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The Grand design lessons from DATOS

US drug treatment was under fire and facing the new challenge of crack when a study which allied size with unprecedented depth set out to test whether the system was still working and, above all, **how** *it worked.*

by **Christine Franey**
and **Mike Ashton**

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For three decades the drug and alcohol treatment field has been preoccupied with five large-scale outcome studies backed by large-scale public funding. Thorough in design and detail, these comprise the biggest – and perhaps the best – in drug and alcohol treatment research.

In the USA, the Drug Abuse Reporting Program (DARP) began collecting data in the early '70s, followed a decade later by the Treatment Outcome Prospective Study (TOPS).[1] In the '90s they were succeeded by the Drug Abuse Treatment Outcome Studies (DATOS). Together they collected information from over 65,000 admissions to 272 programmes.[2] Fourth was the UK's National Treatment Outcome Research Study (NTORS). Fifth was the US Project MATCH, distinct from the others in that it was about alcohol and that it randomised its subjects to specially designed treatments.

Already FINDINGS has analysed MATCH[3] and NTORS.[4] Now we turn to DATOS. Like its predecessors, DATOS assessed clients as they entered everyday treatment programmes in the normal way and then followed them through and beyond treatment. But in DARP, TOPS and NTORS, opiate problems dominated. In contrast, DATOS was carried out in a decade of widespread cocaine (especially crack) use in the USA;[8] 8 in 10 of DATOS's subjects had used cocaine at least weekly, just a third heroin.[9] There were fears that this shift would worsen treatment outcomes,[7] not just because of the drug, but also because clients in the 1990s exhibited more severe and extensive problems. Outcomes were also threatened by funding constraints at the very time that services were experiencing increased demand in response to HIV.[7 10]

Rather than a comprehensive account, our aim is to extract findings of relevance for the UK. Of course, findings from one country may not transfer to another. However, there are encouraging parallels between DATOS and NTORS in their findings on outcomes, retention, and cost-savings.[5 6 7] Given that we have NTORS, in the UK we need DATOS less to show us *that* treatment works, more for what it tells us about *how* it works. Here we explore the major factors related to outcomes (◤ *Major themes*) and the interactions between client, treatment and environment which underlie these (◤ *Inside the black box* p. 7), then how to make things better (◤ *Ways to promote commitment* p. 16). Lastly, we ask, if this is what DATOS tells us, can we rely on its word?

Major themes

There is an exception to the generalisation that Britain's main interest in DATOS is how rather than whether treatment works: it is the clear demonstration that cocaine and especially crack addiction *is* treatable. Other major themes are that resource cutbacks can be compensated for by quality improvements, that retention is closely related to outcomes, and that support after treatment is important in sustaining the gains.

Cocaine treatment saves money

Like other US studies[11 12] and like NTORS, DATOS found that treatment saves money – but this time the focus was on cocaine/crack. As a measure of the savings generated by treatment, the social costs of the crimes committed by the DATOS intake during and in the year after treatment were subtracted from the equivalent figure for the year before treatment; the difference was taken as the cost-savings due to treatment.

Savings were calculated for long-term residential care and for non-residential counselling programmes. Though residential care cost nearly eight times as much, in both each $ spent recouped up to $3 in savings. This was because residentials took in far more criminally active clients and achieved greater reductions (roughly 80% versus 40%) in the costs of crime. For the same reasons, in terms of actual $s saved, they won hands down: each episode of residential care saved up to $30,000 compared to under $5000 for non-residential care.[13]

This gap does not justify wholesale redirection of clients to residential settings. The advantages of residential care were clearest among clients with the greatest problems and who stayed for at least three months.[14] Diverting less criminal and less problematic clients to residential services would be a waste of resources, as would persuading clients to enter residential care who clearly will not stay the course. Also, there is a big difference between the counselling services DATOS compared to residential care and intensive day programmes offering a therapeutic input rivalling residentials. Such programmes may be the most cost-effective of all for high severity clients.[12]

For both costs and savings, the calculations were incomplete. Effectively, the assumption was made that *all* the savings were due to the DATOS treatment – undoubtedly not the case. Savings might have occurred even without treatment – evidence the reductions in drug use seen after only fleeting treatment contact.[15] Uncosted earlier[9] and later treatments[15] may also have contributed to the savings. Most clients were under legal constraint.[14] If this helped curtail their criminality, criminal justice costs too would need to be accounted for. On the other hand, left out of the benefits side were the saved and improved lives of the clients and their families and cost-savings for health and welfare systems. Moreover, benefits can be expected to have accrued beyond the one-year post-treatment interview.

We already knew that treatment saves money. Despite the imponderables, it seems a fair conclusion that DATOS has shown that this applies also to the treatment of crack

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THANKS We acknowledge the generosity of Dwayne Simpson and colleagues in making their work available to the field and in their assistance with this article. Remaining errors are entirely our responsibility.

addiction, even in relatively expensive long-term and residential options.

Performance sustained despite cuts

Despite financial constraints and the crack and HIV epidemics, outcomes were comparable to those seen in earlier studies.[8] A year after treatment, drug use, illegal activities and psychological stress had fallen by about 50%. Yet the constraints *had* bitten: there had been striking cutbacks on planned lengths of stay and on 'ancillary' services such as financial advice and help with housing and employment.[16] The impact was felt by the clients, a far smaller proportion of whom received the services they felt they needed.[17]

But at the same time, the *quality* of some core treatment functions had improved, including assessment, planning, addiction counselling and communication with clients, and aftercare was more widely available through 12-step groups. Since around 1980 patient satisfaction had actually increased.[16] Money-saving changes such as reliance on self-help for aftercare[18 19] and on group rather than individual counselling[20] are unlikely to have degraded and may have improved performance. It seemed that by focusing on core treatment components and reducing their costs in ways which did not affect outcomes, services had maintained drug use and crime outcomes and increased cost-effectiveness.[21]

There is an important caveat. It can take considerable investment to reinsert someone back into society who has spent over a decade engrossed in drug use, especially when jobs and housing are scarce.[22 77] That the loss of ancillary services made little difference could be because they never were provided at the required scale and intensity.

From other studies, the picture is mixed. Some have queried whether ancillary services improve outcomes,[23 24] others have found they do both generally and in the areas targeted.[25 26 27] The evidence is strongest for services specially constructed and implemented for the study. We can expect these to have been more intensive, more systematic and more expertly applied than in real-world studies such as DATOS. Finally, cost-driven cuts at the time of DATOS had yet to peak.[18] Had the research been done a few years later, it may have found that the deeper cuts *had* bitten into outcomes.

Experienced clients are more discerning

How does a history of previous treatments affect retention and outcomes? In DATOS, the answer varied across the types of treatment. In non-residential counselling and in short residential programmes, there was evidence of a cumulative impact, but the analysis conflated two very different treatment careers.[28] For some clients, previous treatments may have represented an orderly progression through a phased

The message from DATOS is challenging and clear – 'poorly motivated' clients can no longer justify poor retention

effort at overcoming addiction culminating in the DATOS treatment, a progression associated with greater success rates than each element on its own. For others, previous treatments may have been repeated failures to achieve lasting recovery.

A later analysis of cocaine users focused on these serial treatment 'failures' by selecting clients treated at least three times before (excluding detoxification), whose first treatment episode was at least five years earlier, and whose time in treatment had totalled at least a year.[29] Their fate was compared with that of clients never previously in treatment.

The bottom line was that treatment repeaters had worse drug use and crime outcomes than first-timers. Does this refute the idea that treatment exerts a cumulative effect? Not necessarily. On average their previous treatment experiences had not made them any less positive about entering treatment or undermined their confidence in what they could achieve by doing so. Previous treatments may actually have helped them move forward in the DATOS treatment, but they had more baggage to carry, having used more drugs for longer and been more involved in crime.[9] For this and for other reasons, they may also have been less responsive to interventions.

In the non-residential treatments, there was an interesting kink in the bottom line. Far more so than first-timers, outcomes for treatment repeaters depended on the *quality* of their current treatment experience. Given a good relationship with their counsellor, on methadone they did better than equivalent first-timers; given a poor relationship, they did worse. Similarly, in drug-free treatments, indicators of a positive relationship between treatment and client were associated with better cocaine use outcomes for the repeaters, but were much less influential for first-timers. It is as if for the first-timers this new experience overshadows the quality dimension, while experienced clients respond less to treatment as such than to what they see as *good* treatment.

Longer is better

Longer stays are consistently associated with better outcomes.[2] In DATOS, the effects were sometimes clear cut. In the year after leaving residential rehabilitation or non-residential counselling, 80–90% of long-stay (at least three months) clients who had been using heroin or cocaine weekly before treatment were no longer doing so. For clients who left earlier, the figure was 50–60%.[8] However, this may have been because clients who were more promising to begin with stayed longer.[26] To help eliminate this possibility, the analysis went on to compensate for at least some of the differences between clients; still those who stayed longer remained far less likely to regularly use cocaine after treatment. They were also less likely to be heavy drinkers or to regularly use cannabis.

Though talked of in terms of 'thresholds', DATOS does not suggest treatment is ineffective until a sufficient duration has

Golden Bullets

Essential practice points from this article

- Crack addiction is treatable and treatment saves money for the society which provides it.
- Long-term, residential programmes which retain clients for at least three months are particularly cost-beneficial for highly criminal clients with severe problems.
- Quality standards should be based on client engagement and retention because these are predictive of outcomes. The quality of the relationship between a client and their key worker is a particularly good indicator of retention and treatment success.
- Measures of engagement and progress such as those used in DATOS provide early warning of potential drop-out; they should be measured and acted-on before drop-out occurs.
- Treatment quality is most important for clients with prior experience of treatment.
- At intake, the client's commitment to change through treatment is an important predictor of how well they will do. The implication is that providing treatment swiftly when this motivation is at its height will enhance retention and outcomes.
- Even with less motivated admissions, services can retrieve the situation if early on they use appropriate communication strategies to foster, recognise and reward engagement.
- Post-treatment self-help prevents relapse. Uptake is encouraged by starting self-help *during* treatment.

been reached and that then there is a distinct step up. The retention periods above which outcomes improved were chosen partly on the basis of previous research, and partly because they neatly bifurcated the DATOS intakes. There is nothing magical about them.[15] Longer stays were associated with even better outcomes[8] and very short stays can also be followed by great improvements.

To be included in DATOS, patients had to have stayed in treatment for at least a week. DARP and TOPS found that even shorter brushes with treatment were followed by substantial cuts in drug use, presumably due to the impetus which led the user to seek treatment.[8] Similarly in DATOS, some patients who left before attending a single counselling session nevertheless improved.[15] But in all these studies, longer stays were associated with significant *extra* gains.

If there is a 'threshold', it is probably at or before the door to the treatment service, when addicts make the decision (or have it made for them) to seek an end to their drug problems and to do something concrete to bring this about.

Longer is **usually** better

Important exceptions to the rule that longer is better emerged most solidly from an analysis which[30] compensated not only for client differences, but also for differences between programmes.[15] Effectively, it was able to ask whether similar people who stay longer in similar programmes do better. Even on this levelled playing field, staying for over three months remained strongly linked to good outcomes in long-term residential care.

Less clear cut, but still significant, was an improvement in the behaviours targeted by methadone maintenance – injecting and heroin use – among clients in treatment for at least a year. However, this finding was largely due to patients still *in* treatment. Some of the benefits of long stays do 'stick' after methadone ends, but, like other studies,[31,32] DATOS suggests that the key thing is *remaining* in treatment. As normally implemented in the UK and the USA, methadone maintenance seems more like a switch than a progressive enlightenment.[33,34]

Differences between the 'rag bag' of non-residential counselling services meant that once this variation had been taken into account, longer stays were *not* linked to better outcomes.[15] Short-term residential programmes also showed no length of stay effect,[8] perhaps because they were too short for such an effect to emerge, possibly because many were forced to shorten their programmes during the study.[16]

Focusing on primary cocaine users (by definition, not in methadone programmes) revealed that staying in treatment was most important for the 1 in 7 with extensive and severe polydrug and social or psychological problems. They clustered in the long-term residential programmes. As long as they stayed in them for at least three months, they did far better (just 15% returned to weekly cocaine use) than in less intensive or shorter treatments. In contrast, these treatments seemed fine for most less problematic users, even those who left relatively early.[14]

Mutual aid sustains treatment gains

For DATOS's primary cocaine users, more counselling or mutual-aid sessions *during* treatment did not improve outcomes. What was influential was participating at least twice a week in self-help groups *after* discharge from residential treatment. Even among clients who had already received a substantial 'dose' of formal treatment, and after a battery of other variables had been taken into account, intensive post-treatment self-help dramatically cut the chances of relapsing to weekly cocaine use.[18]

Surprisingly, this was not the case after long-term *non*-residential treatment. Perhaps the variability of these programmes prevented significant findings emerging. Certainly other studies have found that attending 12-step groups after non-residential therapy was strongly associated with reduced cocaine use.[19,35]

DATOS programmes differed in how successful they were at encouraging post-treatment self-help; for non-residential programmes, starting self-help *during* treatment seemed one factor in its continuation.[18] Similarly, in another study of cocaine users, patterns of self-help attendance established early in outpatient treatment tended to persist.[36]

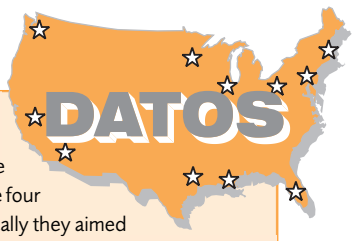
Inside the black box

The themes above can be thought of as patterns which emerged from interactions between the client, the treatment, and the environments surrounding and following treatment. If we can understand these interactions, then we may be able to manipulate them to improve outcomes. DATOS takes us part way down that road.

What makes clients want to stay?

If retention is important, what is it about treatment which makes clients stay? Whatever it is, its influence is substantial. In

Designing DATOS



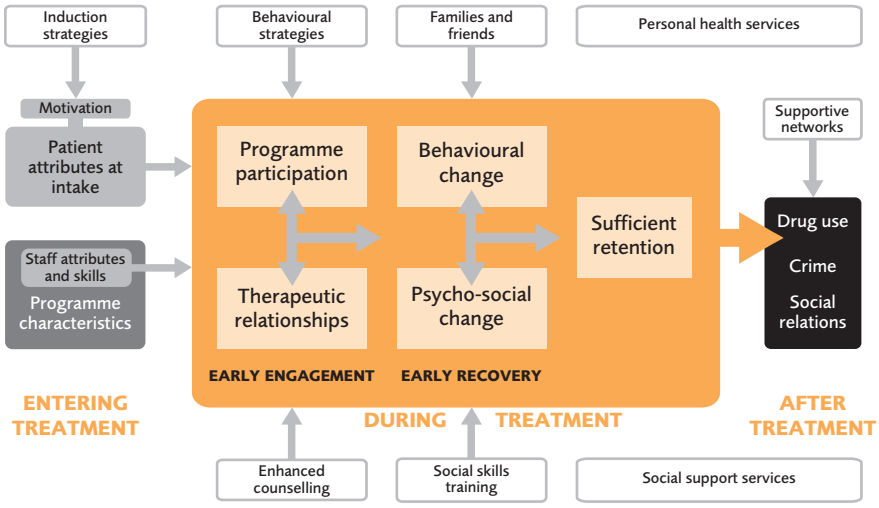
DATOS followed up clients admitted between 1991 and 1993 to US treatment providers in 11 major cities.[16,72] The 120 programmes were selected to be representative of the four major types of treatment then available in the USA. Typically they aimed for abstinence from illegal drugs and alcohol. Except for the methadone programmes, 12-step philosophies dominated. Supportive group or individual counselling was the major non-pharmacological treatment tool. Programmes were classified as:

- **long-term rehabilitation:** residential therapeutic communities with on average 11-month programmes;
- **short-term inpatient:** typically three-to-four-week 'Minnesota model' programmes;
- **non-residential drug-free:** a mixed bag of non-medical services planned to last on average five months; post-residential aftercare clients were excluded;
- **outpatient methadone maintenance:** on average these services expected patients to stay about 19 months. Most embraced a long-term maintenance philosophy but over a quarter aimed to move patients towards abstinence from methadone.

To collect baseline data, researchers aimed to interview clients on admission and again a week later, but only 96 of the 120 programmes yielded any interview data at all. Together they reported on 10,010 clients of whom nearly half were African-American.

Clients who completed baseline interviews and had attended one of the 76 programmes where at least 20 clients had done so, were included in the frame for the follow-up sample to be re-interviewed a year after leaving treatment (or two years after treatment entry for continuing methadone clients). The follow-up sample was deliberately biased towards clients who had also completed interviews whilst still in treatment (at one and three months). Random selection from eligible clients produced a sample of 4786 targeted for follow up. 12% had to be left out because relocation or events such as imprisonment or hospitalisation made re-contacting them too costly. Of the remainder, 3147 were located of whom 2966 were interviewed.

For clients still in treatment, interviews were also conducted at six and 12 months after treatment entry. A client in treatment for a year who had submitted a complete set of data will have been interviewed seven times over approximately two years. The first two (intake) interviews and the last (follow-up) each lasted about 90 minutes. The in-treatment interviews replicated much of the intake interviews and added further detailed questions about services received and how the client felt about the treatment.



DATOS's 'worst' methadone programmes, six out of seven clients left within 12 months, in the 'best', three quarters stayed for at least this period. Similar ranges (this time of three-month retention rates) were found in long-term residential and non-residential treatments. It wasn't that some programmes *intended* stays to be shorter; something was causing unplanned early departures and it was found in far greater quantities in some programmes than others.

First, what of the clients? Maybe some will quit early, whatever the programme. An analysis capable of disentangling the influence of client differences from programme differences found that pre-treatment client characteristics had surprisingly little impact.[37] Among those tested were age, gender, treatment history, existence of alcohol or cocaine dependence, legal constraint, HIV risk behaviour, and psychological disorders such as anti-social personality and depression. None influenced retention on methadone and only one or two modestly improved retention in long-term counselling (being a woman) or residential rehabilitation (dependence on alcohol or being older).

However, this analysis measured only static, non-motivational features – who the client was and where they had been, not (in the vernacular) where they were at. Later analyses showed that client differences *did* matter a great deal – differences at treatment entry in how committed they were to achieving change in their life through treatment.[38] This was far more influential than the client's history of drug use, criminality or previous treatments, or their age, gender, skin colour, employment, or relationships[39] – good news, because these cannot be changed; motivation can.[38 39 40]

Measured a week after admission (so possibly reflecting first impressions as well as pre-treatment motivation), commitment to change through treatment consistently had a substantial impact on early engagement with and confidence in treatment, and on the quality of the client-counsellor relationship. In turn, these helped to enrich the content of counselling sessions and vice versa. *Rather than directly*, it was through these processes that the client's commitment at treatment entry influenced retention.[38]

This indirectness is important. It implies that *even with less motivated admissions*, services can retrieve the situation if at intake and within the first few weeks they take steps to bolster the client's confidence in and commitment to treatment, to forge good client-counsellor relationships, and if they energetically address a range of client concerns and problems. Similar implications have emerged from other studies.[41 42 43]

In DATOS, three months into treatment these early experiences still significantly influenced confidence in and commitment to treatment.[40] In contrast, as with retention, whether the client was black or white, man or woman, and their age or drug use profile, made little difference. Neither was there much evidence that increasing the frequency of therapy sessions could improve commitment or retention[37 38 40] and, desirable as it may be, services which made their treatment plans known to clients did not thereby enhance commitment or confidence.[44]

However the data was sliced, rather than 'hard' facts of the kind commonly recorded, it was the soft, qualitative dimensions, to do with feelings and relationships, which held greatest sway over how long people stayed and how actively they engaged with treatment. For FINDINGS readers this will be familiar territory. Other research here[45 46 47] and in the USA[42 43 48 49 50] has also stressed the importance of quickly establishing a relationship within which the client has reason to feel they are being listened to, understood and being given helpful, positive responses to their concerns.

There is an important rider. The key DATOS analysis was limited to clients who had stayed in treatment for at least a month.[38] At intake they had nearly *all* been very committed. Presumably those less keen had already dropped out. Had they been included, we might have found that initial commitment *did* directly affect retention – that for really unmotivated clients, little can be (or at least, was) done to persuade them to stay.

A model of the treatment process

Based partly on these findings, US researcher Dwayne Simpson and his team have constructed a model which makes visible at least some of what goes on within treatment.[2 38] The model was developed from studies on methadone maintenance[51 52] but the vast DATOS dataset allowed it to be refined and tested in different settings and with respect to cocaine rather than heroin addiction. That it held up suggests that it elucidates processes common to addiction treatment.

In this model, retention is not an active ingredient in its own right, but a sign that client-treatment relationships are going well, deepening the client's engagement with treatment and improving outcomes. This process is seen as a series of phases from outreach to treatment entry, induction, engagement, recovery and post-treatment aftercare, each with its own therapeutic tasks, influences and methods for moving forward.

Before treatment gets under way, the client's commitment to change through treatment interacts with induction (probably also referral) strategies in ways which hinder or promote the formation of a therapeutic relationship. The way the programme is run and the character and skills of its counsellors also influence the degree to which clients engage. At this stage, interventions targeting engagement strengthen the basis for later progress *Ways to promote commitment* p. 16.

Within treatment, early engagement is seen as a mutually reinforcing interaction between the *quality* of the therapeutic relationship (rapport with your key worker and confidence in and commitment to the programme) and the *quantity* of opportunities for that relationship to exert an effect (number of counselling sessions attended and how often drugs, health and other issues such as employment and housing are discussed). These in turn promote early recovery, seen as another mutually reinforcing relationship between improvements in psychological well-being and compliance with treatment plans and objectives. At this stage social skills training and support from families and friends play an important part. Finally, early recovery promotes retention for long enough for improvements to be maintained on discharge.

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As the client engages and improves, so too their family and social relationships improve and reinforce their recovery, paving the way for the supportive networks (especially self-

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help groups) which will sustain the gains after treatment has ended. At this aftercare stage, there remains a role for health and social services to deal with residual health problems, prevent lapses in sexual or drug use practices which risk new problems, and to help reinsert the client into satisfactory employment, education and housing.

More modelling needed

Appealing though this model is, in DATOS it accounted for only a small part of the variation in retention.[38] In other words, what we *don't* know about how treatment facilitates retention and recovery far exceeds what we do. Like the Cycle of Change,[53] there is also a disturbing redundancy in the model which tempts a 'so what' response.

In DATOS, the client's *readiness for treatment* at intake means their commitment to treatment in general as a way to achieve their objectives.[38] This is related to later *therapeutic involvement*, partly measured by commitment to the *particular* treatment they are in, partly by whether they feel it has helped. To find these are related is already close to saying like is related to like. It comes closer when one realises that readiness was not measured *before* treatment entry, but a week to ten days later, so will partly reflect the patient's reaction to the *particular* programme.[79] The upshot is that a measure which incorporates commitment to the programme (readiness) is related to a later measure (therapeutic involvement) which also incorporates commitment to the programme.

The therapeutic involvement measure also reflects how likely the client feels they are to complete the programme. This measure is related to retention, that is, to how likely they were to *actually* complete the programme; what one thinks one will do is related to what one actually does. The same can in part be said of the relationship between therapeutic involvement – *feeling* involved in the programme – and *being* involved by attending counselling sessions and using them for their intended purpose.

This account is selective in order to make a point. The measures went beyond their overlapping features and the imperfect relationship between them shows they are not just the same things expressed in different ways at different times. And the saving grace is the time dimension – that a measure of commitment taken almost before any treatment is delivered can relate to commitment to treatment months later and to outcomes over a year down the road carries the important message that referral, induction and early treatment processes are critical.

Ways to promote commitment

We now know that the more committed the client is to the programme, the greater their confidence in its ability to help them, and the better their relationship with their key worker, the better will be retention and outcomes. As a broad sweep study, DATOS offers few specific clues to how services can foster this kind of environment; those it identified are still valuable.

In residential rehabilitation, the resident group is the prime therapeutic tool. Here a climate of absenteeism from group sessions tended to undermine confidence in and commitment to the programme. In non-residential programmes, absenteeism is less visible and had no significant impact, but an early positive response to patient needs (expressed in referral to ancillary services) did seem to foster a climate which generated confidence in the programme over the following months.[40]

> *Crack addiction is powerful but so too is human contact of the various kinds we term 'counselling' and 'therapy'*

Where non-residential programmes might go wrong is in scheduling *very* frequent counselling sessions, a feature associated with poorer retention.[37] Intuitively, this makes sense. Getting from your home to the service can be difficult, the more so the more it has to be done. One way services countered this was by directly providing transportation.[54]

Transportation was even more influential in methadone services, which in the USA typically require daily attendance. If they provided vehicles to take clients in, they were three times more likely to retain them for at least a year. In contrast, leaving clients to arrange their own transport but paying for it had no positive impact. Direct provision may be a marker of a personal service, reimbursement of a bureaucratic ethos. This is important information, because at doses typically prescribed in British methadone services, requiring near daily attendance is associated with a much higher drop out rate. If providing transportation can overcome this then the benefits of frequent supervision might be retained without losing clients.[78]

More ways to promote commitment

After nearly all the factors mentioned above had been taken out of the equation, the greater part of the variation in retention between DATOS programmes remained unexplained:[38] within the same type of service seeing the same type of clients and providing in some ways the same level of service, some programmes were still much better at holding on to their clients than others.[37 39] To peer deeper into this black box we need to move beyond DATOS to the studies summarised below. Much this work derives from the team at the Texas Christian University who constructed the model tested in DATOS and has been summarised on their web site *For more information* p. 18.

In residential services for offenders, early measures to reinforce commitment to treatment (using aids such as board games) improve therapeutic relationships and engagement with and confidence in the programme.[55 56] Using senior staff to induct residents into therapeutic communities improves retention.[57] Engagement and outcomes are better in services which clearly communicate their policies to residents yet involve them in running the programme, adhere to a distinct, structured therapeutic regime,[58] maintain a supportive social environment in which residents feel free to express themselves, and provide practical inputs such as training for employment.[59]

Work mainly in non-residential settings has shown that tailoring the therapist, the therapy, and the practical aspects (such as childcare) of the programme to the client improves retention and outcomes.[27 60 61 62] In methadone services, a diagram technique called node-link mapping depicting the client's problems and solutions to those problems aids communication, leading to improved engagement and outcomes.[51 63] It was especially useful when the kind of concentration and verbal fluency needed to discuss problems and solutions with a professional therapist did not come easily to the client. The technique has also achieved promising results in residential services for adult offenders[64] and children.[65]

In methadone maintenance, recognising and rewarding signs of engagement such as attending for counselling reinforces engagement and improves outcomes, even when rewards are relatively inexpensive.[51 66 67 68]

Attendance for aftercare can be improved by simple motivation-enhancing measures[69] and rewards; these need be nothing more than public congratulation for attending group sessions.[70]

The message from these studies and from DATOS is challenging and clear – 'poor client motivation' can no longer be accepted as a justification for poor treatment retention and outcomes. Motivation is not a given, but arises from an interaction between on the one hand the client, and on the other the people and processes involved in referral and induction into treatment. Changing those people and processes can improve motivation, engagement and outcomes. Good therapists have known this for decades – probably one reason why even in methadone maintenance, who the therapist is has a strong impact on outcomes.[71]

Can we rely on the findings?

The DATOS Cooperative comprised experienced, specialised researchers who understood the problems of running community-based studies to inform everyday

REFLECTIONS

We know it works; now let's make it work better

by **D. Dwayne Simpson**

Professor Simpson is the Director of the Institute of Behavioral Research at the Texas Christian University.

A leading DATOS researcher reflects on the study's significance

The DATOS team is grateful for the thorough and well-balanced review of our research in this issue of FINDINGS. Such a comprehensive and integrative commentary on this type of complex project (our study extends over approximately 70 publications) is rare. It offers particular value for clinical audiences and policy makers, who are less inclined to read the peer-reviewed scientific literature. Meeting the information needs of these diverse audiences has long been a challenge for treatment evaluation studies, especially those like DATOS which rely on technical sampling designs and multivariate analytic methods. We have addressed this challenge through a multi-channel dissemination strategy involving journal publications, presentations, newsletters, and summary interpretations on our web site ◤ www.datos.org.

Methods: no competition

Discussions about the merits of research methods often pit randomised clinical trials against naturalistic, field-based designs. Highly controlled designs are criticised for overly strict (unnatural) controls on treatment admissions and high sample attrition, while DATOS and similar efforts to study treatment in real-world settings are subject to criticisms about bias arising from open, self-selected admission procedures and from the accuracy of patient reports. In fact, both are needed because they ask complementary questions: without experimental assignments to test the impact of selected interventions on appropriate clients, there is no scientific guidance for therapeutic protocols; without freedom for clients to 'come and go' in a naturalistic fashion, the path of recovery and its interactions with important treatment and environmental influences cannot be explored.

Budgetary considerations, along with protection and confidentiality guidelines for human subjects, impose boundaries on both approaches. The choices made in DATOS were to use a stratified sampling plan with the widest 'geopolitical' coverage we could afford, while being guided by the concerns of US community-based treatment during project planning in the early 1990s. Those embraced questions about access and utilisation of services, treatment and drug use histories of admissions, and treatment retention and process effects on outcomes. Sub-samples were selected for follow-up using the following criteria: they would yield sufficiently large samples for appropriate statistical analyses; at least 70% could be relocated for interview; and urine and hair could be obtained to confirm self-reported drug use.

Treatment: when is more needed?

Our findings show the importance of 'high intensity' (long-term residential) services for high-severity drug users. Soon to be published are results indicating that favourable outcomes for this group are generally sustained for at least five years. But for low-severity cases, brief, low-intensity services are adequate and more cost-effective, results in line with numerous studies supporting 'brief interventions'. Improvements among early dropouts in DATOS (and DARP and TOPS) probably fall in the same category. So the real question is one of 'matching': where is the severity threshold and how intense (and long) does treatment need to be? – not new questions, but ones yet to find a satisfactory answer. Such issues are particularly poignant when co-occurring psychiatric disorders are involved.

Towards this end, treatment research in the USA appears to be focusing on elements of the therapeutic process, better monitoring of performance changes by patients, and assessing how programmes function organisationally and financially. DATOS illustrates the direction of some of this work, which also has direct implications for programmes' abilities to adopt new and more effective technologies and therapeutic philosophies. This is the focus of current research at the Texas Christian University ◤ www.ibr.tcu.edu.

New decade, new direction

Over the past 30 years, all three major US national evaluations – DARP, TOPS, and DATOS – have reported a highly consistent pattern of reduced drug use and criminality. NTORS used a similar design and found the same pattern in England. These studies have helped renew public policy decisions to support community-based treatment, but they also provided a unique scientific venue for large-scale research on programme attributes and diversity and how these relate to client recovery.

Now the USA has entered the first decade since its National Institute on Drug Abuse (NIDA) was set up during which no such study is in progress. Instead, resources have shifted to NIDA's Clinical Trials Network (◤ www.nida.nih.gov/CTN/Index.htm) composed of 14 research centres across the nation. Its mission is to determine whether interventions found to work in research settings retain their effectiveness across a broad range of community-based treatment settings and patient populations, and then to transfer the research results to physicians, providers, and their patients to improve treatment.

practice.[72] The study was about as scientifically rigorous as it could have been given its aims and the constraints of budget, scientific understanding, geography and human resources. Large samples increase confidence in the findings and permitted vigorous testing of diverse hypotheses. Bias was limited by the collection of data from many treatment agencies using independent interviewers. It is impossible to measure everything, but guided by previous research and coherent theories, DATOS measured an unusually comprehensive array of relevant variables.

Some argue that the effects of treatment can only be verified through an 'experimental' study such as a randomised controlled trial. Yet such studies too can be criticised because they tend to provide an over-optimistic estimate of effectiveness. To reduce extraneous 'noise' in the outcomes and to minimise study drop-out, they often exclude particularly difficult or problematic clients. Commonly they manipulate the amount and type of treatment and exercise quality controls rarely realised in everyday practice. They deviate further from real life by depriving the client of the opportunity to choose their treatment, often resulting in high drop out.

Instead of randomisation, DATOS deployed advanced statistical techniques to 'virtually' iron out differences in extraneous variables so that the effects of the variables they were interested in were thrown into sharper relief, allowing a rigorous yet realistic assessment of treatment process and outcome in everyday settings.

Methodological limitations

Like two sides of a coin, DATOS's strengths were inevitably also its limitations, particularly in the extent to which its findings can be generalised across the spectrum of clients and services. Its starting samples were not representative of all treatment programmes or all treatment admissions in the USA at the time.[16] Instead the aim was to represent the four major types of treatment and the types of clients they serve. Some ill-defined programmes were also left out of the frame. For a study interested in *how* treatment works, simple before and after measures were never going to be enough; several labour-intensive interviews were conducted with each client. On cost-effectiveness grounds, this meant limiting the work to major cities with established treatment

systems. On the same grounds, some small programmes were excluded as were those liable to fold during the study.

From this restricted sample, further selection was required to produce the data needed to investigate treatment processes. So comprehensive was the intake interview that it had to be done in two stages, at intake and a week to ten days later. Because they could shed little light on a treatment they had barely participated in, early drop-outs were excluded by this two-stage process.

Data for the follow-up study was collected from an even more restricted set of clients *Designing DATOS* p. 6. Of the 4786 targeted for follow-up, 2966 (62%) provided the required data. However, the targeted sample *already* excluded clients who had not completed intake interviews. Adding these to the starting sample suggests that only 46% of clients were included in the follow-up study. Adjusting this further for excluded *programmes* yielded an estimated coverage of 36% of all clients attending all 120 programmes.[73 74] DATOS researchers have contested these estimates[75] but clearly the requirements of a *process* as well as an outcome study created an unusually restricted set of programmes and clients.

In effect the data was drawn from enriched samples of both of programmes and of clients. Smaller, rural, atypical and less stable programmes were completely or partly excluded, as were early drop-outs and clients who were unresponsive, inaccessible or institutionalised at follow-up.

This enriched sampling could have affected the results in three ways. First, outcomes too may have been enriched, giving an over-optimistic impression. Secondly, we cannot say whether the treatment processes identified in this dataset would apply to all clients at all programmes. Thirdly, restricted sampling casts doubt over whether the relationships found between the various measures are valid, even for the people and programmes who *were* in the study.[73] However, similar processes and relationships emerged in the earlier studies of methadone maintenance.

Lastly, subjecting people to hours of follow-up interviews which probe deeply into their lives and feelings will almost certainly have exerted its own effects, probably augmenting outcomes.[76]

Don't expect too much

Has the investment in studies such as DATOS been worthwhile? Arguably, the answer is yes. One large, rigorous, multi-site, multi-intervention study, pulling together the best of research endeavour and expertise is probably worth hundreds of small, non-standard, single-site studies. Even negative findings can be valuable. It is important, for example, that it matters relatively little who the client is and what treatments they have been through, and that though motivation at intake is a factor in later outcomes, its influence is far from decisive. This gives us hope that what seems a poor prognosis can be turned round.

With DATOS, arguments about the relative effectiveness of major treatment modalities have further abated. Delivered with sufficient quality, they are *all* effective. They can even loosen the powerful grip of crack addiction in an era when treatment was being stripped to the basics. Human contact of the various kinds we term 'counselling' and 'therapy' are *also* powerful, especially when both sides want and expect them to be.

How far have these studies advanced knowledge of the mechanisms of treatment and of how to optimise outcomes? There are helpful pointers and the products of the research – treatment manuals and assessment and monitoring tools – are concrete aids to improving the consistency and quality of treatment. In particular, the team at the Texas Christian University which led the process studies in DATOS have made the most of what they found here and in earlier work. The practice lessons have been systematised and packaged and made freely available via their web site. Taking on their responsibility not just to study treatment but to improve it, they have also actively engaged with practitioners and policymakers.

But overall the practice lessons from the grand studies have not matched up to the investment. To have expected otherwise would probably have been unrealistic. Any attempt to explain immensely complex human behaviours will inevitably fall short. We cannot adequately control all the influential variables, and yet at the same time deliver findings relevant to everyday practice.

Arguably, too, it is not so much the scientific and service-level impact which matters most, but the impact on politicians and administrators faced with investment decisions. Like NTORS, DATOS robs the sceptics of the 'It's a waste of money' argument. Importantly, it does so for dependence on crack cocaine, a problem for which that argument held greatest credibility. The message is being heard here and in the USA as criminal justice officials grasp treatment as their most effective weapon against drugs and administrations begin to match this realisation with resources.

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For more information

DATOS has reported in two major chunks. Eight papers in the December 1997 issue of the *Psychology of Addictive Behaviors* reported one-year follow up outcomes and identified the importance of retention. A second set published in 1999 in volume 57 number 2 of *Drug and Alcohol Dependence* explored treatment processes.

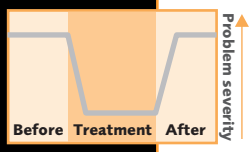
DATOS has its own web site at www.datos.org with summaries and *PowerPoint* presentations of the findings. As well as the adult study featured in this article, there are references to the companion study of the treatment of adolescents. Keep an eye on the site for five-year follow up results.

The Institute of Behavioral Research at the Texas Christian University collaborated in the research and developed the model of treatment tested in DATOS. Among the wealth of information available from its web site (www.ibr.tcu.edu) are graphic presentations of their model and of intervention mechanisms and a comprehensive set of instruments for measuring client progress. The core model and its implications for treatment have been summarised in: Simpson D.D. "Modeling treatment process and outcomes." *Addiction*: 2001, 96, p. 207–211.

Copies of cited papers can be obtained from DrugScope – phone 020 7928 1211.

OFFCUTS

A remarkable confluence of views from leading US researchers writing in *Addiction* has profound implications for how addiction treatment is delivered and how it is evaluated. Both argue that if, for whatever reason, addiction *is* a 'chronic' condition (because the individual and/or the environment is difficult to change), then instead of short, intensive treatments, care should be spread more thinly and much more extensively in the form of long-term monitoring and support. In this "continuing care" perspective, bounce-back of symptoms once treatment ends is a sign that it worked, just as recurrence of high blood pressure after stopping medication is a sign that the pills were effective. Traditionally, the opposite has been the case: improvements during addiction treatment have been discounted and post-treatment relapse has been seen as a sign that the treatment failed.



Is this evidence that the treatment worked – or that it failed?

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