 which had carried on with their normal curriculum.[9]

How the schools were allocated is critical to understanding the study. The school year was already under way when the project started. Eight schools agreed to be randomly allocated and were evenly split between STAR and the comparison set. Another 20 rescheduled classes to accommodate STAR. Fourteen unable to do so at short notice were added to the comparison sample. There were no relevant statistically significant differences between random and non-randomly allocated schools, so all schools were pooled in the main analysis.

In eight schools all first-year pupils were assessed and then tracked individually; in the remainder one in four pupils were sampled.

Encouraging outcomes

On all the measures, what started as similar or slightly higher rates of drug use had a year later been significantly held back in STAR versus comparison schools. This was true for use in the last week, in the last month, and for all three drugs (tobacco, alcohol and cannabis), but it was most apparent and most significant for smoking ◤ *Figure 1.*

For example, at baseline on average in each comparison school about 11% of pupils had smoked cigarettes in the last month; a year later about 25% had done so, roughly 14% more. In STAR schools the increase was held back to just 3%. Similarly, in both sets of schools the proportion of pupils who had drunk alcohol in the past month[10] started at about 7%; in comparison schools it rose to roughly 16% but to just 12% in STAR schools. For cannabis, a slightly higher baseline rate in STAR schools was reversed a year later when just under 8% had used cannabis in the last month compared to just over 10% in comparison schools. A study restricted to smoking showed that the gains were broadly maintained at two years.[11]

Most stringent test?

The most stringent test for STAR was its performance in the eight schools where all first-year pupils were assessed and 'tracked' individually, and where schools were (perhaps) randomly allocated. Random allocation would overcome doubts that schools which chose to start STAR immediately were unusually keen; tracking avoids dilution of the samples by pupil transfers. In this cohort STAR also had perhaps its best chance to shine; despite short notice, in the first year all STAR schools fully implemented the lessons, a strong influence on outcomes.[12]

In what seem to be three reports on the tracking study, the allocation of schools is differently described. In one the eight schools were "assigned randomly to program or control conditions",[4] a design which would indeed have overcome the limitations of the main study. But the other two either stipulate[13] or leave open the possibility[14] that the school's preferences played a part. If these really are different descriptions of the same study, then its major advantage – random allocation – is in doubt.

The report which asserted random allocation says 1607 pupils were assessed before the lessons and 84% again three years later, a period which included parent organisation and training as well as school lessons.[4] At follow-up about 6–7% fewer STAR than non-STAR pupils had smoked cigarettes or used cannabis in the past month, a cut of about a fifth and a third respectively in the numbers using the drugs. The impact was consistent across pupils at high and low risk of drug use, though for any particular combination of risk factors STAR's contribution was small. For example, without STAR 54% of pupils initially at greatest risk for cannabis use went on to use the drug monthly three years later; STAR reduced this to 47%. There was no significant impact on drinking not any indication of what happened to heavier (weekly or daily) use or to drunkenness, though by the ages reached in the study (14–16), these are the more relevant outcomes.[15]

A report which says allocation was based on school preferences came to similar conclusions.[13] Results were limited to the one-year follow-up but there were some answers to whether heavy use had been held back. Again, STAR's benefits were most clear-cut for smoking. At baseline 4-5% of pupils had smoked in the past week: a year later, without STAR this had risen to nearly 18%, with STAR to just over 8%. On some assumptions, past-month cannabis use was also significantly reduced, on others it was not, while there were no statistically significant reductions in the proportions drinking in the past week.

From brief mentions elsewhere it seems that these heavier use reductions outlasted the end of the lessons. After two years, growth in past-week smoking was 9% less in STAR schools, drinking 2% less, cannabis use 3% less,[18] but whether these findings had withstood the sophisticated statistical tests employed in the previous study is unclear.

A third report is limited to cigarette smoking up to the two-year follow-up, when (compared to the growth in control schools) in STAR schools 16% fewer children were smoking in the past month and 12% fewer in the past week.[14] Importantly, STAR seemed to curb heavy as well as occasional smoking.

Indianapolis – the missing link

Three years later and with longer to prepare, all 57 schools in the Indianapolis study accepted random assignment to I-STAR or to delay for a year. This far stronger design was intended to eliminate doubts raised by non-random allocation in Kansas. Unfortunately, we found just one report of the results in a scientific journal, and this confined itself to pupils who before the lessons had *already* smoked, drunk or used cannabis in the previous month.[16] At most these were under a third of all pupils and perhaps much less. A researchers who worked on the study says this reporting gap "leaves many questions unanswered and reflects negatively" on the Midwestern Prevention Project as a whole.[17]

As in Kansas, these precocious pupils were assessed first aged 11–13. Follow-ups were conducted six months later and then annu-

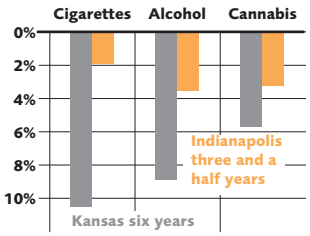


Figure 2 Random allocation in Indianapolis seems to have led to less impressive results than in non-randomised Kansas. The chart shows the net reductions (ie, differences between STAR and comparison schools) in the proportions of pupils using drugs at least monthly.[19] The deeper the bar, the greater the reduction.

KANSAS CITY – Non-random allocation

Ewing Kauffman, local philanthropist and drugs company owner, bought baseball and STAR to his hometown. His support was critical. Outcomes looked encouraging but just eight out of 42 schools were randomly allocated. Another 20 revamped their teaching schedules at short notice to incorporate STAR. The results could reflect their greater flexibility and commitment to drugs prevention.

Professor Mary Ann Pentz

Her findings influenced US drug prevention policy and are now being used as the basis for the national drug education evaluation in England.

INDIANAPOLIS – The missing link

In Indianapolis it was the charitable arm of another pharmaceutical company, Eli Lilly, which took on the Kauffman role. With longer to prepare, all 57 schools accepted random assignment but the results from this far stronger design have never been fully reported. From what can be gleaned they were less impressive than in Kansas.

ally until three-and-a-half years. Relative to controls, at all but one of the follow-ups for one of the drugs, I-STAR pupils were more likely to have made lasting reductions in the quantity of drugs they used. Across the whole time period the reductions were significant for all three drugs. The effect was greatest at the early follow-ups (and statistically significant for alcohol and cigarettes) but practically absent by the last. The study was hampered by the very high absence rate of children at follow-up assessments. At the last two, often half or more were missing, potentially greatly reducing the chances of a statistically significant result and casting doubt over those which were found.

Other reports do draw on data from more or less all the pupils, including the ones who had not already used drugs. However, the their main aims were to illustrate statistical techniques, not to present findings. One such report used past-month smoking data from 50 schools.[18] So far as can be ascertained, I-STAR's impact was inconsistently significant depending on the statistical analysis being used.

Otherwise, for the whole sample there are only snippets of results briefly reported. At three-and-a-half years, growth in weekly smoking had been held back by about 4% but daily smoking by under 1%.[19] On all other measures[20] growth in drug use had been held back by about 2–3%. The statistical significance of these findings was not specified, but from another report we know that at one-and-half years some analyses found significantly reduced cannabis use.[15] For cocaine, only at the four-year follow-up had significantly fewer I-STAR pupils used the drug in the past month. In earlier years sometimes there were fewer, sometimes more.

Outcomes less impressive

Where comparison is possible, outcomes in Indianapolis were generally less impressive than in Kansas ◤ *Figure 2*. At three-and-a-half years the rise in weekly smoking had been held back by 4%[19] compared to 5% at two years in Kansas.[4] Daily smoking was barely restrained at all (0.7%) while at six years in all Kansas schools[19] and at three where pupils were individually tracked[4] the figures were 5% and 3%. With respect to cannabis, retardation in growth was about the same as in all Kansas schools[8 19] but much less than in those subject to individual tracking, where it had been held back by 9%[4] compared to just 3% in Indianapolis.[19]

Despite the curriculum having been strengthened on alcohol,[1] outcomes relative to Kansas were mixed. In the eight-school Kansas tracking study there had been a relative growth in monthly use of 3%;[4] Indianapolis reversed this into the intended reduction.[19] But in the whole sample of Kansas schools drinking reductions at one[8] and six years[19] had been greater than at three-and-a-half years in Indianapolis.

It seemed that randomisation had revealed that STAR was not as strong as it had seemed in Kansas. However, in some respects Indianapolis had the odds stacked against it. The programme had been compressed,[1] meaning that after the first year, outcomes in the 25 comparison schools could have been heavily 'contaminated' by parental and community-wide influences. The effect would have been to reduce the chances of I-STAR schools bettering the others.

Another factor would have had a similar effect. In the first year publicly funded schools were slow to implement I-STAR,[1] while presumably the comparison schools – which continued with their normal lessons – had no such teething problems. Many I-STAR pupils will have incompletely received the core lessons, a deficit which greatly attenuates the impact of the intervention.[12] Professor Pentz reports that taking these implementation problems into account, I-STAR's outcomes were closer to those in Kansas,[1] but this analysis does not seem to have been published.

Long-term benefits unclear

There is no comprehensive account of longer term outcomes for the full Kansas sample, but there are several mentions. Six years after baseline when pupils were generally aged 18, these suggest that without STAR 7% more would have used cigarettes or alcohol in the past week and 3% cannabis.[19] Heavy use too had been held back, with 5% fewer smoking daily, 7% fewer getting drunk in the past month, and 3% fewer using cannabis more than twice in the past week.[1] Also reported are reductions in cocaine use at age 14–16. At least some of these findings were statistically significant, but it is unclear which.

These results are difficult to square with a third report which portrays a steady growth to 12% at five years in the proportion of pupils STAR prevented from smoking daily.[21] A fourth report on daily smoking gives yet

The STAR programme ★★★★★

STAR's core is its school programme, but it also reaches out to parents and the wider community. The thinking is that prevention aimed at pupils 'radiates' out to their family and peer group, reducing the opportunities for and the acceptability of drug use.[1 33]

Gains made by the pupils are fed back to parents, encouraging their participation in homework. Feedback to adults who control school and community resources helps mobilise support for continuing the school and parent programmes and for environmental changes. These may include drug-free events, changes in local norms about drug use, enforcement of supply regulations, and services for youngsters experiencing drug problems. Throughout, local media coverage reinforces prevention messages and encourages participation in the local coalition. Rather then leaving this positive interaction to chance, STAR aims to give a major push to all three levels in turn. Its five strands are described below.

★ School programme

Initiated in the first year of secondary school, STAR's lessons are delivered by trained teachers who also train peer leaders nominated by the class. Between ten and 13 lessons scheduled preferably twice a week aim to increase skills to resist drug offers and to counteract adult, community and media influences which promote drug use, altering the social climate of the school towards non-drug use norms. Five booster sessions in the second year reinforce the previous year's messages.

Interactivity is the key to successful preventive education[34] and is a feature of STAR's teaching style. Pupils are encouraged to share their feelings and raise questions in a safe environment and to generate their own information and role-play scenarios,[35] helping ensure that what happens in class connects to their lives outside.

In the same vein, six or seven homework sessions involve parents and children in interviews and role plays, and the programme is amended in the light of feedback from teachers and other participants. In later years peer counselling and support activities are provided to help pupils who may have fallen through the primary prevention net.

STAR is a community programme, so ideally all the schools in a community participate. This mandates lead-in work with local educational and political leaders to gain support for the programme and then community-wide teacher training. Later, teachers will be expected to attend refresher courses and annual reviews. The first generation of trained teachers helps train later generations and those nominated by their colleagues then go on to take the training lead.

★ Mass media

The mass media component starts the same year as the school programme and continues for nearly five years. In Kansas it featured over 30 television, radio and print slots a year. Simple messages introduce and explain the school-based programme (and each successive component as it is added) to the community. The aim is to reinforce the other components through the wider community's modelling influence on adolescents.

★ Parents' programme

From year two parents are directly targeted. Parent education and organisation through the remaining years of middle school aim to develop support for, and modelling of, non-drug use social norms in the family and neighbourhood. For each school, a committee consisting of the head, four to six parents, and two student leaders meets throughout the year. Their tasks are to institutionalise drug prevention in the school, help create a drug-free environment by monitoring the grounds and neighbourhood, and to organise twice yearly training for all parents, focusing on parent-child communication and prevention support skills.

★ Community organisation

The community beyond the school comes more directly on board during the third year. Community and local government leaders are enlisted and trained to form a coalition to arrange prevention services and activities which complement other components. At its head is a small steering committee primarily drawn from local businesses who lend credibility to the coalition and raise funds. A wider 'council' of up to a 100 people representing diverse interests is the key structure guiding implementation through perhaps nine subcommittees charged with specific, time-limited tasks.

★ Health policy

During the fourth and fifth years, leaders who participated in the community organisation component form a local government subcommittee which actively implements policy changes to reduce the demand for drugs and to limit their supply. Examples include restricting cigarette smoking in public, limiting the availability of alcohol by regulating outlets, 'drug-free' zones, financial support for prevention programming, and enforcement of national and local laws such as those controlling underage sales of alcohol and tobacco, drunkenness, and drink driving.

another picture.[22] Technical adjustments and different definitions may account for these unexplained variations.

The longest term results come from eight Kansas schools whose pupils were tracked individually. By age 23 the growth in drug use among former STAR pupils was generally lower than in the comparison sample.[1 19] For regular smoking or cannabis use, the gap was below 2%, but it was 6–8% for the proportions ever having tried LSD, amphetamine or volatile substances. For heroin the corresponding proportion was 2.5% but in the wrong direction – higher use after STAR.

There seem also to have been gains in health care costs. Among a sub-sample of about 1000 pupils aged about 16–18, after going through STAR significantly fewer said they (5% v. 7%) or their families (19% v. 23%) had received professional treatment for drug problems.[23]

All these results are reported only briefly, leaving a question mark over how the figures were reached, over their significance, and over the completeness of the reporting. For example, in the publications uncovered for this review, no outcomes are reported for cocaine beyond the mid-teen years, yet at the time this was the major 'hard' drug problem in the USA, and the adverse heroin use results reported in one document[19] are omitted from another.[1]

Uneven playing field in Kansas

There is no doubting the sophistication and rigour of the implementation effort and of the statistical analyses deployed in Kansas and Indianapolis.[15] But in Kansas this superstructure was built on a shaky foundation: the non-random allocation of all but eight of the 42 schools.[24] The decision of the remainder whether or not to immediately implement the programme is attributed to scheduling flexibility, but this could itself reflect the all-important flexibility needed to deliver STAR's interactive curriculum. Perhaps, too, only schools prepared to undertake a major in-year revamp of their science or health education schedules would have opted for STAR, and these are the ones most likely to prioritise substance use prevention.

In other words, rather than STAR itself, maybe it was something about the schools which opted to take it on straight away which accounts for the apparent gains from the programme.[25] That there was indeed a variation in enthusiasm across schools is indicated by the fact that only a quarter opted to continue with STAR once the study had ended.[19] A strong effect of the school's social 'climate' is indicated by the persistence of drug use levels in different schools.[15] Similar considerations could explain why, among schools which did immediately implement STAR, only those prepared to devote more than the typical classroom time for the

lessons statistically bettered comparison schools ◤ *How did it work?*[12]

Set against this is the fact that it seems there were no significant differences in the impact of STAR between schools allocated at random and the remainder.[8]

School and STAR in synergy

However, a straight choice between whether features of the schools or of STAR accounted for the outcomes is too simplistic. It seems likely that STAR had its greatest impact in schools with the enthusiasm and flexibility to give life to the lessons, and that in these schools STAR provided the structure needed for these virtues to create drug use reductions – that the active ingredient was an *interaction* between programme and school. Professor Pentz herself cites just such a finding with respect to a school or college tobacco policy.[26] Random allocation in Indianapolis reduced the chances for any such interaction to affect the results, which were less impressive than in Kansas.

This still suggests that STAR's performance in schools able and willing to overturn teaching schedules to take it on is an unreliable guide to how it would perform in the normal run of schools. Indianapolis, where publicly-funded schools were slow to implement the programme,[1] may have been a case in point. If the Kansas results are anything to go by, these schools will have barely bettered the controls.[12]

Could it be done in the UK?

Setting aside the doubts and accepting the validity of briefly reported findings, there remains the issue of whether a STAR-type programme could successfully be implemented across Britain.

Central guidance needed

Interactivity (within a predetermined framework and to pre-determined ends) is the key to STAR's work with the children. Allowing pupils to share the lead, and facing the risky issue of disclosure of drug use, do not come naturally to many British teachers.[27] To prevent selective implementation and backsliding into didactic teaching, the STAR and I-STAR teams found that monitoring and refresher courses were critical.[1] This presupposes a central expert agency capable of distinguishing desirable curriculum adaptation from undesirable deviation, and with the resources and clout to monitor and correct the latter. If teachers are left to seek further guidance on their own initiative, those who need it most would probably be least likely to receive it.

In this respect STAR and I-STAR had one major advantage not generally available – the direction and support of the research team and the start-up funding[8] they brought with them. They identified potentially suitable communities, provided scientific credibility, set the framework for the project, helped win over schools and community leaders, initiated the local coalition, provided manuals and training, and monitored what happened to keep the project true to its core methodology and objectives. This central support is essential to provide coherent planning and to enable cost-effective use of resources such as specialised training and teaching manuals which it would be unrealistic to provide at a single-school level.[1]

Cost demands a wider remit

Implementing just STAR's school-based elements was very expensive – $28 per pupil per year compared to $6 for a more typical programme, and this estimate did not include the cost of hiring substitutes for teachers away on training courses or the time of headmasters, local authority officials and other staff. These costs and those of the community mobilisation envisaged in STAR are more justifiable and more likely to be supported if the initiative also targets other local concerns such as crime, truancy and teenage pregnancy.[28]

In Britain[29 30 31] as in the USA,[1] a multi-problem approach is made feasible by the fact that these problems tend to go together. The cross-agency coalition required to elevate the schools programme into a truly community venture should be available in Britain through drug action teams, and extension to other problems areas should come all the more naturally through strengthened links with crime prevention teams.

Money helps, local support is vital

A STAR-type initiative requires local financing and resources which are less likely to be available in the most needy neighbourhoods. Above all, it presupposes a community which is already strong, well organised and enthusiastic about engaging not just children and schools but also their parents in prevention activities which eat into classroom time and into the free time of the adults.[1] Where drug problems are most entrenched, it is possibly because just such a community is lacking.

With energetic support from a well-healed sponsor, the Kansas City project got off the ground in four months; even with that

How did it work?

Pupils in 42 Kansas schools completed questionnaires to identify how (if it did) STAR reduced drug use.[37] The clearest findings related to how much pupils cared about their friends' reactions if they used drugs. STAR pupils cared more and this seemed to lead them to drink and smoke less. Together with the fact more STAR pupils thought their friends might react negatively, this suggests that an alteration in the social climate of the pupil's immediate peer group underpinned at least part of the programme's effects.[38]

There were surprising negative findings. The lessons had no impact on pupils' confidence that they could refuse an offer of drugs nor on their estimates of how many of their peers used drugs, supposedly important mechanisms. Most other variables (such as communication skills and beliefs about the benefits of each of the drugs) were changed in the intended direction, but few were among the ways STAR impacted on drug use.

'Dosage' seems important

In the same set of schools, another analysis tested the impact of classroom time devoted to the year-one lessons.[12] Typically schools devoted six to seven hours, close to the scheduled requirement.[35] Schools were divided into the top and bottom halves of the time commitment range. Only those in the top half held back the growth of drug use significantly more than in comparison schools, which had effectively spent zero hours on STAR. Time spent on the lessons was more important to the outcomes than whether the school had chosen STAR or been allocated to the programme at random.

These findings suggest a critical duration before STAR improves on normal lessons, but instead they could reflect the impact of the school's commitment to drug prevention. More committed schools would tend to spend longer on the topic, but this same enthusiasm might also mean they would have done well even with fewer hours.

If rather than the school, the lessons were the active factor, then teachers' ratings of how well they went might be expected to correlate with outcomes, but they did so only weakly and generally in the 'wrong' direction. Another potentially crucial measure was omitted from the analysis. Interactivity in teaching is fundamental to STAR. This dimension was rated by observers[1] but there was no test of its relation to outcomes.

What of the non-school components of the programme? Their contributions are impossible to disentangle with any confidence,[17] though it seems a fair guess that the school lessons – the main element distinguishing STAR from comparison schools in year one – were the major factor.

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experience to draw on, in Indianapolis it took four years, and still the state-run schools were slow.

The decisive factor in Kansas City was the prominent local businessman and philanthropist, Ewing Kauffman. He provided valuable services in kind as well as direct funding. As the owner of the local baseball team, he was also in a unique position to lend credibility to and to publicise the project, as well as to motivate teachers by public commendation and by inviting them to games as his special guest.[1] Mr Kauffman had made his money in pharmaceuticals. In Indianapolis, it was the charitable arm of another pharmaceutical company, Eli Lilly, which took on the Kauffman role.

Without these head starts, implementing a STAR-type initiative could be an uphill struggle. The Kansas communities were mainly white, middle class, well educated and stable. Nearly half the schools in the Indianapolis study were private or parochial schools and the population again seems to have been overwhelmingly white.[16] As Mary Ann Pentz has acknowledged, projects aiming at community-wide change may not be feasible when that community is so diverse that consensus on the nature of the problem and the solutions may be lacking.[1]

The British *Blueprint* project will be the proof of the pudding. How many schools will volunteer, how much of a community-wide initiative will be generated, will these take root in areas of greatest need, and will the school and community elements be sustained after the study has ended?

Still seeking the magic highway

Despite the accolades, including that from a Health Education Authority report,[3] we have to agree with the rather lukewarm assessment in another report from the same source.[32] STAR and I-STAR *may* have held back the growth of substance use during adolescence, but the studies and the reports on them are not strong enough to show this with any confidence. Where STAR and I-STAR undoubtedly have lessons for us is in their impressive orchestration of school and community mobilisation and in the methodologies developed to evaluate their impact. What that impact was is the major question.

The evidence is strongest and most consistent for cigarette smoking, the conclusion reached also on Life Skills Training.[2] But even with respect to tobacco, non-random allocation in Kansas, and the incomplete account of what happened in Indianapolis, create considerable doubts.

Despite their flaws, studies which seem to have discovered the educational route to a more drug-free generation – broad, inexpensive and relatively easy to travel – are seized upon. The unpalatable truth is that the existence of such a route has yet to be adequately established. ★

1 Pentz M.A. *et al*. *Blueprints for violence prevention. The Midwestern Prevention Project*. Univ. of Colorado, 1997.

2 Stothard B. *et al*. "Education's uncertain saviour." *Drug and Alcohol Findings*: 2000, 3, p. 4–7, 16–20.

3 White D. *et al*. "Educating young people about drugs: a systematic review." *Addiction*: 1998, 93, p. 1475–1487.

4 Johnson C.A. *et al*. "Relative effectiveness of comprehensive community programming for drug abuse prevention with high-risk and low-risk adolescents." *Journal of Consulting and Clinical Psychology*: 1990, 58(4), p. 447–456.

5 Pentz M.A. *et al*. "A comprehensive community approach to adolescent drug abuse prevention: effects on cardiovascular disease risk behaviors." *Annals Med.*: 1989, 58(4), p. 219–222.

6 Brown J.H. *et al*. "Why adolescent substance use prevention programs do not work." *Eval. Rev.*: 1993, 17(5), p. 529–555.

7 *Preventing drug use among children and adolescents: a research-based guide*. National Institute on Drug Abuse, 1997.

8 Pentz M.A. *et al*. "A multicommunity trial for primary prevention of adolescent drug abuse: effects on drug use prevalence." *JAMA*: 1989, 261(22), p. 3259–3266.

9 Commendably, instead of capitalising on the huge pupil sample, the researchers treated whole schools as the study's 'subjects', the more proper procedure.

10 At least twice.

11 Pentz M.A. *et al*. "Longitudinal effects of the Midwestern Prevention Project on regular and experimental smoking in adolescents." *Preventive Medicine*: 1989, 18, p. 304–321.
At this stage most pupils had changed schools but the results held whether assignment to the intervention was based on the schools pupils had started in or the schools they ended up in.

12 Pentz M.A. *et al*. "Effects of program implementation on adolescent drug use behavior." *Eval. Rev.*: 1990, 14(3), p. 264–289.

13 Dwyer J.H. *et al*. "Estimating intervention effects in longitudinal studies." *Am. J. Epidemiology*: 1989, 130, p. 781–795.

14 Pentz M.A. *et al*. "Primary prevention of chronic diseases in adolescence: effects of the Midwestern Prevention Project on tobacco use." *Am. J. Epidemiology*: 1989, 130, p. 713–724.

15 Pentz M.A. "Adaptive evaluation strategies for estimating effects of community-based drug abuse prevention programs." *J. Community Psychology*: 1994, CSAP special issue, p. 26–51.

16 Chou C.P. *et al*. "Effects of a community-based prevention program on decreasing drug use in high-risk adolescents." *Am. J. of Public Health*: 1998, 88(6), p. 944–948.

17 Flay B.R. "Approaches to substance use prevention utilizing school curriculum plus social environment change." *Addictive Behaviors*: 2000, 25(6), p. 861–865.

18 Chou C-P. *et al*. "A two-stage approach to multilevel structural equation models: application to longitudinal data." In: Little T.D. *et al, eds*. *Modeling longitudinal and multilevel data: practical issues, applied approaches, and specific examples*. Lawrence Erlbaum Associates, Inc., Publishers, 2000, p. 33–49. Covers schools whose pupils were first assessed in grade 7.

19 Pentz M.A. "Preventing drug abuse through the community: multi-component programs make the difference." In: Sloboda Z. *et al, eds*. NIDA Research Monograph (NIDA Publication no. 98-4293), 1998, p. 73–86. Pre-publication draft. Published document unavailable.

20 Use in the past month or week, past month drunkenness and use of cannabis over twice a week.

21 Pentz M.A. "Benefits of integrating strategies in different settings." In: Elster A. *et al, eds*. *American Medical Association State-of-the-Art Conference on Adolescent Health Promotion: proceedings*. National Center for Education in Maternal and Child Health, 1993, p. 15-34.

22 Pentz M.A. "Preventing drug abuse through the community: multicomponent programs make the difference." In: *National Conference on Drug Abuse Prevention Research: presentations, papers, and recommendations*.

23 Pentz M.A. "Costs, benefits, and cost-effectiveness of comprehensive drug abuse prevention." In: *Cost-benefit/cost-effectiveness research of drug abuse prevention: implications for programming and policy*. National Institute on Drug Abuse, 1998, p. 111–129.

24 Aguirre-Molina M. *et al*. "Community-based approaches for the prevention of alcohol, tobacco and other drug use." *Annual Review of Public Health*: 1996, 17, p. 337–358.

25 The fact that STAR and non-STAR schools and pupils were found comparable on a few broad measures does not eliminate this possibility. These did not capture important attributes such as teaching styles or the teachers' enthusiasm for the programme, or whether a school provided a health-conscious environment and its stance on drugs. Baseline drug use measures were taken into account, but at this time pupils were new to the schools so these reflect earlier experiences rather than the impact of the schools.

26 Pentz M.A. "Institutionalizing community-based prevention through policy change." *Journal of Community Psychology*: 2000, 28(3), p. 257–270.

27 Bishop J. *et al*. "A review of substance use education in fifty secondary schools in South Wales." *Health Education Journal*: 2001, 60(2), p. 164–172

28 Nuttall C. *et al. Reducing offending: an assessment of research evidence on ways of dealing with offending behaviour*. Home Office, 1998

29 Newburn T. *et al. Risks and responses: drug prevention and youth justice*. Drugs Prevention Advisory Service, 1999

30 Home Office. *Young people and alcohol*. Crime Reduction Toolkit. Undated.

31 McKeganey N. *et al. Drug misuse research in Scotland: the contribution of research to Scotland's drug misuse strategy*. Scottish Executive, 2000.

32 Foxcroft D.R. *et al. Review of effectiveness of health promotion interventions: young people and alcohol misuse*. Final Report, September 1995.

33 Pentz M.A. "Prevention aimed at individuals: an integrative transactional perspective." In: McCrady B.S. *et al, eds. Addictions: a comprehensive guidebook*. Oxford University Press, 1999, p. 555–572.

34 Tobler N. "Prevention is a two-way process." *Drug and Alcohol Findings*: 2001, 5, p. 25–27.

35 *Project I-STAR. Part one: teacher's guide*. 1992.

36 US National Health Promotion Associates web site, www.preventionnet.com/files/star.cfm.

37 MacKinnon D.P. *et al*. "Mediating mechanisms in a school-based drug prevention program: first-year effects of the Midwestern Prevention Project." *Health Psychology*: 1991, 10(3), p. 164–172.

38 Alteration in beliefs about the positive effects of cannabis were influential as were intentions to use that drug or to drink.

OFFCUTS

Drug education is not the only health education sector which find it difficult to demonstrate behaviour change. The first randomised trial of school **sex education** in Britain has also recorded no short-term reduction in sexual activity or risktaking.[1] The SHARE programme consists of a teacher-training course plus 10 lessons each in the third and fourth years of secondary school. This modern programme was implemented in 13 Scottish schools randomly allocated from 25 which volunteered for the research. In most schools, most lessons were delivered but (as with the interactive elements of drug education) teachers often shied away from the skills-based sessions. The 12 control schools carried on with normal lessons, typically much fewer than SHARE and lacking its interactive elements. Pupils answered questions beforehand and at follow up aged 15–16, six months after lessons had ended. Though the programme improved knowledge, there was no impact on behaviour. Just as many children from SHARE schools initiated sex, did not use contraception, and experienced unwanted pregnancies. How well the programme was delivered had no effect on outcomes, suggesting that rather than the teaching, it was the programme itself which failed to improve on normal lessons. Negative findings might be due to the difficulty of further raising the already high level of contraceptive use among the youngsters. However, a more fundamental problem is suggested by the fact that worldwide, just one of the nine other randomised trials of sex education has recorded positive behaviour change outcomes.

1 Wight D. *et al*. "Limits of teacher delivered sex education: interim behavioural outcomes from randomised trial." *British Medical Journal*: 2002, 324.

Much more than outcomes

It records agency activity as well as outcomes, is suitable for drugs or alcohol, can be customised, and outputs to the national drug monitoring database – it's **RESULT**, *a new treatment monitoring system developed in Leeds.*

by **Duncan Raistrick & Gillian Tober**

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More than most, FINDINGS readers will be familiar with questionnaires and interview schedules designed to measure treatment outcomes such as the Maudsley Addiction Profile[1] and the Addiction Severity Index.[2] RESULT is different. First, though suitable for research projects,[3] it was designed for the routine evaluation of treatment outcomes in everyday practice, including audit. Second, it captures agency activity as well as outcomes and can be expanded into a complete data collection and client administration system.

In other words, RESULT helps manage a service and improve its use of resources, not just (though it will do this too) document its outcomes. The same features enable reporting which matches the requirements of drug action teams, funders and the national drug monitoring database.

Flexible – but from a solid base

The ideal for a research tool is uniformity across different services and circumstances, and RESULT can be used that way. But primarily it aims to meet service needs, and these differ. Even the same service needs different data for different purposes. A flexible, modular design enables services to pick and mix to match their requirements as well as to engage in more in-depth customisation. For example, the outcome monitoring components allow users to select measures which best suit their agency or purpose.

However, flexibility is not the same as floppiness in scientific terms. RESULT draws on a variety of source material developed and validated by researchers. A strong evidence base for its key components gives the system its robustness and adaptability. RESULT is also grounded in a *theory* of addiction, in this case one which sees addiction as learnt behaviour.[4] Without such grounding, developers might be tempted to base a system on the current interests of politicians, the public, or commissioners, but these vacillate, are sometimes parochial, and commonly lack scientific support. Since despite adaptations, the underlying theoretical approach remains the same, a theory-based system also makes it possible to pool or compare data across agencies and treatment modalities.

Precisely because of its solid reference points, it is possible to add 'softer' variables to meet local or political interests without threatening the integrity of the system. For example, there is no scientifically acceptable method of determining a client's position in the popular 'stages of change' model. Nevertheless, if they wish, RESULT users can opt to incorporate one of the stages of change scales. Equally, they may wish to include 'problem' scores, for example, criminal activity or homelessness.

The flexible RESULT software can easily incorporate such data. It is written in the familiar Microsoft Access database program, a major benefit because agencies can develop their own modules to suit their purposes. Only basic IT competence is required to use the off-the-peg system but agencies with in-house IT expertise will get the most from the power of the underlying database.

Over the last 10 years RESULT has been refined and tested at the Leeds Addiction Unit.[5] The full version includes elements for screening referrals, comprehensive assessment, recording client contacts, and measuring outcomes. It also includes modules for administrative purposes such as writing prescriptions, recording professional development, and estimating service costs. All these will continue to be developed to meet new requirements of quality assurance reporting, drug action teams, and of the National Drug Treatment Monitoring Service. We have shown the full version to be manageable within a busy NHS addiction service, but a cut-down version has also been proved in a variety of Leeds agencies participating in the National Treatment Agency's Enhancing Treatment Outcomes project.

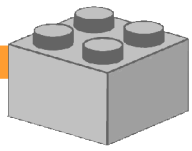
What RESULT measures

RESULT documents inputs and outcomes in areas traditionally seen as important to the evaluation of addiction treatment. *Substance dependence*, *psychological health* and *social satisfaction* were chosen as the key performance indicators. Their suitability arises partly from two special properties: *universal* applicability across services, clients and drugs; and *inde-*

Golden Bullets

Essential practice points from this article

- RESULT is a computer program designed for the routine evaluation of treatment outcomes in everyday practice. Dependence, psychological health and social satisfaction are the key performance indicators.
- It captures agency activity as well as outcomes and can be expanded into a complete data collection and client administration system.
- RESULT can create reports which match the requirements of drug action teams, funders and the national drug monitoring database.
- A flexible, modular design enables services to pick and mix to match their requirements as well as to engage in more in-depth customisation.
- RESULT draws on validated measurement tools and is grounded in a theory of addiction as learnt behaviour.
- The program is freeware. Collaborators can submit developments for validation and incorporation in the software.

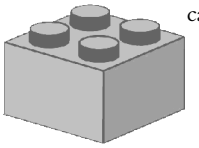


Modular and customisable – two of RESULT's strengths

pendence – people can improve on one dimension but stay still or get worse on another.[6] Without such independence, it is difficult to establish whether outcomes in one domain change simply because of changes in the others. Independence also opens up the possibility of targeting treatments at particular outcome domains. RESULT generates an outcome profile which, as well as these key indicators, can be adapted to include measures which are not independent, such as criminal behaviour, quantity/frequency of drug use, deaths and so forth. There is no single or overriding indication of a 'good outcome' – it largely depends on the agency's objectives.

Demographic information is used mainly to profile caseloads. Demographic and *referral data* are also required for the national database and to record waiting times at agencies which offer appointments. Within an agency, the ability to link data on when someone is referred for an intervention to when they received it means waiting times for different services can be recorded. One complication is that the Department of Health recommends that clinics and patients arrange mutually convenient appointment times; a clinic may be able to offer one tomorrow, but the patient may opt to come later. RESULT can take this into account.

Information on *substance use* is collected at each client contact and can be used to monitor progress as well as to record outcomes. *Physical health* problems commonly accompany substance misuse. These should be recorded because it is important – at least for health-funded services – to undertake some simple health checks and to offer treatment and preventive care. Recording *agency activity* forms the basis of *cost* and *cost-effectiveness* calculations. It also provides data which helps monitor staff activity and informs their supervision.



Why 'RESULT'?

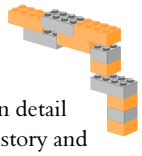
'RESULT' stands for *Routine Evaluation of the Substance Use Ladder of Treatments* – a reference to 'stepped care'. This approach is based on evidence which consistently shows how difficult it is to match a client in advance to a particular type or intensity of treatment. To avoid wasting resources, some agencies deliver what is referred to in the RESULT acronym as a *ladder* of treatments. The first step is the briefest and least costly intervention – such as handing over a self-help booklet ('bibliotherapy'); if this proves insufficient then a treatment on the next step of the ladder is offered, and so on.[17] Because RESULT enables services to document interventions and the consequent outcomes, it can be used to help decide when to move on to the next step and what that next step should be. However, while this is one potential use for the system, RESULT is equally suited to services which do not adopt this approach.

Which outcomes and why

Among the measures taken by RESULT, it is the outcome domains which required the greatest thought. RESULT's outcome measures were selected to meet the following criteria:

- compatibility with statutory requirements: RESULT can output to the national treatment monitoring database;
- universality: they are not constrained by substance or social group;
- validity and reliability demonstrated through standard scientific processes;
- sensitivity: capable of tracking clinically significant changes across the full range expected in the clients at a given agency;
- self-completion format for measuring key outcomes: this means therapists are not left to assess their own performance yet avoids the need for research staff;
- readability and neutral language: the wording has been subjected to a formal readability assessment and tested on patient groups from different cultural backgrounds;
- brevity: the self-completion items take about 10 minutes.

The next sections document how these criteria were satisfied in each of the major outcome areas.



Substance use

The initial assessment enquires in detail about a person's substance use history and current use – obviously relevant for a substance misuse service. Thereafter a 'snapshot' of current use is taken at every face-to-face contact. The data is compatible with the national drug treatment monitoring database but also includes some additional items:

- quantity used on heaviest use day;[7]
- weekly spend: gives some indication of the social impact of substance misuse on the user and their family and acts as a proxy for the amount of a drug being used;
- a medical diagnosis coded according to the *International Classification of Diseases* (ICD-10):[8] required by the health service for returns to the Department of Health and a useful way of categorising outcomes;
- 'talkback' – the client's subjective assessment of how well they feel expressed as a percentage of 'myself at my best'.

Substance dependence

Measuring substance dependence is clearly relevant to a service which aims to treat this condition. For this purpose RESULT uses the *Leeds Dependence Questionnaire* (LDQ),[9] a ten-item self-completion scale derived from a social learning theory of addiction. The LDQ is designed to measure dependence (and therefore to enable comparisons to be made) across a range of substances, even during spells of abstinence. It has been shown to be suitable for routine outcome evaluation,[10] technically satisfactory as a measurement tool, and to be a valid measure of alcohol and heroin dependence.[11 12 13] To interpret such scales it helps to have benchmarks in the form of 'normal' scores for different substances and different types of patients. This data is being collected and will be available on the Leeds Addiction Unit web site.

Psychological health

Poor psychological health is consistently associated with poor treatment outcomes, making changes on this dimension an important progress indicator. Some agencies may also want to screen their clients for mental illness. RESULT uses the *General Health*

How to get RESULT

Click on RESULT on the Leeds Addiction Unit web site, www.lau.org.uk, and order your CD-ROM. The program is freeware subject to the usual licence agreement, but there is a £50 administration fee. Alternatively, e-mail result@lau.org.uk or write to Leeds Addiction Unit, 19 Springfield Mount, Leeds LS2 9NG.

The web site asks for collaborators in developing both the software and the use of RESULT as a clinical research tool. Collaborators in software development are required to follow the conventions used by RESULT. Program extensions are submitted to the Leeds unit for testing prior to inclusion in a software update. Developers are fully credited for their contribution.

Alternatively, RESULT users can simply use the software in their agency as it stands. They can also develop it without restriction, though this may mean their customised version becomes incompatible with future software releases.

The idea of collaborative development of freeware has a commercially successful precedent in the Linux operating system. It reduces development costs; gives end-users control over how the product is implemented in their own agency and how it is developed overall, enabling it to be adapted to their needs; bolsters the justification for in-house IT expertise; and creates scope for collaborators to share knowledge and skills. Being developed by enthusiasts committed to a focused task may also enhance the quality of the product.

Questionnaire[14] for these purposes. It has well established properties as a measurement tool and, though originally intended for screening, can also be used to measure change in terms of degrees of psychological health. It can pick up transient disorders which may remit without treatment and is also said to usually detect functional psychoses such as schizophrenia or psychotic depression.[15]

Social satisfaction

Social stability is consistently associated with good outcomes, but huge personal and cultural variations in lifestyle make it difficult to measure directly across all client groups. As a proxy we selected the *Social Satisfaction Questionnaire*, itself adapted from the 33-item *Social Problems Questionnaire*.[16] It measures how satisified the client is with: their accommodation and living arrangements; employment and financial situations, time spent with friends and in social activities, and their relationships with partner, family and friends. These group into two constellations which broadly reflect satisfaction with life inside versus outside the home.

Physical health

Simple measures of physical health record:

- infectious diseases status;
- height, weight, blood pressure, and peak flow;
- use of health care resources.

Agency activity

Agency activity – the inputs it provides to achieve outcomes – is recorded as 'events', defined as any face-to-face contact between clinical staff and clients as part of a formal intervention. 'Events' are integral to the way RESULT meets the demands of the national database and to the way it calculates costs.

Each 'event' includes a brief snapshot of main substance use, client 'talkback', and the following administrative information:

- a broad categorisation of the client as: a new help seeker; seeking help with mental illness; in continuing care; a 'significant other' related to a substance abuser; or seeking advice and information;
- the nature of the contact: this equates to the intervention being delivered;
- treatment programme: usually equates to the funding stream or clinical team involved in the intervention;
- time taken and the location.

Agencies which categorise their clients into major groups can record this as an attribute of the client; the software automatically associates this attribute with 'events'. Data is recorded on a simple record sheet which clinical staff find easy to use.

For some services (such as drop-in or outreach projects), recording contacts in this way would be inappropriate, while in primary care the data may duplicate routine record-keeping.

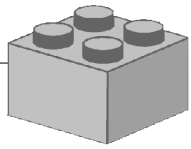
Cost and cost effectiveness

Agency activity data makes it possible to calculate the costs of the different elements of care provided to a client, to compare these with average costs, and to compare the cost-effectiveness of different types of treatment. In calculating costs RESULT takes into account the that different events involve different staff costs (eg, consultant versus nurse) and different overheads costs (such as those associated with interventions carried out in the community, on a domiciliary basis, or at a health centre).

Aggregated across a client group or a particular type of intervention, 'events' can also be used to estimate the costs of treating, for example, mentally ill clients, or of running a detoxification programme. By setting the costs against the outcomes achieved, RESULT can be used to calculate cost-effectiveness – how much improvement is gained per unit of expenditure on different types of clients, using different types of programmes, or by different clinical teams.

An invitation

FINDINGS readers in drug or alcohol treatment services are invited to order their own copy of RESULT and to join us in developing the content and the software ◤ *How to get RESULT*. Collaborative development promises to help quickly and cheaply create a product of the greatest use to the greatest number of services.



1 Marsden J. *et al*. "The Maudsley Addiction Profile (MAP): a brief instrument for assessing treatment outcome." *Addiction*: 1998, 93, p. 1857–1868.

2 McLellan A.T. *et al*. "The fifth edition of the Addiction Severity Index." *Journal of Substance Abuse Treatment*: 1995, 9, p. 199–213.

3 RESULTS's outcome measures meet research standards, but can only be relied on for research purposes if the standard of data collection is also sufficiently high. This may not be the case if staff believe the data is being collected only for administrative purposes.

4 Raistrick D.S. *et al*. "Development of the Leeds Dependence Questionnaire: a questionnaire to measure alcohol and opiate dependence in the context of a treatment evaluation package." *Addiction*: 1994, 89, p. 563–572.

5 Tober G. *et al*. "Measuring outcomes in a health service addiction clinic." *Addiction Research:* 2000, 8, p. 169–182.

6 Tober G. *The nature and measurement of change in substance dependence*. University of Leeds, PhD Thesis, 2000.

7 Raistrick D.S. *et al*, op cit.

8 World Health Organization. *The ICD-10 classification of mental and behavioral disorders*. WHO, 1993.

9 Raistrick D.S. *et al*, op cit.

10 Tober G. *et al*, op cit. .

11 Raistrick D.S. *et al*, op cit.

12 Heather N. *et al*. "Leeds Dependence Questionnaire: data from a large sample of clinic attenders." *Addiction Research*: 2001, 9, p. 253–269.

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14 Goldberg D.P. *The detection of psychiatric illness by questionnaire*. Oxford University Press, 1972.

15 Goldberg D.P. *et al*. *A user's guide to the General Health Questionnaire*. Windsor: NFER-NELSON Publishing, 1988.

16 Corney R.H. *et al*. "The construction, development and testing of a self-report questionnaire to identify social problems." *Psychological Medicine:* 1985, 15, p. 637–649.

17 Sobell M.B. *et al*. "Stepped care for alcohol problems: an efficient method for planning and delivering clinical services." In: Tucker J.A. *et al, eds*. *Changing Addictive Behavior*. New York: Guilford Press, 1998.

LINKS *Monitoring with MAP*, issue 5 • *Outcome monitoring must be made easy*, issue 3 • *How to show treatment works*, issue 1 • *Are we right to spend more?* issue 1

OFFCUTS

New studies suggest that the image of addiction as a 'chronic relapsing condition' is due to seeing it through the narrow slit of treatment populations. With a broader vision it seems that what is chronic is the lack of the physical, psychological and most of all social resources needed to lever oneself out of a bad patch, collectively termed **recovery capital**.[1,2] Some of this capital is lacking due to pre-addiction environment and upbringing or is lacking in the addict's current environment. Some is lost during addiction as the support of friends and families and employability are eroded and doors close behind the addict due to criminalisation and social stigma, blocking a return to normality. In societies where use of a particular drug is heavily stigmatised its regular users will nearly all be socially alienated and need to turn to treatment for help, giving the impression of a chronic condition which requires professional intervention. In the same societies, where use of a different drug (such as alcohol in Western societies) is more acceptable, most over-heavy users will still retain social links and be able to recover without formal help[3] by drawing on their recovery capital,[4] usually at the first try.[5] Addicts of the kind who resort to treatment services typically lack recovery capital and repeatedly relapse. This vision suggests that if treatment is to have a lasting impact it must (re)create this capital by providing supportive social relationships (eg, with treatment staff or through mutual aid groups) and improving the life chances of the client.

1 Cloud W. *et al*. "Natural recovery from substance dependency: lessons for treatment providers." *Journal of Social Work Practice in the Addictions*: 2001, 1(1), p. 83–104.

2 Klingemann H. *et al*. *Promoting self change from problem substance use. Practical implications for policy, prevention and treatment*. Kluwer Academic Publishers, 2001.

3 Hasin D. *et al*. "DSM-IV Alcohol dependence and sustained reduction in drinking: investigation in a community sample." *Journal of Studies on Alcohol*: 2001, 62, p. 509–517.

4 Blomqvist J. "Recovery with and without treatment: a comparison of resolutions of alcohol and drug problems." *Addiction Research & Theory*: 2002, 10(2), p. 119–158.

5 Price R.K. *et al*. "Remission from drug abuse over a 25-year period: patterns of remission and treatment use." *American Journal of Public Health*: 2001, 91(7), p. 1107–1113.

New literature reviews, meta-analyses, and evidence-based resources

TREATMENT

MODELS OF CARE FOR THE TREATMENT OF DRUG MISUSERS. National Treatment Agency for Substance Misuse. Department of Health, 2002.
Published in two parts. Framework for commissioning adult treatment for drug misuse in England.
Download from www.nta.nhs.uk, e-mail nta.enquiries@nta.gsi.gov.uk, or phone 020 7972 2214.

SERVICES FOR YOUNG PEOPLE WITH PROBLEMATIC DRUG MISUSE: A GUIDE TO PRINCIPLES AND PRACTICE. Effective Interventions Unit and Partnership Drugs Initiative Lloyds TSB Foundation for Scotland. 2002. EIU
Based on literature review published by EIU plus consultation and experience of services in Scotland.

DRUG TREATMENT SERVICES FOR YOUNG PEOPLE: A RESEARCH REVIEW. Burniston S. et al. 2002. EIU
Service provision in Scotland and a brief review of the international literature on effectiveness.

DRUG TREATMENT SERVICES FOR YOUNG PEOPLE: A SYSTEMATIC REVIEW OF EFFECTIVENESS AND THE LEGAL FRAMEWORK. Elliott L. et al. 2002. EIU
Detailed tabular review of the international literature on effectiveness.

MESA GRANDE: A METHODOLOGICAL ANALYSIS OF CLINICAL TRIALS OF TREATMENTS FOR ALCOHOL USE DISORDERS. Miller W.R. et al. Addiction: 2002, 97, p. 265–277. AC
Updates the widely quoted comparison of the effectiveness of different alcohol treatments.

APPLYING EXTINCTION RESEARCH AND THEORY TO CUE-EXPOSURE ADDICTION TREATMENTS. Conklin C.A. et al. Addiction: 2002, 97, p. 155–167. DS
Includes a meta-analysis which finds no impact on abstinence rates.

VOUCHER-BASED INCENTIVES. A SUBSTANCE ABUSE TREATMENT INNOVATION. Higgins S.T. et al. Addictive Behaviors: 2002, 27, p. 887–910. DS
Contingency management using vouchers for goods and services to promote recovery.

THE COMMUNITY REINFORCEMENT APPROACH TO THE TREATMENT OF SUBSTANCE USE DISORDERS. Smith J.E. et al. American Journal on Addictions: 2001, 10(suppl.), p. 51–59. DS
Benevolent social engineering of incentives and disincentives in an addict's life to promote recovery.

THE EFFECTIVENESS OF TREATMENT FOR OPIATE DEPENDENT DRUG USERS: AN INTERNATIONAL SYSTEMATIC REVIEW OF THE EVIDENCE. Simoens S. et al. 2002. EIU
Also summarises evidence on cost-effectiveness. Recommends extensions to Scottish service provision.

RETENTION RATE AND ILLICIT OPIOID USE DURING METHADONE MAINTENANCE INTERVENTIONS: A META-ANALYSIS. Farré M. et al. Drug and Alcohol Dependence: 2002, 65, p. 283–290. DS
Compares methadone against buprenorphine and LAAM.

PHARMACOLOGICAL TREATMENT OF COCAINE DEPENDENCE: A SYSTEMATIC REVIEW. de Lima M.S. et al. Addiction: 2002, 97, p. 931–949. DS
Concludes that psychosocial approaches are much more promising than drug-based treatments.

SUBSTITUTION THERAPY FOR AMPHETAMINE USERS. Shearer J. et al. Drug and Alcohol Review: 2002, 21, p. 179–185. DS
Reviews the slim literature on prescribing stimulants.

MOVING ON: EDUCATION, TRAINING AND EMPLOYMENT FOR RECOVERING DRUG USERS. Research review. 2001. EIU
Service provision in Scotland, international literature on effectiveness, consultation with key players.

REDUCING HARM

PREVENTING PROBLEMS IN ECSTASY USERS: REDUCE USE TO REDUCE HARM. Baggott M.J. Journal of Psychoactive Drugs: 2002, 34(2), p. 145–162. DS
Argues that in our current state of knowledge reduced use is the best way to reduce harm from ecstasy.

SAFER INJECTION FACILITIES IN NORTH AMERICA: THEIR PLACE IN PUBLIC POLICY AND HEALTH INITIATIVES. Broadhead R.S. et al. Journal of Drug Issues: 2002, p. 329-356. DS
Review plus observations of 18 facilities suggest that injection rooms extend harm reduction gains.

OFFCUTS

One of Australia's leading drug and alcohol treatment centres has distilled its evidence-based practice and clinical experience into practical guides for specialist and non-specialist practitioners in a series of Clinical Treatment Guidelines for Alcohol and Drug Clinicians. Turning Point Melbourne has so far produced nine titles with more planned.

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PREVENTION

THE LIFE SKILLS TRAINING DRUG EDUCATION PROGRAMME: A REVIEW OF RESEARCH. Coggans N. et al. 2002. EIU
Concludes that small effects raise doubts over cost-effectiveness of widespread implementation.

NATIONAL SCHOOL DRUG EDUCATION STRATEGY. FINAL REPORT. EFFECTIVE IMPLEMENTATION IN RELATION TO SCHOOL DRUG EDUCATION. Murnane A. et al. Centre for Youth Studies and Curtin University, 2003. F
Australian-oriented review and recommendations in a harm reduction policy context.

EFFECTIVE INGREDIENTS OF SCHOOL-BASED DRUG PREVENTION PROGRAMS. A SYSTEMATIC REVIEW. Cuijpers P. Addictive Behaviors: 2002, 27, p. 1009–1023. DS
Extracts seven evidence-based quality criteria from evaluation findings.

PEER-LED AND ADULT-LED SCHOOL DRUG PREVENTION: A META-ANALYTIC COMPARISON. Cuijpers P. Journal of Drug Education: 2002, 32(2), p. 107–119. DS
Inconsistent findings suggest that whether peers or adults deliver education is not the key factor.

PREVENTION AND REDUCTION OF ALCOHOL MISUSE. EVIDENCE BRIEFING. Waller S. et al. Health Development Agency, 2002.
Synthesises findings from systematic reviews and meta-analyses.
Download from www.hda-online.org.uk.

CROSS-CUTTING

EFFECTIVE AND COST-EFFECTIVE MEASURES TO REDUCE ALCOHOL MISUSE IN SCOTLAND: A LITERATURE REVIEW. Ludbrook A. et al. Health Economics Research Unit, 2002
Evidence in support of the Scottish national alcohol plan.
Download from www.scotland.gov.uk/health/alcoholproblems.

HARM REDUCTION APPROACHES TO ALCOHOL USE: HEALTH PROMOTION, PREVENTION, AND TREATMENT. Marlatt G. et al. Addictive Behaviors: 2002, 27, p. 867–886. AC
Non-abstinence based approaches and outcomes from school to surgery and treatment clinic.

PSYCHOSTIMULANT WORKING GROUP REPORT. Scottish Advisory Committee on Drug Misuse. Scottish Executive, 2002.
Recommendations from prevention to treatment based on review, fresh research and consultations.
Download from www.drugmisuse.isdscotland.org.

SUPPORTING FAMILIES AND CARERS OF DRUG USERS: A REVIEW. 2002. EIU
Research and recommendations on services to limit harm to family members from a relative's drug use.

THE ROLE OF FAMILIES IN THE DEVELOPMENT, IDENTIFICATION, PREVENTION AND TREATMENT OF ILLICIT DRUG PROBLEMS. Mitchell P. et al. Commonwealth of Australia, 2001.
Comprehensive review of the role of families in the creation and resolution of illicit drug use problems.
Download from www.nhmrc.gov.au.

PARENTAL DRUG MISUSE – A REVIEW OF IMPACT AND INTERVENTION STUDIES. Tunnard J. Research in Practice, 2002.
Focuses on child welfare.
Research in Practice, Blacklers, Park Road, Dartington, Totnes, Devon TQ9 6EQ, phone 01803 867692, fax 01803 868816, e-mail jo@rip.org.uk.

EVALUATION METHODS

USING ASSESSMENT DATA FOR EVALUATION. Evaluation Guide 7. 2002. EIU

EVALUATING OUTREACH SERVICES. Evaluation Guide 8. 2002. EIU

EVALUATING EMPLOYABILITY PROGRAMMES. Evaluation Guide 9. 2002. EIU

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KEY

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F For copies phone/fax 020 8888 6277 or e-mail da.findings@blueyonder.co.uk.

Attribution A judgement on whether one event was caused by another. Usually whether an *impact* was caused by an *intervention*. Will depend on whether other explanations can be eliminated and whether the *intervention* can credibly be seen as the cause.

Attrition The degree to which a study fails to include all the intended subjects due to factors such as drop-out or inability to contact them. May threaten the comparability of *treatment* and *control groups* and how far these remain representative of the *target group*.

Audit A quality assurance process that checks actions and procedures against guidelines and standards.

Blinding See *double-blind*.

Comparison group See *control group*.

Control group A group of people ('controls'), households, communities or other *units of analysis* who do not participate in the *intervention* being evaluated. Instead, they usually receive an alternative *intervention* (in which case the term *comparison group* may be preferable) or no *intervention* at all. Observations made on the controls are used to decide whether the *intervention* had an *impact* on the *treatment group*(s).

Cost-effectiveness One *intervention* is more cost-effective than another if it achieves more of a desired *objective* for a given expenditure.

Cost-benefit In a cost-benefit analysis both the costs and the benefits of *interventions* are expressed in monetary terms. This enables us to assess whether an *intervention* gained more than it cost and whether an alternative *intervention* achieved greater benefits for each £ spent.

Double-blind Research designs in which neither the subjects nor those taking measures from them know which *intervention* (if any) the subject received. Eliminates bias due to expectations or preconceived views. For the same reason, researchers may also be 'blinded' to other variables, such as characteristics thought to make subjects more or less receptive to *interventions*. See *placebo*.

Drop-out See *attrition*.

Effectiveness The degree to which an *intervention* produces the desired *objectives* under everyday conditions typical of those in which it will usually be applied. Contrast with *efficacy*.

Efficacy The degree to which an *intervention* produces a desired *objective* under relatively optimal or ideal conditions. A measure of its potential benefits rather than what we can expect from it in normal conditions. Contrast with *effectiveness*.

Evaluation A systematic assessment of whether and/or how the *aims* and *objectives* of an *intervention* have been acheived. May also assess unintended *outcomes* or other *impacts*.

Experimental group See *treatment group*.

External validity The degree to which what is evaluated in a study (and the conditions under which it is evaluated) permit us to assume that similar *impacts* will be observed in everyday practice. Can be maximised either by limiting the claims made for the study's *generalisability* or by employing more *naturalistic* research designs. Contrast with *internal validity*.

Generalisability How far an *evaluation*'s findings will be replicated in similar situations. Normally the main issue is whether the results will apply outside the research context to everyday conditions.

Hypothesis A formal prediction about what will happen as a result of an *intervention*. Such predictions are tested by the *evaluation*.

Impacts All the consequences of an *intervention* including intended and unintended *outcomes for* the *target group*.

Inputs The resources used to deliver an *intervention*, whether human, financial or physical.

Instrument An organised method for consistently collecting information such as questionnaires, guidelines for interviews and making observations, and protocols for testing urine and saliva. Because evaluations depend critically on how well they measure *outcomes* and other variables, instruments should be *objective*, *reliable* and *valid*.

Internal validity The extent to which the research design enables us to decide whether the *intervention* caused the observed *impacts*. The controls needed to achieve high internal validity often distance a study from real-world conditions, threatening its *external validity*. Internally valid studies are usually best suited to demonstrating *efficacy*. Contrast with *external validity*.

Intervention A policy, programme, service or project designed to bring about specified change to *target* areas or *groups*.

Longitudinal Research designs which aim to assess and reassess the same subjects at several time periods. For *evaluations*, the benefit of such designs is that they permit changes in each subject to be assessed against earlier measures taken from the same subject. See *prospective*.

Mediating o i i variables Variables affected by the *intervention* which help cause the *outcomes*. For example, ability to refuse drug offers is increased by some prevention programmes and in turn is thought to lead to reduced drug use. When *outcomes* are hard to measure, changes in mediating variables may be used as a proxy for assessing the *intervention*.

Meta-analysis A study which uses recognised procedures to amalgamate results from several studies of the same or similar *interventions* to arrive at composite *outcome* scores.

Milestones Key stages in the *intervention* process which underpin later *outcomes* and which can be documented and monitored. For example, numbers attending for assessment or retained for a set period or the proportion of the target group reached by a campaign.

Monitoring An ongoing process involving the continuous or regular collection of key information about an *intervention*'s *inputs*, *outputs* and *outcomes*. This data may feed into a broader *evaluation*.

Naturalistic Describes a study of an *intervention* in 'real-world' conditions with minimal research interference, eg, without specially selecting subjects or controlling the quality of the *intervention*. Most appropriate to *effectiveness* trials. Often the only feasible approach in the light of resource constraints and ethical considerations which preclude allocating subjects to potentially inappropriate *interventions* or to none at all.

Null hypothesis The assumption tested by *statistical* procedures that a set of observations occurred purely by chance. In the current context, the null hypothesis usually amounts to the assertion that an *intervention* produced no *outcomes* or that there was no difference in the *outcomes* produced by two or more *interventions*.

Objectives Intended *outcomes* of an *intervention* which indicate that it has acheived its *aim*. Ideally specific, measurable, and attached to a timescale, in which case they can be expressed as targets.

Objectivity With respect to an *instrument*, the degree to which different people applying or scoring it in the same circumstances on the same subjects would register similar values. An aspect of *reliability*.

Odds ratio An odds ratio of 1 (the break-even point) suggests that the intervention is no better and no worse than doing nothing, below 1 that it is worse, above 1 that it is better.

Outcome evaluation An *evaluation* (or the element of an *evaluation*) which systematically records the *outcomes* of an *intervention*. Colloquially, whether the *intervention* 'worked'. Contrast with *process evaluation*.

Outcomes Intended or unintended end product of the *intervention* in the *target group*, eg, changes in substance use, infection control, reduced crime. If these match the *objectives* the *intervention* has worked.

Outputs Records or indicators of the level of throughput or activity of a service such as counselling sessions provided, level of occupancy of a residential service, training sessions provided. To be distinguished from *outcomes*.

Placebo A dummy *intervention* which mimics but lacks the presumed active ingredient of the *intervention*. Used to prevent subjects' expectations or preconceptions of the *intervention* systematically biasing *outcomes*. It is often impossible to construct a placebo condition when testing psychosocial *interventions*. See *double blind*.

Process evaluation An *evaluation* (or the element of an *evaluation*) which systematically documents the planning, implementation and delivery of an *intervention*. This may be as part of an attempt to establish its practicality (a feasibility study) or to elucidate how and why any observed *impacts* may have occurred. Colloquially, *how* the *intervention* 'worked' or why it did not. Contrast with *outcome evaluation*.

Prospective A study in which the subjects are recruited (and normally baseline measures taken) before the *intervention* takes place. Advantages usually include enabling *attrition* to be accounted for and *impacts* to be assessed by comparing measures taken after the *intervention* with those taken before.

Randomised controlled trial A study in which subjects are allocated at random to different *interventions* and/or to *intervention* and *control* groups. The intention is to eliminate the possibility that any *impacts* arose due to differences between the subjects in these groups rather than the *intervention*. Such studies are rare and (since self-selection or referral to *interventions* are the rule in practice settings) may suffer from low *external validity*.

Reliability A highly reliable *instrument* will deliver near identical results when applied repeatedly to the same subjects under the same conditions, and will do so even when different people administer and score the test. An *instrument* is unreliable to the degree to which measures taken with it may vary even when what it is supposed to be measuring has stayed the same.

Sensitivity In relation to a test, the proportion of people with the condition being tested for who are correctly identified. An aspect of *validity*. Contrast with *specificity*.

Specificity In relation to a test, the proportion of people *without* the condition being tested for who correctly test negative. An aspect of *validity*. Contrast with *sensitivity*.

Spontaneous remission Also termed 'regression to the mean'. The tendency for extreme or unusual behaviour (or attitudes, etc) to revert to more usual levels without formal *intervention*. Particularly relevant to therapeutic *interventions* as people often seek help when their problems have become unusually severe.

Statistical significance The findings of a study are accepted as statistically significant when they are very unlikely to have occurred by chance. The cut-off point is normally set at less then 1 in 20, expressed as a probability of less than 0.05 or '$p<0.05$'. If lower probabilities emerge we assume that something other than chance caused the results.

Statistical tests Accepted arithmetical methods to determine the probability that a set of observations occurred by chance. When this probability is below a certain level the observations are accepted as *statistically significant*. Such tests are important as unexpected causes of variation in *outcomes* could lead to unjustified conclusions about how well an *intervention* worked.

Target group The people, households, organisations, communities or other identifiable entities which an *intervention* is intended to affect. The degree to which the changes occur in this group constitute the *outcomes* of the *intervention*.

Treatment group People, households, organisations, communities or any other identifiable entities which receive an *intervention* as opposed to the *control group*. The term 'treatment' does not imply a medical or therapeutic *intervention* and may be replaced by 'experimental' or '*intervention*'. Contrast with *control group*.

Unit of analysis What constitutes a 'case' or 'subject' in the study. Usually an individual, but may be a group, a service, a family, a class or a school. To avoid mistaken conclusions, units *randomised* to *treatment* and *control* groups should correspond to those used to measure *outcomes*.

Validity With respect to an *instrument*, the degree to which it measures or otherwise reflects what it is supposed to measure. With respect to an *evaluation*, the degree to which conclusions drawn from the data correspond to reality; see *internal validity*, *external validity*.

Technical terms relating to evaluation

Standard definitions may have been adapted to fit the context of evaluations of interventions in the drug and alcohol fields. Terms defined elsewhere are italicised.

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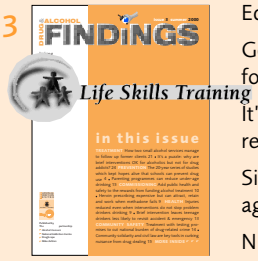

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