

Residential versus non-residential treatment

These notes were originally compiled as background for a Nugget published in 2002. They are not nor are they intended to be a comprehensive or systematic review.

1 Relevant reviews and meta-analyses

1.1 Of the attempts to assess the cost-effectiveness of alcohol treatment, the latest and most relevant to treatment seeking populations found modalities generally provided on a non-residential basis to be the most cost-effective.¹

1.2 In 1996 an analysis of research to date on alcohol treatments concluded that inpatient treatment confers only modest additional benefits which within six months fade into statistical insignificance.² In no case was fully inpatient treatment superior to outpatient if that had been preceded by a period of inpatient detoxification. Five studies had significant setting effects favouring inpatient treatment, two found day hospital to be significantly more effective than inpatient treatment, and seven yielded no significant differences on drinking-related outcome variables. In all but one instance in which a significant effect emerged, patients in the 'superior' setting received more intensive treatment and patients were not preselected for their willingness to accept random assignment to treatment in either setting. Studies finding significant setting effects also conducted more treatment contrasts (18.6 vs. 4.9), on average, and had a mean statistical power level of 0.71 (median 0.79) to detect a medium-sized effect, whereas studies with no significant findings had an average power level of 0.55 (median 0.57). When inpatient treatment was found to be more effective, outpatients did not receive a respite in the form of inpatient detoxification and the studies were slightly less likely to have social stability inclusion criteria and to use random assignment to treatment settings. The authors concluded that the setting of treatment for alcohol abuse was very distal variable in relation to patients' post-treatment functioning. Other treatment variables, such as the modality, amount and duration of treatment, as well as therapist characteristics, should have a more direct impact. Treatment providers and policymakers were recommended to: (a) encourage outpatient treatment for most individuals with sufficient social resources and no serious medical/psychiatric impairment; (b) promote the development and availability of less costly nonmedical residential and intensive outpatient treatment options; and retain inpatient treatment options for individuals with serious medical/psychiatric conditions and residential options for those with few social resources and/or environments that are not conducive to recovery.

After taking into account effect sizes of the reviewed studies, the authors slightly revised their conclusions. The meta-analysis indicated a small positive effect of inpatient treatment, but only in the first three months following treatment. Given the inclusion and exclusion criteria applied in the studies, and the low participation rates in some of them, the studies reviewed indicated the relative effectiveness of different treatment settings mainly among patients with no severe medical/psychiatric impairment who have at least a modest level of social resources. Inpatient treatment is needed to treat serious complications of withdrawal and other severe medical complications of alcohol abuse. For certain patients, residential settings may be necessary to attract them to treatment, and/or to provide a place to live and a sober and supportive environment, as well as a respite in which to nurture personal resources and motivation for lifestyle changes.

1.3 A combined narrative/meta-analytic review of the results of a number of well-conducted randomized controlled clinical trials found no evidence that usual treatment delivered in an in-patient or residential setting is superior to treatment delivered on an out-patient or

non-residential basis for the treatment of alcohol dependence.³ Nor was there any evidence to support the view that in-patient/residential treatment is superior to a day patient (partial hospitalisation) intervention, or that longer in-patient treatment is superior to shorter in-patient treatment. The review suggested that in-patient/residential care should not be considered as a standard setting for intervention for alcohol dependence. However, the authors cautioned that their findings did not contradict the view that in-patient/residential care remains suitable for specific sub-populations of alcohol dependent individuals, such as those requiring closely supervised detoxification, respite care, or who (because of extreme severity of dependence on alcohol) may require an intense form of supervised intervention.

The above review did not stress the important qualification that studies which randomise patients to residential and non-residential options are obliged to do so only for those who in practice can attend and are prepared to be randomised to either. The advantages of residential care are likely to be most apparent among the homeless and those whose extreme vulnerability makes outpatient care an unsafe option or those with very strong preferences. For example, one of the cited studies excluded 'skid row' alcoholics and patients with a preference for one setting or the other (of the latter, very few in this case), and its outpatient sample scored nearly 3 out of 4 on a scale of social stability.⁴ In this and in other studies the intensity of follow-up contact – partly dictated by research requirements – would have helped obscure differences in the impact of the initial treatment episode. In another study all the male subjects had female partners and what in the review is portrayed as a six-week inpatient stay was in fact a mix of outpatient and inpatient treatment, the latter reserved for the minority not doing well as outpatients.⁵

Summary of remaining sections

The assumption that treatment retention and completion would be linked to term short and long-term outcomes is reasonable^{6 7 8} but needs to be tested in a follow-up study. Residential settings seem to help extricate residents from a particularly damaging environment^{9 10} but the added benefits can fade after discharge back into the community.^{11 12 13}

In one US study suicide risk emerged as the key indicator for short-term residential as opposed to outpatient treatment.¹⁴ Though this finding is not universal,¹⁵ in other studies clients with relatively severe psychiatric problems¹⁶ (in some combined with severe employment or family problems^{17 18}) have been found to profit most from inpatient programmes.

These and other studies support the general contention¹⁹ that more severely dependent^{20 21} and problematic clients^{22 23 24} differentially benefit from residential care. Where studies have found no added benefit for more severe cases this may have been because the service's caseload was limited in severity²⁵ or because the study set severity limits so that all the subjects could safely be sent to either residential or non-residential care.^{26 27 28 29 30 31} Other attributes found in some studies to favour residential care include low cognitive functioning,³² homelessness,³³ low social support,³⁴ and poor employment prospects.³⁵ Variability in matching attributes is to be expected. What matters in any particular situation will depend on the range of problems in the caseload and the alternative treatments on offer. For example, if very severe cases are admitted beyond the capacity of any of the options, or if the caseload is unproblematic enough to do well whatever the treatment, then none will seem preferable.³⁷ Similarly, where these are available, intensive non-residential options (but not routine outpatient care) may almost match residential settings even for severe cases.³⁸

2 Other randomised trials of residential care v non residential care for substance users

Where residential rehabilitation is compared to a similar programme partially or completely provided on a non-residential basis, studies usually find little difference in outcomes.³⁹

2.1 In Boston a study involved mainly primary alcohol dependents who formed 73% of the 55 patients who provided follow up data up to 18 months after discharge from a detoxification and short-term rehabilitation programme run by a hospital psychiatric unit.⁴⁰ Treatment was delivered by medical and other professionals and included group therapy but this was clearly a different environment to the therapeutic community of the featured study. Patients were randomised to either a traditional inpatient regime averaging 25 days or to inpatient detoxification averaging 10 days followed by a on average 12 days of intensive day programming which in most respects duplicated the inpatient regime. The costs of the mixed inpatient and outpatient regime were less than half that of the traditional regime but only at one point and on one measure (alcohol composite six months favouring traditional regime) were outcomes assessed by composite scores on the Addiction Severity Index statistically different. Since 28 comparisons were made this might have occurred purely by chance. Client satisfaction too did not differ. As in the featured study only a minority of the unit's substance abuser intake (74 from 221) were judged suitable for either option with psychiatric or medical conditions requiring hospitalisation accounting for 30% of the remainder and homelessness 13%. However, at this unit substance abuse admissions were also typically mentally ill. Of the 74 considered eligible by the research team six were not thought suitable for non-residential care by their doctors and another 13 refused to be randomised leaving 55 patients in the sample, a quarter of the substance abuse intake. Responders at follow up were biased towards the patients who had the least severe alcohol and other problems, raising a question mark over whether non-residential care really had worked as well for the more severe patients included in the baseline sample. Commenting on other similar studies, the authors suggest that about a quarter of patients eligible for inpatient substance abuse care are appropriate for and would agree to day treatment. Diverting this minority to day care is worthwhile it was argued, because they would otherwise receive costly and unnecessary inpatient care, occupying beds which could have been freed for patients for whom inpatient care was essential or would create extra benefit.

2.2 In Philadelphia, 111 male cocaine dependent armed services veterans (mainly black, lower class, single and smoking cocaine) were randomly allocated either to 28 days of day hospital treatment or 28 days in the agency's inpatient unit.^{41 42} The treatments in both were similar as was the staffing. They were both relatively intensive 12-step based group therapies led by psychiatrists with an emphasis on attending 12-step support groups during and after treatment. The inpatient unit scheduled 48 hours therapy per week compared to 27 hours in the day hospital. Just over a third of all admissions were deemed suitable for day hospital treatment and eligible for the study. Admissions with severe medical or psychiatric conditions or other illegal substance abuse (except cannabis) or without stable residence were excluded, but in this population they accounted for few of the excluded subjects. 30% of those asked to participate refused because of a strong preference for one of the treatment as opposed to the other. On the measured variables (including the ASI) patients in the study differed little from normally admitted day hospital patients. Over 90% of patients were re-interviewed to establish their drug use in the six months after the scheduled end of treatment. Nearly 90% of inpatients completed treatment compared to 54% of day hospital patients. More of the latter took up aftercare (45% v 31%) or further treatment (37% v 26%), though these differences were not statistically significant. Outcomes differed little. About half of both groups had remained abstinent from cocaine after leaving treatment a picture broadly confirmed by urinalysis. Inpatient treatment cost about three times as much per patient and

per abstinent patient. However, these calculations exclude the costs of any follow up treatment.

2.3 A later study at the Philadelphia service investigated in study 2.2 tested whether the equivalence of inpatient and outpatient treatment held up for self-selected patients.⁴³ 115 male cocaine-abusing patients were randomly assigned to 28 days of 12-step based day-hospital or inpatient rehabilitation. Another 56 self-selected the same treatments. Though retention was much better in the inpatient regime (nearly 9 in 10 randomised patients completed compared to just over half the outpatients), as measured by the Addiction Severity Index, neither cocaine, alcohol use nor psychosocial outcomes over the 12-month follow-up period were better after residential care whether or not the patients had selected this option. Patients included in the analysis were selected from 308 cocaine dependent admissions. Psychiatric problems and unstable accommodation were among the major reasons for excluding subjects. Patients who accepted randomisation had used cocaine on just less than half the previous 30 days.

2.4 In a US study the residential phase of a year-long programme was cut from ten to six months without deterioration in outcomes; perhaps significantly, treatment completion was also unaffected and was strongly related to outcomes.⁴⁴ This study compared treatment outcomes of substance abusers with and without antisocial personality disorder randomly assigned to two therapeutic communities. Though both were scheduled to run for a year, in one the residential phase lasted 10 months followed by two months of aftercare and in the other the split was six months and six months. Self-reports and objective measures of criminal activity and substance abuse were collected at pre- and post-treatment interviews conducted an average of 19 months after discharge. 380 out of the 412 patients randomised were successfully reinterviewed. This paper focuses on the 338 who completed a psychiatric diagnostic test. Most were under criminal justice supervision and on average each had been arrested several times before the current arrest. Cocaine was the major problem drug with or without concurrent heroin abuse. Personality disorder clients were as likely to complete treatment as other clients, and they exhibited the same patterns of reduced drug use and recidivism as the other clients. Treatment programme attended was unrelated to completion rates or outcomes and there was no interaction effect indicating that patients with personality disorder particularly benefited from the longer inpatient stay. An earlier paper probably not confined psychiatric diagnostic test completers had reported that at the same facilities the amount of time spent in inpatient vs. outpatient phases did not seem to be a critical factor, except for the impact on employment status. Rather what seemed important was completing a treatment programme composed of both modalities.⁴⁵

2.5 A US study found that dependent crack users with no pressing reasons to enter residential as opposed to non-residential rehabilitation do as well in either.⁴⁶

In 1990 a residential service in San Francisco introduced a parallel day programme running every weekday for 12 hours and for shorter periods at weekends. Both were based on therapeutic community principles and scheduled to run for a year followed by aftercare, though clients who stayed at least six months were seen as having completed. Nearly three-quarters of the agency's intake were considered ineligible for random allocation (especially to non-residential care), mainly because of a court order or homelessness. Of those randomised about half dropped out within two weeks, before the baseline research interview; the residential option seemed better at retaining clients with high levels of psychiatric disturbance or low levels of social support.

The 261 remaining clients were included in the analysis; two-thirds were primarily abusing crack cocaine. About a third stayed at least six months in treatment. Over 90% were re-

interviewed up to 18 months after admission. During the first six months 43% of day clients relapsed (drug use at least twice a week) compared to 35% of residential. Once other variables had been taken into account, only during this period was relapse significantly less likely in residential clients, perhaps because they had all been partially or completely protected by the residential environment. Over the next year the benefits from residential care dissipated whilst relapse rates among day clients remained steady. 12–18 months after entering treatment about half of both groups had remained abstinent and about a quarter had for a period relapsed to using at least four times a week.

An earlier report had also found the two settings resulted in similar improvements in drug or alcohol problems and in social or psychological adjustment. Exceptions favoured residential care and included greater social support, less social conflict and greater reduction in psychiatric symptoms. However, the last two may have been partly because residential clients had more room for improvement.

The study is one of the few to have randomised alcohol or drug dependent clients to residential rehabilitation or to a similar non-residential programme. Previous studies also found little difference in outcomes. However, such studies must select patients who can safely and practically be sent to either option and who are willing to leave the choice to chance. Any advantages of residential care are likely to be most apparent among homeless clients, those whose vulnerability makes outpatient care unsafe, or those with strong preferences, all excluded or self-excluded from the studies. Non-randomised studies able to include a greater range of psychosocial severity have found that for the most problematic clients residential care does confer extra benefits. Sometimes these are contingent on staying for a substantial part of the scheduled treatment and do not persist beyond a few months after leaving.

Other studies have replaced the later phases of residential care with a non-residential alternative or cut stays without noticeable loss of benefit, perhaps because completion rates have been maintained or improved. There are limits to how far this can go depending on the programme's objectives. Long-term rehabilitation is often found to require at least three months.

This was a study of the minority of the agency's caseload considered suitable for residential or non-residential care and who were sufficiently prepared to accept either that they consented to randomisation and stayed for at least two weeks. There remain many whose housing conditions dictate a housing component to their care, others whose employment and family commitments preclude a move into a residential home, and others too ill, suicidal, vulnerable or criminal to remain at home or with multiple severe disadvantages. Beyond these clear allocation criteria, neither client preference nor drug problem severity are much of a guide and intensive day programmes have the potential to create equal benefit for less money

3 Randomised trials of residential care v non residential care for alcohol dependence

Only studies not incorporated in the review cited above in paragraph 1.3⁴⁷ are listed here.

3.1 A US study similar to the study in paragraph 2.3 above compared outcomes for alcoholic patients randomly assigned to day hospital or inpatient rehabilitation with patients who self-selected these settings.⁴⁸ Patients who self-selected setting did not have better outcomes than those who were randomly assigned, and there were no significant differences between day hospital patients and inpatients on any of the 11 outcome measures. Significant interactions between treatment setting and assignment were found with only two outcome measures.

4 Other studies relevant to the benefits of residential care v non residential care for substance users

4.1. All 17,385 clients admitted to alcohol or drug treatment programmes in Ohio in 1993–1995 (except methadone maintenance) were asked to participate in a follow-up study. Two thirds agreed of whom a quarter were interviewed by researchers at both six months and one year after entering treatment. Results from these 2941 clients formed the basis for a cost-effectiveness analysis.⁴⁹ Four types of programme were benchmarked against simple detoxification. At issue was how much they cost for each *extra* year of abstinence they achieved. Though different, the client profiles of the service categories overlapped sufficiently for their relative performance to be assessed for low severity clients (using main drug once a week or less), high severity clients (using at least twice a day), and mid-severity clients (in between). Statistical adjustments were made to further even out remaining differences among the clients such as age, ethnicity, gender, frequency of use, depressive symptoms, and employment. Records of therapeutic inputs for each client were used to calculate the costs of achieving these improvements.

For the most severe clients, short-term (typically 28 days) residential rehabilitation was the most cost-effective option. Not only did it maximise the chances of a client remaining abstinent (to 57% in the first year), but it did so at the lowest cost – \$19,000 for each additional year of abstinence gained over and above detoxification. Not far behind were intensive non-residential programmes delivering at least three hours of therapy three times a week, typically over 15 days. Less intensive routine non-residential programmes failed to achieve sufficient improvements while the improvements gained by longer term residential rehabilitation were outweighed by its cost – \$55,000 for each extra year of abstinence.

For mid-severity clients, routine non-residential treatment was most cost-effective. It cost even less than detoxification yet achieved over 10% more years of abstinence at a cost of \$14,000 for each additional year. For these clients, short-term residential treatment was the *least* cost-effective option, costing over \$73,000 for each additional year of abstinence.

However, adjustments for client mix cannot fully compensate for the fact that just 17% of the client pool made it through to the final analysis and that they differed in some ways from the clients who did not. This degree of selection and attrition reduces confidence both in the findings and in their generalisability to the treatment population in Ohio and beyond.⁵⁰ In Britain⁵¹ and in the USA,⁵² clients who secure public funding for long-term residential programmes can be expected to have particularly difficult or extensive problems. Even after the adjustments made in this study, it would be unsafe to assume that these clients could have been treated as well and at lower cost in less expensive modalities. Comparisons between more cost-similar short-term and non-residential modalities may be more meaningful. In the US context the greater abstinence rate among heavily using clients after 28-day inpatient treatment may reflect the close links between many such programmes and NA/AA-based aftercare, found in this study and in others to be an important relapse prevention support.^{53 54} Probably because the study was limited to public programmes, the client profile was broadly similar to the typical UK client – poor, unemployed and male. The strict outcome criterion (abstinence for a year) may have discriminated against services for which lasting abstinence is not the primary objective and fails to credit services which achieve less far-reaching changes.

4.2 Other similar studies have not attempted to adjust for client mix to facilitate comparison between modalities.⁵⁵ The closest parallel researched publicly funded drug and alcohol

treatment in California in the early '90s.⁵⁶ As in the Ohio study, it found treatment of all kinds more than paid for itself in terms of the benefits to law-abiding citizens, mainly due to reduced crime, and the savings ratio it reported were similar to those found in Ohio. Though they cut drug use the least, in California outpatient services and methadone detoxification produced the greatest per \$ benefits of the modalities studied.

4.3 DATOS, a naturalistic study of drug treatment in the USA, found that even the least promising of cocaine dependents can dramatically cut drug use and crime though it often takes long-term residential care to achieve this transformation. Less severely problematic clients generally do just as well in non-residential settings.

The entire sample consisted of 2966 clients who completed intake interviews and were interviewed one year after leaving treatment (two years after treatment entry for continuing methadone clients).⁵⁷ Of these, 1648 were cocaine dependent or daily cocaine users seen at services other than those providing methadone treatment. 1605 who provided sufficient data were included in the analyses reported below. The programmes they had attended were mainly abstinence-oriented. They were classified as:

- long-term rehabilitation – residential therapeutic communities with on average 11-month programmes;
- short-term inpatient – typically three to four week, 12-step based ‘Minnesota model’ residential programmes
- non-residential drug-free – a mixed bag of non-medical services providing counselling and other therapies planned to last on average five months; post-residential aftercare clients were excluded.⁵⁸

Though on entry therapeutic community clients had the most extensive problems, after treatment only 24% were still regular cocaine users used (ie, at least weekly), statistically indistinguishable from the other two modalities. This was in large part due to the clients who stayed at least three months; over 40% of those who left before this threshold went on to use cocaine weekly. A measure of pre-treatment problem severity combined polydrug and alcohol use, crime, unemployment, low social support, depression or anxiety, and lack of medical insurance. All except depression or anxiety were more common on long-term residential clients and all except alcohol dependence differed across the three modalities. The advantages of at least three months of residential care were clearest among clients with the greatest problems at treatment entry. After treatment 15% used cocaine weekly compared to nearly 30% of those who stayed for the same time in non-residential programmes and nearly 40% of those who stayed at least three weeks in inpatient programmes. However, non-residential programmes seem to have been the most cost-effective option for clients without extensive complicating factors such as criminality, multiple dependency and low social support.⁵⁹ The relative cost-benefits of residential therapeutic communities versus long-term non-residential counselling services was also analysed.⁶⁰ Based on reductions in crime-related costs during treatment and in the following year compared to the year before treatment, the honours were roughly even. This was because though they cost nearly eight times more, the therapeutic communities also gained greater benefits. They took in far more criminally active clients and achieved greater reductions (roughly 80% versus 40%) in the costs of crime. The net result was that both types of programmes paid for themselves roughly twice over. As in the featured study, the residential rehabilitation units in DATOS scheduled what for the UK would be unusually long stays and most of the programmes emphasised group processes and abstinence.⁶¹ Clients too were different: a quarter of those attending

Minnesota model programmes and over half the remainder were being processed through the criminal justice system, nearly 6 in 10 were black, and by definition all were cocaine users/addicts, the dominant drug use pattern seen at US services at the time. For all these reasons generalisability to the UK is limited. Though their performance would probably have remained impressive, scheduling interviews one year after treatment had *ended* favoured the long-term residential rehabilitation programmes relative to the shorter modalities as on average their clients had several more months during which to recover from whatever precipitated treatment entry.⁶²

4.4 In Britain the National Treatment Outcome Research Study (NTORS) has paralleled the work of DATOS in the USA. NTORS monitors the progress of 1075 drug users who entered 54 drug treatment or rehabilitation services in England in 1995. Among them were 15 residential rehabilitation programmes (a fifth of the total) and eight hospital inpatient units offering detoxification and relapse prevention (half the total).⁶³ Intake interviews by service staff revealed that three-quarters of the residential/inpatient clients had used heroin in the past three months and that typically they were highly dependent on the drug. However, polydrug use was the norm: over two-thirds had used stimulants, and 16% were daily drinkers. Half had committed acquisitive crimes and a third had sold drugs.⁶⁴ A year later 275 of the clients (over 70% from residential rehabilitation units) were interviewed by researchers; another 11 had died. Nearly all had left their original treatment but 60% had received further treatment. Compared to under 3% at intake, after one year 37% had achieved abstinence (the usual treatment goal) from opiate-type drugs, stimulants and benzodiazepines over the past three months, and 19% were drinking excessively compared to 33% at intake. Reductions in the proportion using each type of drug were substantial and statistically significant; stimulant use in particular fell from 71% to 32%, including a halving in the numbers using crack. Also roughly halved were the proportions who had committed drug dealing or acquisitive crimes in the past three months including a cut from 10% to 3% in robbery. At 33% the proportion injecting had nearly been halved and 7% had shared injecting equipment compared to 19% at intake.

Residential services dealt with clients in some ways more problematic than those attending methadone programmes. Rehabilitation clients in particular were more likely to be heavy drinkers, to use stimulants regularly,⁶⁵ and to have consumed far greater quantities of these drugs.⁶⁶ They were also more likely to have shared injecting equipment and to have committed and been arrested for more serious crimes.⁶⁷ Nevertheless, at one year outcomes were comparable to those of methadone programmes. For each individual treated in residential settings 11 fewer acquisitive crimes were committed, for methadone programmes 22 fewer crimes,⁶⁸ but this masks greater reductions after residential care in the crimes of greatest public concern. For robbery the 'savings' for society were 0.51 for each residential client and 0.12 for each methadone client, for burglary 1.14 and 0.84.⁶⁹ Also at one year 12% fewer residential clients were at risk of spreading blood-borne diseases by sharing injecting equipment compared to 8% fewer methadone clients.⁷⁰ Improvements at one year are known to have persisted through to two years after treatment entry, with the possible exception of some reversion to heavy drinking.⁷¹

But the same findings can also be described from a 'half empty' perspective. Despite expensive residential treatment and follow on help, nearly two-thirds of the clients were still illicitly using drugs of dependence 9-12 months later, two-thirds of those who had been using heroin continued to do so, and over a quarter continued to perpetrate acquisitive crimes. By most residential services' own yardstick (abstinence), failure was nearly twice as common as

success.⁷² It is also likely that admission and funding procedures will have weeded out the less motivated and stable clients. Room for improvement is suggested by the fact that different services produced very different outcomes. At one year clients of the 'best' 25% of residential services had cut their heroin use by two thirds, while clients of the 'worst' 25% had on average not cut their heroin use at all.⁷³ Retention rates also varied with (except for the short-term rehabilitation programmes) most projects failing to keep clients for the critical times identified in the study. Retention rates in US rehabilitation programmes also vary in ways not yet satisfactorily accounted for by differences in the clients⁷⁴ or in the programmes.⁷⁵

The only possible comparison in NTORS is between residential care and methadone programmes, treatments which differ greatly not just in setting but also in content. This leaves open the question whether therapies normally delivered in a residential setting might just as effectively be delivered on a non-residential basis. At intake over three-quarters of residential clients were in stable accommodation so presumably purely in physical terms did not require housing.⁷⁶

As the researchers cautioned, while the findings can be used to compare outcomes and cost-savings from the different modalities, they cannot be used to answer the question "Which is the better treatment?" because "The self-selection and other processes that lead clients to start a treatment episode in one of the four modalities are largely unknown and are likely to be complex. During their drug careers, many of the clients will receive treatment in more than one of the modalities."⁷⁷

4.5. Two reports have attempted to elucidate what type of patients benefited most from inpatient treatment in Minnesota based on the state's routine outcomes monitoring system. Outcomes were compared from outpatient (median length 6.5 weeks, average intensity 12 hours per week) and short (average three weeks) inpatient services.^{78 79} Assessment interview and weekly treatment services records were completed for 4,953 adults and 387 adolescents who consented to participate in the outcomes study. Six-month follow-up interviews were completed for 64% of the adults and 84% of the adolescents. Alcohol was the primary drug problem for over three-quarters of the adults but among adolescents it was cannabis.

The inpatient services tended to take in patients with more severe drug and psychosocial problems than the outpatient services. Once these differences had been taken into account, adult post-treatment abstinence was unrelated to treatment setting and remained so even when outpatient programmes which offered supportive housing were eliminated.

However, one of the studies found support for the use of inpatient treatment for adult patients who ranked in the most severe third⁸⁰ in at least four out of five dimensions (alcohol use, drug use, psychological distress, social isolation, and a history of unemployment).⁸¹ Though ranking this high on just one of these dimensions was associated with significantly better completion rates in inpatient treatment, not until four or five were combined did this completion advantage translate into a significantly greater likelihood of abstinence six months after treatment had ended (58% inpatient, 41% outpatient). These patients constituted just 14% of the inpatient caseload. In the other study the same trend was found for patients ranking in the most severe quarter⁸² on at least three dimensions (a quarter of the inpatient caseload) but did not reach statistical significance.⁸³

Of all the markers of problem severity, recent suicidal ideation seemed to be the most important. Once these patients were excluded even patients ranking in the top quarter on all

five severity dimensions did no better in terms of abstinence outcomes after inpatient treatment. In contrast, for patients with suicidal ideation, once other relevant differences (including drug and psychosocial problems) had been taken into account, the odds of abstinence were 60% better (odds ratio 1.6) after inpatient treatment.⁸⁴ When treatment completion was also taken into account, suicidal ideation remained an important factor, the odds of abstinence being 85% better (odds ratio 1.85) after inpatient treatment.⁸⁵ In other words, regardless of whether they completed treatment and how severe their other problems were, the 16% of patients who were suicidal were nearly twice as likely to be abstinent six months later if they had spent about three weeks in hospital as opposed to about 6–7 weeks being treated as outpatients. Using suicidal ideation as a main criterion would have meant many fewer patients being diverted to inpatient programmes. However, for these short programmes practical issues such as housing, childcare and employment are less of a determinant of placement and psychological and severity dimensions such as those investigated in Minnesota are more likely to be prominent.

4.6 A US study compared outcomes at two residential drug-free treatment programmes in New England.⁸⁶ The first was a traditional therapeutic community and the second one modified to incorporate relapse prevention and health education components. It was not feasible to allocate clients randomly to one or the other programme but within each programme, clients were before admission allocated randomly to a shorter or longer version. At the traditional therapeutic community, clients were assigned to 6- or 12-month programmes and at the modified program to 3- or 6-month programmes. The final sample of 628 represents 85% of all clients admitted, 91% of all eligible clients, and 95% of those asked to participate. Most had been using heroin or cocaine. Interviews two to six months following programme exit assessed abstinence for drugs other than alcohol and other variables. Changes in psychosocial status, return to drug use, and changes in HIV-risk behaviours were unrelated to programme length (and also not related to type of programme). This might be because completion rates were better in the shorter programmes: using program staff criteria, rates were 56% in the 3-month programme, 30–33% in the two 6-month programmes, and 21% in the 12-month programme.

4.7 A study of a US Navy inpatient alcohol treatment programmes sought to determine whether a 4-week programme was as effective as a 6-week programme.⁸⁷ 2,823 active-duty alcohol-dependent inpatients (2,685 men, 138 women) at 12 Navy treatment facilities participated in the evaluation. All facilities conducted a 6-week programme until data had been collected for 1,380 participants; they then switched to a 4-week programme (1,443 participants). In general, the facilities reduced the time devoted to any given treatment component by about one-third to achieve their 4-week programmes. Background information and clinical profile were obtained when patients entered treatment; 1-year outcome data (alcohol use, behaviour problems, job performance, quality of life) were obtained from patients, work supervisors and aftercare advisers. Once the effects of other predictors had been taken into account, the single best predictor of success at 1 year was months of aftercare attendance. Once other prognostic variables had been controlled for statistically including successful completion of the rehabilitation programme (but in this environment 90% or more completed treatment), programme duration failed to have a significant impact on any of the seven outcomes measured. This was true not only for the primary dependent variable – a 4-versus 6-week treatment programme – but was also true when length of stay was rendered as the actual number of days in treatment, regardless of programme assignment. Nor was there

any indication that certain types of patients required the longer stay. Also 78% in both the 4- and 6-week samples considered their programme's length to have been appropriate and about 13% thought it had not been long enough. However, the patients had a relatively good prognosis (eg, young, fully employed, first-time programme enrollees). Compared with other patient cohorts, they also scored significantly lower on clinical measures of both alcoholism and psychiatric symptomatology.

The key to understanding why duration was completely nonsignificant in this study may lie with the one variable that accounted for virtually all of the explained variance in outcomes: namely, aftercare attendance. Aftercare meetings serve to extend the principles of AA and the supportive treatment environment into the patient's ordinary life. Viewed in this light, a 2-week difference in formal treatment time, at least for these Navy participants, may have had negligible impact on outcomes at 1 year, relative to regular attendance at aftercare meetings.

4.8 A British study similar to that reported in paragraph 4.7 was conducted at an independent hospital's addiction unit. The aim was to assess whether outcomes worsened after a five-week inpatient regimen was changed to a two-week regimen consisting of an inpatient detoxification period of four to five days followed by treatment as a day patient.⁸⁸ Both regimens were based on cognitive-behavioural techniques.⁸⁹ Effectiveness was assessed by comparing intake measures with measures at six and twelve months after treatment discharge taken by researchers 'blind' to the subject's treatment history. 112 consecutively admitted alcohol dependent patients underwent the five-week programme, the next 100 were treated in the shorter programme. Data from 75 patients from each regime matched on age, sex and severity of dependence were used to compare the treatments. Internationally accepted outcome measures collected by interviewing patients were confirmed by blood tests and reports from relatives and friends.

The generally good outcomes were not affected by the new regimen but the average length of stay and time in the treatment unit were significantly reduced, translating into a cost saving of a third and improved cost-effectiveness. At 76% versus 55%, programme completion (either staying the course or approved discharge) in the shorter regime was much higher than in the longer, in which patients stayed on average for just 19 out of the scheduled 35 days. Attendance at fewer aftercare sessions also meant this element was considerably cheaper in the two-week regime and could not have compensated for the shorter initial treatment.⁹⁰

In many ways this study was an ideal test of the added value of inpatient treatment, giving it a fair chance to show its worth but eliminating confounding factors. Perhaps most importantly, the type and intensity of treatments in the two regimes was planned to be the same, leaving the major difference the time spent as an inpatient. Variation between patients should have been minimised by the use of consecutive referrals to a single centre and individual matching without having to intervene through random allocation. Resultant sample sizes were large enough to detect modest effects, the use of several outcome criteria gave these more chance to emerge, follow up rates were high, and outcomes were measured over an acceptably long period.⁹¹

Use of time from discharge as an anchor point for follow up rather than treatment entry would have tended to favour the longer inpatient option by giving more time for natural recovery⁹² and shorter time for the impact of treatment to decay. However, the benefits (if any) of inpatient treatment may have been obscured by the fact that patients tended to be less dependent with more social resources than in other settings, with less than 1 in 12

unemployed and nearly two-thirds married and living with their spouse. Also the shorter regime retained an important inpatient element during which three-quarters of the treatment was delivered. In this study replacing inpatient with outpatient care (and shortening the programme) *improved* completion rates, probably because most of the patients had commitments which made five weeks away from home and work problematic. This factor is likely to have helped boost the outpatient outcomes up to those of the longer treatment as (independent of the length of the programme) completion⁹³ and treatment progress⁹⁴ predict good outcomes. In most studies *inpatient* retention is better, another reason why the results of this study might not generalise to more problematic (unemployed, homeless, mentally ill) populations.

4.9 Although patients went through normal selection procedures, the 93 allocated to four weeks inpatient alcohol treatment at a private facility in New Jersey were similar to the 80 allocated to a six-week outpatient programme on measures of alcohol, drug, psychiatric and social severity.⁹⁵ Few exclusion criteria limited the range of problem severity in the caseload, but the pay-for-treatment setting seems to have meant that relatively few patients (especially outpatients) were of low socioeconomic status and all but a few were white.

The study aimed to test whether patients with more severe alcohol or psychiatric problems profited most from inpatient treatment. The treatments differed greatly in intensity (inpatient was more intense) and length as well as setting but both were AA-based. The main outcome measure was a relapse to significant drinking defined as three or more drinks in a sitting, a return to detoxification or inpatient alcohol treatment, or imprisonment for alcohol-related behaviour. In the period shortly after discharge significantly more former outpatients relapsed (about half) than inpatients (about a quarter). By 12 months after treatment entry the gap had narrowed but not altogether disappeared. This advantage for inpatient treatment was entirely due to more outpatients either dropping out of treatment or drinking heavily during treatment without ever achieving abstinence. Their poorer reaction during treatment simply continued over the next few months. Among the remaining patients there were no significant differences in outcome. Though psychiatric severity was not related to later outcomes, the number of alcohol problems clients had experienced over their lifetime was. At three months after treatment entry, reflecting immediate post-discharge behaviour, patients with a more extensive history of alcohol problems were far less likely to have relapsed after inpatient than outpatient treatment. This advantage did not persist to six months or a year after treatment entry. Overall the outpatient option was 4.5 times more cost-effective at preventing relapse at three months and even more so at later follow-up points. However, for patients with the most extensive history of alcohol problems the cost-effectiveness ratio seems to have been nearly even.⁹⁶ Inpatient stays may have seemed more cost-effective for severely affected patients if a multi-variable measure of severity had been employed. It is also possible that the very low level of outpatient therapeutic input in this study failed to give that setting a fair chance at performing well with the more problematic clients.

4.10 A US study has made a start at creating a protocol to systematically determine who to recommend for residential as opposed to non-residential rehabilitation.⁹⁷

The *Client Matching Protocol* systematised the adult allocation criteria endorsed by staff, clinicians and residents at six therapeutic communities. First 'exclusionary criteria' identify people for whom practical or safety considerations preclude one or other setting. Inability to travel to the centre precluded non-residential treatment. Residential care was seen as

precluded by conflicting domestic or family responsibilities, communicable disease, need for hospital care, current severe mental illness, a recent (three years) history of planned or attempted suicide, or a history of extremely violent crime. Then allocation is based on clinical criteria related to problem severity.

Piloting at nine centres (each offered a therapeutic community programme on both a residential and non-residential basis) refined the original 57 items down to the 30 which best identified who would stay longer in one setting than the other. These could be grouped into four problem severity indicators, effectively hurdles which must be jumped to justify residential care. Clients are considered for residential care if their current drug problem is 1 relatively severe *and* 2 stretches back at least four years without an abstinence break of a year or more. Among these clients, residential care will be chosen if there is also either 3 a poor social prognosis (criminal behaviour or lacking a drug-free home or social circle) or 4 a poor vocational prognosis (poor education, skills, training or experience).

Two sets of consecutive admissions to the nine centres were allocated to residential or non-residential care through usual intake procedures. About 40% were primarily cocaine users and just under 20% each alcohol or heroin users. Intake counsellors also applied the protocol to the same referrals but were not privy to the allocations it indicated. The issue was whether these allocations would have resulted in better outcomes than those made unaided by the counsellors. Exclusionary criteria allocated 243 clients. The clinical criteria were tested on the remaining 725 with sufficient data (59 did not).

Clients who had been allocated in line with the protocol ('matched' cases – 7 out of 10 of the total) did significantly better than those where the counsellor had made a different decision ('mismatched' cases). In the first cohort outcomes had longer to pan out. Nearly 20% more matched clients (47% versus 28%) were either still in treatment at follow up or had completed it and far fewer (10% versus 28%) had to be discharged.⁹⁸ The second cohort confirmed the retention/completion benefits of matching the protocol but over this shorter period there were more drop-outs rather than 'throw-outs' in the mismatched clients. The predictive power of the protocol remained even when client differences on the individual domains were statistically evened out, indicating that it was the combination of factors taken into account by the protocol which made the difference. A similar procedure evening out differences on motivation (internal and external in the form of legal coercion) still left protocol matching a significant predictor. In both analyses matched clients were 60% more likely to have been retained or to have completed than mismatched clients. Matching to the protocol was particularly important for moderately well motivated clients: the very highly motivated and relatively poorly motivated tended to respectively do well or poorly in terms of treatment retention and completion irrespective of matching.

This is one of the very few studies not just to record which type of people benefit most from residential as opposed to non-residential care but to test how this information might be used to guide the allocation. Pre-testing revealed that while several severity dimensions predicted relatively poor outcomes overall, not all (family or peer support, prior treatment, psychosocial stressors) predicted poorer outcomes in one setting than in the other. Only these can be used to guide the choice between the two.

That the allocation protocol made a worthwhile difference is all the more remarkable since several factors worked against it. First, it crystallised and then refined current practice but still found that this bettered the uncrystallised starting point. Second, the intake counsellors whose decisions formed the benchmark for the protocol all worked in longstanding agencies familiar with both settings and with deciding between them. Third, though counsellors did not know where the protocol would have placed their clients, the raw data it generated was

available to inform their decisions. Fourth, clients tended to all have relatively severe problems, reducing the scope for the protocol (itself based on problem severity) to differentiate between them. Given these factors, it is reasonable to expect the gains from using such a protocol to often be greater in normal practice.

The criteria were specifically developed for therapeutic community programmes and may not be applicable to the decision between other forms of residential and non-residential care. However, the process of encapsulating accepted practice into exclusion criteria and a series of clinical criteria, and then refining this in the light of its ability to differentiate between alternative treatments, should have wider applicability. Because it is explicit the protocol can also be changed in the light of the outcomes from the decisions it indicated. The ability to do this is potentially the greatest advantage of documenting allocation criteria.

The assumption that treatment retention and completion^{99 100 101} would be linked with term short and long-term outcomes is reasonable but (as the authors acknowledge) needs to be tested in a follow-up study. Sometimes the added benefits of a residential environment fade after release into the community.^{102 103 104} A residential setting may particularly be needed to insulate patients who find it hardest to stop using drugs, accounting for its differential effect on the severest cases, but on return to their previous life situations the same clients eventually tend to relapse.

Most of the criteria precluding residential care seem to reflect limits to the problems the services felt they could risk taking into their residences. In the process they excluded severely problematic clients who might have the greatest to gain from residential care. Most questionable are the psychiatric exclusions, especially suicide risk. Though the programmes and caseloads were different, in Minnesota suicide risk emerged the clearest indicator for three-week residential care as opposed to six to seven weeks outpatient treatment.¹⁰⁵ In this primarily alcohol dependent population, completion rates were better in inpatient care only for adults who ranked in the most severe third on at least four out of five dimensions partially reminiscent of those used in the featured study (alcohol use, drug use, social isolation, a history of unemployment, and – not used in the featured study – psychological distress). But suicidal ideation was the key. If this was present the odds of abstinence were 60% better after inpatient treatment.¹⁰⁶ If it was not, even patients ranking in the top quarter on all five severity dimensions did no better after inpatient treatment.

4.11 Given controversy about the comparative utility of inpatient and outpatient treatment for substance abusers, we compared samples of cocaine-abusing inpatients (n=149) and outpatients (n=149) regarding a range of clinical characteristics both at entrance into treatment and one year following this initial assessment.¹⁰⁷ We wished to access (a) whether inpatient treatment appeared justified on the basis of more severe clinical problems in this group of patients and (b) the comparative one-year outcome of patients treated in the two conditions. Regarding the presenting clinical picture, inpatients had more severe ratings in numerous areas, with heavier drug use, social impairment, and psychopathology. At one-year follow-up, the direction of clinical ratings had reversed in the two groups, with inpatients showing lower problem severity in several areas, particularly cocaine use and psychopathology. Thus, results of this nonrandomized study of inpatient and outpatient treatment suggest that decisions to hospitalize were made on a rational basis and that inpatient treatment had better long-term efficacy.

4.12 This study compared 28-day intensive inpatient, intensive outpatient, and standard

outpatient treatment settings for persons with alcoholism and tested a priori hypotheses about the interaction of setting with client alcohol involvement and social network support for drinking.¹⁰⁸ Therapeutic inputs in the two intensive options were planned to be and turned out to be similar in type and amount leaving the major difference them the residential element and the extra non-formal interactions this permitted. All the options were based on group therapy and were abstinence-oriented. Exclusions included patients requiring detoxification and those with serious mental illness. Just two-thirds of the eligible patients consented to randomisation. They tended to have more severe drink and other problems than the remainder. Before treatment they had been drinking about 10 US drinks (=17–18 UK units) on over half the days they were free to do so. Over half were unemployed and most were not in a stable sexual relationship. Participants (N = 192) were assigned randomly in cohorts to 1 of the 3 settings. Therapists too were randomly rotated through the three conditions to eliminate bias from therapist effects. Around 90% or more follow-up completion over 18 months. During treatment the inpatients drank less often and less on each occasion. The settings did not differ in posttreatment primary drinking outcomes; by 18 months each group was abstinent on 75% of days and drinks per drinking day had been halved. However, inpatients had significantly fewer jail and residential treatment days combined than outpatients (29% were institutionalised in these ways compared to over half the outpatient groups). Clients high in alcohol involvement (includes measures of subjective craving, withdrawal and loss of control when drinking) benefited more from inpatient than outpatient care. The greater their involvement, the more they cut down their drinking days and the amount drunk on each of those days, while in the other conditions less involved patients ended up drinking less than the more involved. Had the sample been restricted to moderately severely involved (similar to dependence) patients the outpatient treatments would have looked best, had it been restricted to the most involved patients then inpatient treatment would have looked best. Alcohol involvement did not differentiate the two outpatient treatments. It is important that despite randomisation this study recruited fairly severely problematic inner-city clients so was able to witness the effect of the severity range. At all but (in this sample) the lowest severity levels outcomes were best after inpatient care. Network drinking support did not moderate setting effects. Clients low in cognitive functioning also appeared to benefit more from inpatient than outpatient care. Improved outcomes might be achieved by matching degree of alcohol involvement and cognitive functioning to level of care.

The following studies were added to this review after the summary above was prepared. Generally each entry consists simply of the published abstract.

4.13 McLellan and colleagues¹⁰⁹ failed to find substantive statistical interactions of client demographics, initial substance-related problems, and treatment programs in predicting posttreatment substance-related problems. They then developed a matching algorithm to select among the treatment programmes, based on a client's level of psychiatric, employment, legal, and family problems.¹¹⁰ Abstract of this study:

Male alcoholics (n = 460) and drug addicts (n = 282) were evaluated at six-month follow-up after treatment entry in six rehabilitation programs. Initial analyses of the unstratified samples showed significant patient improvement, but no evidence of differential effectiveness from different treatments or from "matching" patients to treatments. However, greater psychiatric severity was associated with poorer ASI six-month outcomes. The two samples were then divided into groups based on the number, duration, and intensity of their psychiatric symptoms at admission, ie, their overall "psychiatric severity." Patients with low psychiatric severity improved in every treatment programme equally and outcomes were better the longer they stayed in treatment. Patients with high psychiatric severity showed virtually no improvement in any treatment and did not improve more the longer they stayed. Patients with midrange psychiatric severity (60% of the samples) did better the longer they stayed but also showed outcome differences from different treatments and especially from specific patient-program matches. For both drug addicts and alcoholics, when they also suffered greater than normal employment and family problems they did worse in an outpatient programme than in an inpatient programme. This was not the case when problems were limited to high severity in drug/alcohol or medical domains. It was not severity as such that mattered, but a particular psychosocial combination of severity. These findings support the effectiveness and specificity of different substance abuse treatments, suggest methodologic reasons for the lack of similar findings in previous studies, and demonstrate the importance of psychiatric factors in substance abuse treatment.

A second study tested this finding as an allocation indicator using the same treatment programmes and a new sample of 130 alcohol- and 256 drug-dependent patients.¹¹¹ The primary matching variable was psychiatric severity. Low severity patients were generally problem free, mid severity had significant symptoms such as anxiety and depression but no recurrent history of these problems, high severity had pronounced symptoms and a recurrent history. Low-severity patients were generally allocated to outpatient programmes except when they had very severe employment or family problems. Mid-severity patients with relatively severe employment or family problems were matched to inpatient programmes. High severity patients were considered mismatched to all the programmes. For a variety of mainly administrative reasons, only just over half the patients could be matched as intended. Patients treated in their predicted programme (matched patients) were compared with those patients from the same sample who were not treated in their predicted program (mismatched patients). Treatment staff were not apprised of the matching criteria or which patients were matched, thus permitting an experimental test of the predictions. Results indicated superior performance during treatment and an average of 19% better 6-month post-admission outcomes for the matched patients than for their mismatched counterparts. They also stayed longer in treatment and were rated as more motivated. The matching effect was seen in both the alcohol- and drug-dependent samples and in all treatment programs. It was also apparent when limited to the low or mid-severity patients. The conclusion was that inpatient regimes were particularly needed to help extricate patients from a particularly damaging environment.

As in other studies which have found inpatient treatment differentially beneficial for severely affected patients, in this study the range of severity included in the study was not constricted and the follow-up rate was high.

Another attempt to replicate McLellan and colleagues' early findings was unsuccessful.¹¹² Similar to McLellan and colleagues' methodology,¹¹³ clients with ASI psychiatric severity ratings between 2 and 6 (on a scale of 0 to 9) were selected, and two logistic regressions predicting retention and treatment completion were performed. This study used logistic regression to test for interaction effects, while McLellan and colleagues used linear regression. In contrast to this earlier work, no significant interactions between ASI legal, employment, psychiatric or family composite scores and treatment setting were found in the current study.

4.14 The present research examined differences in demographics and substance-related problems in populations admitted to three substance abuse treatment settings—outpatient (n = 1132), intensive outpatient (n = 1190), and residential (n = 149) — and tested whether interactions between client characteristics and type of setting predicted rates of 30-day retention and treatment completion.¹¹⁴ Client-setting interactions were found for both retention and completion.

Participants were selected from a large administrative database (funded by Target Cities) containing records for people seeking publicly funded substance abuse treatment in Detroit, Michigan between November of 1995 and March of 1999. All applicants were administered an Addiction Severity Index (ASI) at presentation to a centralized intake unit (CIU). Following a screening questionnaire, participants were referred to treatment providers, where they were admitted into a substance abuse program. At the CIU, applicants for treatment were asked their preferences for the setting they wished to enter; these preferences were recorded in the database. In 98% of the cases, applicants were referred to their preferred setting, so it appears that no formal matching procedure was implemented. Admission to a program occurred an average of 9.1 days (SD = 19.8) after presentation at the CIU. Participants were selected for the current study if they met the following criteria: (1) they were at least 18 years old at program admission, (2) they had complete ASI information administered within six months prior to program admission, (3) they had valid intake and discharge information, and (4) they were referred to a non-methadone outpatient, residential, or IOP facility.

If clients had multiple treatment episodes with complete information, only the first treatment episode was used. These criteria resulted in 2,471 valid client records.

Outpatient programs provided individual, family, and group therapy to clients. Clients were expected to meet with a therapist or participate in other therapeutic activities once a week for one to 1.5 hours. Treatment length was openended, with a minimum expectation of 10 weeks. A total of 1,132 clients were referred to outpatient settings. Intensive outpatient programs (IOPs) were designed to provide rehabilitative and therapeutic services in a supervised structured outpatient setting where clients were expected to attend a minimum of twice a week for three or more hours each treatment day. Services included lectures, group and individual therapy, aftercare planning, and referral sources. Although treatment length was generally fixed, the actual time individuals remained in IOPs varied. Some IOPs provided domiciliary facilities. A total of 1,190 clients were sent to IOPs. Residential programs consisted of either therapeutic settings (82% of residential sample) or recovery settings (18%). Therapeutic residential programs provided supportive or confrontational peer therapy, supplemented with individual or group counseling, didactic lectures, and rehabilitative care.

The goal of therapeutic programs was to reduce a client's substance use, and increase his or her coping skills. Recovery residential programs provided supervised peer group living with limited counseling services emphasizing social rehabilitation. The goal of recovery programs was to increase a client's ability to live independently. Both settings provided overnight care and were structured to last a minimum of 60 days. A total of 149 clients were referred to residential settings.

An interaction with living arrangement demonstrated that homeless clients had substantially lower retention rates in outpatient settings (see Figure 1), relative to other treatment facilities (OR = .64). Nonhomeless clients tended to have lower retention in residential settings, relative to homeless clients.

An interaction with previous substance treatments revealed that previous treatment had little effect on completion for clients in residential or IOP programs. For clients in outpatient programs, however, more previous treatment was associated with lower completion rates (OR = .80). An interaction with a client's level of employment-related problems demonstrated that a higher level of employment problems was associated with lower completion rates in outpatient (OR = .84) and residential settings. In IOP settings, however, a higher level of employment problems was associated with higher completion rates, relative to lower levels of problems (OR = 1.38). Finally, an interaction with drug-related problems showed that more drug problems were associated with a trend towards lower completion rates for outpatient settings (OR = .84), relative to other facilities. The overall logistic regression model was highly significant ($\chi^2 = 526.8$, 47 df, $p < .0001$).

Hypothesis 3 was partially supported. Number of previous treatments and level of drug-related problems interacted with treatment setting, such that clients with many previous treatments and more drug-related problems had lower completion rates in outpatient settings, relative to clients with many problems treated in more intensive settings. Assuming ASI drug-related problems are a reasonable approximation for the criteria of the ASAM dimension of relapse potential, this finding supports the use of this ASAM dimension; more severe clients who are not successfully placed in intensive settings may find outpatient facilities to be less adequate for their drug-related problems.

Other ASAM dimensions evaluate emotional/psychiatric conditions and a client's recovery environment. Allowing for relevant ASI proxies for these ASAM dimensions, the implication is that clients with more severe psychiatric or family/social problems will demonstrate superior outcome in more intensive treatment settings, relative to less intense settings. There was no evidence of this in the present study; no interactions between family/social or psychiatric problems and treatment setting were significant in predicting retention or completion after controlling for other predictors. This may be because ASI composite scores are an inadequate operationalization of relevant ASAM dimensions. Alternatively, the participants in this study may not be representative of all treatment-seeking clients. However, the lack of findings in this study is consistent with the work of McKay and colleagues (1997), who failed to show statistical differences between matched and mismatched clients in inpatient versus IOP settings, using four of the six ASAM dimensions. Thus, the ASAM criteria may need to be refined.

The present study examined statistical interactions of treatment setting and client characteristics on retention across multiple treatment settings. There are at least four areas where the results of this research could be applied. First, the findings provide empirical support for certain client-setting combinations. This could lead to more informed treatment decision-making by intake units, with the eventual outcome of higher retention and completion rates. For example, homeless clients demonstrated the highest 30-day retention

rate in residential settings. In the absence of other matching factors, residential facilities could be suggested as a first choice for future homeless clients. Additional studies are needed to discover if these suggestions would increase overall retention. Second, the results of the study can indicate non-optimum matches with minimum additional risk. Extending the previous example, homeless clients have slightly lower 30-day retention rates in IOP settings, relative to residential settings, but substantially lower rates in outpatient settings.

4.15 McKay and colleagues failed to show statistical differences between matched and mismatched clients in inpatient versus intensive outpatient settings, using four of the six ASAM dimensions.¹¹⁵

OBJECTIVE: The American Society of Addiction Medicine (ASAM) criteria were developed as guidelines for the placement of substance abuse patients in appropriate levels of care. Although the ASAM criteria are widely used, little is known about their validity. In this study, we evaluated the predictive validity of the psychosocial dimensions of the ASAM criteria for inpatient versus intensive outpatient rehabilitation. **METHOD:** The psychosocial dimensions of the ASAM criteria were first operationalized with instruments with proven reliability and validity. The criteria were then used to determine whether cocaine (n = 159) and alcohol (n = 133) dependent male patients in inpatient and intensive outpatient rehabilitation programs were correctly "matched" to the level of care they received. The patients were followed up at 3, 6 and 12 months postrehabilitation, and outcomes of "matched" and "mismatched" patients were compared in a number of ways. **RESULTS:** Alcohol and cocaine patients who were correctly matched to treatment according to ASAM did not have significantly better outcomes than those who were mismatched. Furthermore, a more focused analysis generated no evidence that alcohol patients who met ASAM criteria for inpatient care had better outcomes in that setting than in intensive outpatient treatment. Among cocaine patients who met ASAM inpatient criteria, inpatient care produced marginally better short-term outcomes on most measures, although these results did not reach statistical significance. **CONCLUSIONS:** These results suggest that the psychosocial dimensions of the ASAM criteria for inpatient treatment are probably too broad and are therefore in need of further refinement, particularly for alcohol patients. However, all patients were male veterans without acute medical problems serious enough to warrant inpatient care or histories of psychosis, and the majority were of lower socioeconomic status. It is not clear to what extent the results would generalize to substance abusers with other characteristics.

¹Finney J.W., Monahan S. "The cost effectiveness of treatment for alcoholism: a second approximation." *Journal of Studies in Alcohol*: 1996, 57, p. 229–243.

²Finney J.W., Hahn A.C., Moos R.H. "The effectiveness of inpatient and outpatient treatment for alcohol abuse: the need to focus on mediators and moderators of setting effects." *Addiction*: 1996, 91(12), p. 1773–1796; see also the commentaries on this study on pages 1803–1820.

³Mattick R.P., et al. "In-patient setting and long duration for the treatment of alcohol dependence? Out-patient care is as good." *Drug and Alcohol Review*: 1994, 13, 127–135.

⁴Edwards G., Guthrie S. "A controlled trial of in-patient and out-patient treatment of alcohol dependency." *Lancet*: 1967, 1, p. 555–559.

⁵Edwards G., Orford J., Egbert S., et al. "Alcoholism: a controlled trial of 'treatment' and 'advice'." *Journal of Studies on Alcohol*: 1977, 38, p. 1004–1031.

⁶Messina, N.P., et al. "Therapeutic community treatment for substance abusers with antisocial personality disorder." *Journal of Substance Abuse Treatment*: 1999, 17(1–2), p. 121–128.

⁷Nemes S. et al. "The DC Initiative: preliminary outcome studies. Paper presented at the Therapeutic Communities of America conference, 1997, Washington D.C. Cited in: Messina, N.P., et al. "Therapeutic community treatment for substance abusers with antisocial personality disorder." *Journal of Substance Abuse Treatment*: 1999, 17(1–2), p. 121–128.

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- ⁸Stark M.J. "Dropping out of substance abuse treatment. A clinically oriented review." *Clinical Psychology Review*: 1992, 12, p. 93–116.
- ⁹McLellan A.T. *et al.* "Predicting response to drug and alcohol treatments: role of psychiatric severity." *Archives of General Psychiatry*: 1983, 40, p. 620–625.
- ¹⁰McLellan A.T. *et al.* "Increased effectiveness of substance abuse treatment." *Journal of Nervous and Mental Disease*: 1983, 171, p. 597–605.
- ¹¹Greenwood G.L. *et al.* "Relapse outcomes in a randomized trial of residential and day drug abuse treatment." *Journal of Substance Abuse Treatment*: 2001, 20, p. 15–23.
- ¹²Pettinati H.M., Meyers K., Evans B.D. "Inpatient alcohol treatment in a private healthcare setting: which patients benefit and at what cost." *American Journal on Addictions*: 1999, 8, p. 220–223.
- ¹³Finney J.W., Hahn A.C., Moos R.H. "The effectiveness of inpatient and outpatient treatment for alcohol abuse: the need to focus on mediators and moderators of setting effects." *Addiction*: 1996, 91(12), p. 1773–1796; see also the commentaries on this study on pages 1803–1820.
- ¹⁴Harrison P.A. *et al.* "Outcomes monitoring in Minnesota: treatment implications, practical limitations." *Journal of Substance Abuse Treatment*: 2001, 21, p. 173–183.
- ¹⁵Pettinati H.M., Meyers K., Evans B.D. "Inpatient alcohol treatment in a private healthcare setting: which patients benefit and at what cost." *American Journal on Addictions*: 1999, 8, p. 220–223.
- ¹⁶Greenwood G.L. *et al.* "Relapse outcomes in a randomized trial of residential and day drug abuse treatment." *Journal of Substance Abuse Treatment*: 2001, 20, p. 15–23.
- ¹⁷McLellan A.T. *et al.* "Predicting response to drug and alcohol treatments: role of psychiatric severity." *Archives of General Psychiatry*: 1983, 40, p. 620–625.
- ¹⁸McLellan A.T. *et al.* "Increased effectiveness of substance abuse treatment." *Journal of Nervous and Mental Disease*: 1983, 171, p. 597–605.
- ¹⁹Melnick G. *et al.* "A client-treatment matching protocol for therapeutic communities: first report." *Journal of Substance Abuse Treatment*: 2001, 21, p. 119–128.
- ²⁰Shepard D.S. "Cost-effectiveness of substance abuse services: implications for public policy." *Psychiatric Clinics of North America*: 1999, 22(2), p. 385–400.
- ²¹Rychtarik R.G. *et al.* "Treatment settings for persons with alcoholism: evidence for matching clients to inpatient versus outpatient care." *Journal of Consulting and Clinical Psychology*: 2000, 68(2), p. 277–89.
- ²²Simpson D.D., *et al.* "A national evaluation of treatment outcomes for cocaine dependence." *Archives of General Psychiatry*: 1999, 56, p. 507–514.
- ²³Pettinati H.M., Meyers K., Evans B.D. "Inpatient alcohol treatment in a private healthcare setting: which patients benefit and at what cost." *American Journal on Addictions*: 1999, 8, p. 220–223.
- ²⁴Klein C. *et al.* "Interaction effects of treatment setting and client characteristics on retention and completion." *Journal of Psychoactive Drugs*: 2002, 34(1), p. 39–50.
- ²⁵Pettinati H.M., Meyers K., Evans B.D. "Inpatient alcohol treatment in a private healthcare setting: which patients benefit and at what cost." *American Journal on Addictions*: 1999, 8, p. 220–223.
- ²⁶Finney J.W., Hahn A.C., Moos R.H. "The effectiveness of inpatient and outpatient treatment for alcohol abuse: the need to focus on mediators and moderators of setting effects." *Addiction*: 1996, 91(12), p. 1773–1796; see also the commentaries on this study on pages 1803–1820.
- ²⁷Bachman S.S. *et al.* "Predicting success in a community treatment program for substance abusers." *American Journal on Addictions*: 1993, 1(2), p. 155–167.
- ²⁸Greenwood G.L. *et al.* "Relapse outcomes in a randomized trial of residential and day drug abuse treatment." *Journal of Substance Abuse Treatment*: 2001, 20, p. 15–23.
- ²⁹Alterman, A. I., O'Brien, C. P., & Droba, M. (1993). Day hospital vs. inpatient rehabilitation of cocaine abusers: an interim report. In: F. Leukfield, & C. Leukfield (Eds.), *Cocaine treatment: research and clinical perspectives*. NIDA Research Monograph, (135 pp. 150–162). NIH Publication No. 93-3639.
- ³⁰Alterman A.I. *et al.* "Effectiveness and costs of inpatient and day hospital cocaine rehabilitation." *Journal of Nervous and Mental Disease*: 1994, 182, p. 157–163.
- ³¹McKay J.R. *et al.* "Random versus nonrandom assignment in the evaluation of treatment for cocaine abusers." *Journal of Consulting and Clinical Psychology*: 1998, 66(4), p. 697–701.
- ³²McKay J.R. *et al.* "An initial evaluation of the psychosocial dimensions of the American Society of Medicine criteria for inpatient versus intensive outpatient substance abuse rehabilitation." *Journal of Studies on Alcohol*:

1997, 8(3), p 239–252.

- ³³Rychtarik R.G. *et al.* “Treatment settings for persons with alcoholism: evidence for matching clients to inpatient versus outpatient care.” *Journal of Consulting and Clinical Psychology*: 2000, 68(2), p. 277–89.
- ³⁴Klein C. *et al.* “Interaction effects of treatment setting and client characteristics on retention and completion.” *Journal of Psychoactive Drugs*: 2002, 34(1),p. 39–50.
- ³⁵Greenwood G.L. *et al.* “Relapse outcomes in a randomized trial of residential and day drug abuse treatment.” *Journal of Substance Abuse Treatment*: 2001, 20, p. 15–23.
- ³⁶Klein C. *et al.* “Interaction effects of treatment setting and client characteristics on retention and completion.” *Journal of Psychoactive Drugs*: 2002, 34(1),p. 39–50.
- ³⁷Rychtarik R.G. *et al.* “Treatment settings for persons with alcoholism: evidence for matching clients to inpatient versus outpatient care.” *Journal of Consulting and Clinical Psychology*: 2000, 68(2), p. 277–89.
- ³⁸Klein C. *et al.* “Interaction effects of treatment setting and client characteristics on retention and completion.” *Journal of Psychoactive Drugs*: 2002, 34(1),p. 39–50.
- ³⁹Guydish J. *et al.* “Drug abuse day treatment: a randomized clinical trial comparing day and residential treatment programs.” *Journal of Consulting and Clinical Psychology*: 1998, 66(2), p. 280–289.
- ⁴⁰Bachman S.S. *et al.* “Predicting success in a community treatment program for substance abusers.” *American Journal on Addictions*: 1993, 1(2), p. 155–167.
- ⁴¹Alterman, A. I., O’Brien, C. P., & Droba, M. (1993). Day hospital vs. inpatient rehabilitation of cocaine abusers: an interim report. In: F. Leukfield, & C. Leukfield (Eds.), *Cocaine treatment: research and clinical perspectives*. NIDA Research Monograph, (135 pp. 150— 162). NIH Publication No. 93-3639.
- ⁴²Alterman A.I. *et al.* “Effectiveness and costs of inpatient and day hospital cocaine rehabilitation.” *Journal of Nervous and Mental Disease*: 1994, 182, p. 157–163.
- ⁴³McKay J.R. *et al.* “Random versus nonrandom assignment in the evaluation of treatment for cocaine abusers.” *Journal of Consulting and Clinical Psychology*: 1998, 66(4), p. 697–701.
- ⁴⁴Messina, N.P., *et al.* “Therapeutic community treatment for substance abusers with antisocial personality disorder.” *Journal of Substance Abuse Treatment*: 1999, 17(1–2), p. 121–128.
- ⁴⁵Nemes S. *et al.* “The DC Initiative: preliminary outcome studies. Paper presented at the Therapeutic Communities of America conference, 1997, Washington D.C. Cited in: Messina, N.P., *et al.* “Therapeutic community treatment for substance abusers with antisocial personality disorder.” *Journal of Substance Abuse Treatment*: 1999, 17(1–2), p. 121–128.
- ⁴⁶Greenwood G.L. *et al.* “Relapse outcomes in a randomized trial of residential and day drug abuse treatment.” *Journal of Substance Abuse Treatment*: 2001, 20, p. 15–23.
- ⁴⁷Mattick R.P., *et al.* “In-patient setting and long duration for the treatment of alcohol dependence? Out-patient care is as good.” *Drug and Alcohol Review*: 1994, 13, 127–135.
- ⁴⁸McKay J.R. *et al.* “The effect of random versus nonrandom assignment in a comparison of inpatient and day hospital rehabilitation for male alcoholics.” *Journal of Consulting and Clinical Psychology*: 1995, 63, p. 70–78.
- ⁴⁹Shepard D.S. “Cost-effectiveness of substance abuse services: implications for public policy.” *Psychiatric Clinics of North America*: 1999, 22(2), p. 385–400.
- ⁵⁰Gerstein D.R., *et al.* “Nonresponse and selection bias in treatment follow-up studies.” *Substance Use and Misuse*: 2000, 35(6–8), p. 971–1014.
- ⁵¹Gossop M., *et al.* “Substance use, health and social problems of clients at 54 drug treatment agencies: intake data from the National Treatment Outcome Research Study (NTORS).” *British Journal of Psychiatry*: 1998, 173, p. 166–171.
- ⁵²Simpson D.D. *et al.* “A national evaluation of treatment outcomes for cocaine dependence.” *Archives of General Psychiatry*: 1999, 56, p. 507–514.
- ⁵³Miller N.S., *et al.* “Integration of treatment and post-treatment variables in predicting results of abstinence-based outpatient treatment after one year.” *Journal of Psychoactive Drugs*: 1997, 29(3).
- ⁵⁴Fiorentine R. “After drug treatment: are 12-step programs effective in maintaining abstinence?” *American Journal of Drug and Alcohol Abuse*: 1999, 25(1), p. 93–116.
- ⁵⁵Flynn P.M., *et al.* “Costs and benefits of treatment for cocaine addiction in DATOS.” *Drug and Alcohol Dependence*: 1999, 57, p. 167–174.
- ⁵⁶Gerstein D.R., *et al.* *Evaluating recovery services: the California drug and alcohol treatment assessment (CALDATA)*. California Department of Alcohol and Drug Programs, 1994.

-
- ⁵⁷Hubbard R.L., *et al.* "Overview of 1-year follow-up outcomes in DATOS." *Psychology of Addictive Behaviors*: 1997, 11(4), p. 261–278.
- ⁵⁸Etheridge R.M., *et al.* "Treatment structure and program services in the Drug Abuse Treatment Outcome Study (DATOS)." *Psychology of Addictive Behaviors*: 1997, 11(4), p. 244–260.
- ⁵⁹Simpson D.D., *et al.* "A national evaluation of treatment outcomes for cocaine dependence." *Archives of General Psychiatry*: 1999, 56, p. 507–514.
- ⁶⁰Flynn P.M., *et al.* "Costs and benefits of treatment for cocaine addiction in DATOS." *Drug and Alcohol Dependence*: 1999, 57, p. 167–174.
- ⁶¹Etheridge R.M., *et al.* "Treatment structure and program services in the Drug Abuse Treatment Outcome Study (DATOS)." *Psychology of Addictive Behaviors*: 1997, 11(4), p. 244–260.
- ⁶²Toumbourou J.W., *et al.* "Treatment level progress and time spent in treatment in the prediction of outcomes following drug-free therapeutic community treatment." *Addiction*: 1998, 93(7), p. 1051–1064.
- ⁶³Gossop M., *et al.* "Treatment retention and 1 year outcomes for residential programmes in England." *Drug and Alcohol Dependence*: 1999, 57, p. 89–98.
- ⁶⁴The 122 clients entering inpatient units were more likely to be heroin addicts, less likely have used stimulants and less criminally active than the rehabilitation clients.
- ⁶⁵Gossop M., *et al.* "Substance use, health and social problems of clients at 54 drug treatment agencies: intake data from the National Treatment Outcome Research Study (NTORS)." *British Journal of Psychiatry*: 1998, 173, p. 166–171.
- ⁶⁶Gossop M., *et al.* "The National Treatment Outcome Research Study in the United Kingdom: six month follow-up outcomes." *Psychology of Addictive Behaviours*: 1997, 11: (4), p. 324–337.
- ⁶⁷Gossop M., *et al.* "Substance use, health and social problems of clients at 54 drug treatment agencies: intake data from the National Treatment Outcome Research Study (NTORS)." *British Journal of Psychiatry*: 1998, 173, p. 166–171.
- ⁶⁸Gossop M., *et al.* *NTORS at one year. The National Treatment Outcome Research Study. Changes in substance use, health and criminal behaviours at one year after intake.* Department of Health, 1998. See page 33. Acquisitive crimes for 275 residential clients fell from (13506 - 7610) to (4827 - 1928). See page 33. Acquisitive crimes for 478 community clients fell from (25999 - 11613) to (6718 - 2817).
- ⁶⁹Gossop M., *et al.* *NTORS at one year. The National Treatment Outcome Research Study. Changes in substance use, health and criminal behaviours at one year after intake.* Department of Health, 1998. Calculated directly from table 3 on page 33.
- ⁷⁰Gossop M., *et al.* *NTORS at one year. The National Treatment Outcome Research Study. Changes in substance use, health and criminal behaviours at one year after intake.* Department of Health, 1998. See page 27.
- ⁷¹Gossop M. *NTORS: two year outcomes. The National Treatment Outcome Research Study. Changes in substance use, health and crime.* Department of Health, 1999.
- ⁷²34.2% had become abstinent from opioids, stimulants or benzodiazepines but 63.3% were using.
- ⁷³Gossop M., *et al.* *NTORS at one year. The National Treatment Outcome Research Study. Changes in substance use, health and criminal behaviours at one year after intake.* Department of Health, 1998. (This analysis is based only on the clients actually using heroin at intake. Personal communication from NTORS team to Mike Ashton, 14 August 1998.)
- ⁷⁴Simpson, D. D., *et al.* "Program diversity and treatment retention rates in the Drug Abuse Treatment Outcome Study (DATOS)." *Psychology of Addictive Behaviors*: 1997, 11(4), p. 294–307.
- ⁷⁵Joe G.W., *et al.* "Retention and patient engagement models for different treatment modalities in DATOS." *Drug and Alcohol Dependence*: 1999, 57, p. 113–125.
- ⁷⁶Gossop M., *et al.* "Substance use, health and social problems of clients at 54 drug treatment agencies: intake data from the National Treatment Outcome Research Study (NTORS)." *British Journal of Psychiatry*: 1998, 173, p. 166–171.
- ⁷⁷Gossop M., *et al.* "The National Treatment Outcome Research Study in the United Kingdom: six-month follow-up outcomes." *Psychology of Addictive Behaviors*: 1997, 11 (4), p.324–337.
- ⁷⁸Harrison P.A. *et al.* "Outcomes monitoring in Minnesota: treatment implications, practical limitations." *Journal of Substance Abuse Treatment*: 2001, 21, p. 173–183.
- ⁷⁹Harrison P.A., Asche S.E.. "Comparison of substance abuse treatment outcomes for inpatients and out patients." *Journal of Substance Abuse Treatment*: 1999: 17(3), p. 207–220.

⁸⁰Tertile.

⁸¹Harrison P.A. et al. "Outcomes monitoring in Minnesota: treatment implications, practical limitations." *Journal of Substance Abuse Treatment*: 2001, 21, p. 173–183.

⁸²Quartile.

⁸³Harrison P.A., Asche S.E.. "Comparison of substance abuse treatment outcomes for inpatients and outpatients." *Journal of Substance Abuse Treatment*: 1999: 17(3), p. 207–220.

⁸⁴Harrison P.A., Asche S.E.. "Comparison of substance abuse treatment outcomes for inpatients and outpatients." *Journal of Substance Abuse Treatment*: 1999: 17(3), p. 207–220.

⁸⁵Harrison P.A. et al. "Outcomes monitoring in Minnesota: treatment implications, practical limitations." *Journal of Substance Abuse Treatment*: 2001, 21, p. 173–183.

⁸⁶McCusker J., et al. "Outcomes of four residential treatment models – Project IMPACT." In: Tims F.M., et al, eds. *The effectiveness of innovative approaches in the treatment of drug abuse*. Westport and London: Greenwood Press, 1997, p. 61–69.

⁸⁷Trent L.K. "Evaluation of a four- versus six-week length of stay in the navy's alcohol treatment program." *Journal of Studies in Alcohol*: 1998, 59, p. 270–279.

⁸⁸Long C.G. "Treating alcohol problems: a study of programme effectiveness and cost effectiveness according to length and delivery of treatment." *Addiction*: 1998, 93(4), p. 561–571.

⁸⁹Long C.J., Williams M., Holin C.R. "Staff perceptions of organization change of treatment delivery on an addiction unit." *Journal of Advanced Nursing*: 1995, 21, p. 759–765.

⁹⁰Stark M.J. "Dropping out of substance abuse treatment. A clinically oriented review." *Clinical Psychology Review*: 1992, 12, p. 93–116.

⁹¹Finney J.W., Hahn A.C., Moos R.H. "The effectiveness of inpatient and outpatient treatment for alcohol abuse: the need to focus on mediators and moderators of setting effects." *Addiction*: 1996, 91(12), p. 1773–1796; see also the commentaries on this study on pages 1803–1820.

⁹²Toumbourou J.W., Hamilton M, Fallon B. "Treatment level progress and time spent in treatment in the prediction of outcomes following drug-free therapeutic community treatment." *Addiction*: 1998, 93 (7), p. 1051–1064.

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

⁹⁴Toumbourou J.W., Hamilton M, Fallon B. "Treatment level progress and time spent in treatment in the prediction of outcomes following drug-free therapeutic community treatment." *Addiction*: 1998, 93 (7), p. 1051–1064.

⁹⁵Pettinati H.M., Meyers K., Evans B.D. "Inpatient alcohol treatment in a private healthcare setting: which patients benefit and at what cost." *American Journal on Addictions*: 1999, 8, p. 220–223.

⁹⁶The cost ratio for treatment completers was 6.5 to 1. From figure 2 it seems that at the highest alcohol severity point the probability of relapse was about 0.65 after outpatient treatment and 0.15 after inpatient implying a cost-effectiveness ratio for these patients of about 1.5 to 1.

⁹⁷Melnick G. et al. "A client-treatment matching protocol for therapeutic communities: first report." *Journal of Substance Abuse Treatment*: 2001, 21, p. 119–128.

⁹⁸Drop out rates were no different.

⁹⁹Messina, N.P., et al. "Therapeutic community treatment for substance abusers with antisocial personality disorder." *Journal of Substance Abuse Treatment*: 1999, 17(1–2), p. 121–128.

¹⁰⁰Nemes S. et al. "The DC Initiative: preliminary outcome studies. Paper presented at the Therapeutic Communities of America conference, 1997, Washington D.C. Cited in: Messina, N.P., et al. "Therapeutic community treatment for substance abusers with antisocial personality disorder." *Journal of Substance Abuse Treatment*: 1999, 17(1–2), p. 121–128.

¹⁰¹Stark M.J. "Dropping out of substance abuse treatment. A clinically oriented review." *Clinical Psychology Review*: 1992, 12, p. 93–116.

¹⁰²Greenwood G.L. et al. "Relapse outcomes in a randomized trial of residential and day drug abuse treatment." *Journal of Substance Abuse Treatment*: 2001, 20, p. 15–23.

¹⁰³Pettinati H.M., Meyers K., Evans B.D. "Inpatient alcohol treatment in a private healthcare setting: which patients benefit and at what cost." *American Journal on Addictions*: 1999, 8, p. 220–223.

¹⁰⁴Finney J.W., Hahn A.C., Moos R.H. "The effectiveness of inpatient and outpatient treatment for alcohol

abuse: the need to focus on mediators and moderators of setting effects.” *Addiction*: 1996, 91(12), p. 1773–1796; see also the commentaries on this study on pages 1803–1820.

¹⁰⁵Harrison P.A. et al. “Outcomes monitoring in Minnesota: treatment implications, practical limitations.” *Journal of Substance Abuse Treatment*: 2001, 21, p. 173–183.

¹⁰⁶Harrison P.A., Asche S.E.. “Comparison of substance abuse treatment outcomes for inpatients and outpatients.” *Journal of Substance Abuse Treatment*: 1999: 17(3), p. 207–220.

¹⁰⁷ Budde D. et al. “Inpatient and outpatient cocaine abusers; clinical comparisons at intake and one-year follow-up.” *Journal of Substance Abuse Treatment*: 1992, 9(4), p.337–342.

¹⁰⁸ Rychtarik R.G. et al. “Treatment settings for persons with alcoholism: evidence for matching clients to inpatient versus outpatient care.” *Journal of Consulting and Clinical Psychology*: 2000, 68(2), p. 277–89.

¹⁰⁹McLellan A.T. et al. “Predicting response to drug and alcohol treatments: role of psychiatric severity.” *Archives of General Psychiatry*: 1983, 40, p. 620–625.

¹¹⁰ McLellan A.T. et al. “Predicting response to drug and alcohol treatments: role of psychiatric severity.” *Archives of General Psychiatry*: 1983, 40, p. 620–625.

¹¹¹McLellan A.T. et al. “Increased effectiveness of substance abuse treatment.” *Journal of Nervous and Mental Disease*: 1983, 171, p. 597–605.

¹¹² Klein C. et al. “Interaction effects of treatment setting and client characteristics on retention and completion.” *Journal of Psychoactive Drugs*: 2002, 34(1),p. 39–50.

¹¹³McLellan, A.T.; Woody, G.E.; Luborsky, L.; O’Brien, C.P. & Druley, K.A. 1 983b. Increased effectiveness of substance abuse treatment. *Journal of Nervous and Mental Disease* 171: 597-605.

¹¹⁴ Klein C. et al. “Interaction effects of treatment setting and client characteristics on retention and completion.” *Journal of Psychoactive Drugs*: 2002, 34(1),p. 39–50.

¹¹⁵McKay J.R. et al. “An initial evaluation of the psychosocial dimensions of the American Society of Medicine criteria for inpatient versus intensive outpatient substance abuse rehabilitation.” *Journal of Studies on Alcohol*: 1997, 8(3), p 239–252.