

DRUG COURT REVIEW

Volume VI, Issue 2

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DRUG COURT REVIEW

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Volume VI, Issue 2

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Drug courts perform their duties without manifestation, by word or conduct, of bias or prejudice, including, but not limited to, bias or prejudice based upon race, gender, national origin, disability, age, sexual orientation, language, or socioeconomic status.

THE DRUG COURT REVIEW

Published annually, the Drug Court Review's goal is to keep the drug court practitioner abreast of important new developments in the drug court field. Drug courts demand a great deal of time and energy of the practitioner. There is little opportunity to read lengthy evaluations or keep up with important research in the field. Yet, the ability to marshal scientific and research information and "argue the facts" can be critical to a program's success and ultimate survival.

The *DCR* builds a bridge between law, science, and clinical communities, providing a common tool to all. A headnote and subject indexing system allows access to evaluation outcomes, scientific analysis, and research on drug court related areas. Scientific jargon and legalese are interpreted for the practitioner into common language.

Although the *DCR's* emphasis is on scholarship and scientific research, it also provides commentary from experts in the drug court and related fields on important issues to drug court practitioners.

THE NATIONAL DRUG COURT INSTITUTE

The *Drug Court Review* is a project of the National Drug Court Institute (NDCI). NDCI was established under the auspices of the National Association of Drug Court Professionals with support from the Office of National Drug Control Policy, Executive Office of the President, and the Bureau of Justice Assistance, U.S. Department of Justice.

NDCI's mission is to promote education, research, and scholarship to the drug court field and other court-based intervention programs.

Historically, education and training in the drug court field have been available only at regional workshops and the annual national conference; analysis and scholarship were largely limited to anecdotes and personal accounts.

That situation has changed. Evaluations exist on dozens of drug court and other problem-solving court programs. Scholars and researchers continue to apply the rigors of scientific review and analysis to the drug court model. The level of experience and expertise necessary to support such an institution now exist.

Since its creation in December 1997, NDCI has launched a comprehensive practitioner training series for judges, prosecutors, public defenders, court coordinators, treatment providers, and community supervision officers, developed a research division responsible for creating a scientific research agenda and publication dissemination strategy for the field, developed a series of evaluation workshops, and published a monograph series on relevant issues to drug court institutionalization and expansion.

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**A SYSTEMATIC REVIEW OF DWI COURT
PROGRAM EVALUATIONS**

**By Douglas B. Marlowe, J.D., Ph.D.,
David S. Festinger, Ph.D., Patricia L. Arabia, M.S., Jason
R. Croft, B.A., Nicholas S. Patapis, Psy.D., M.A.C.J.,
and Karen L. Dugosh, Ph.D.**

**Treatment Research Institute at the
University of Pennsylvania**

A systematic literature review was conducted of published and unpublished DWI Court program evaluations released through April 30, 2007. [See Addendum for a subsequent evaluation released in October 2007]. Each evaluation report was scored for methodological rigor by at least two trained, independent raters according to established scientific criteria. One evaluation exceeded 80% of recommended criteria (deemed methodologically “good”) and an additional four evaluations exceeded 65% of recommended criteria (deemed “marginally acceptable”). Many of the evaluations had serious methodological shortcomings, including reporting outcomes only for graduates, failing to account for participant dropout, employing inadequate statistical techniques, and evaluating potentially immature programs. Although the results hint at emerging evidence potentially favoring the effects of DWI Courts, it is not possible to reach scientifically defensible conclusions about the effects of DWI Courts due to the inadequate state of the evaluation literature. It is hoped the methodological criteria outlined in this review article will influence future DWI Court program evaluations and assist practitioners and policymakers to become competent and effective consumers of evaluation findings.

This project was supported by a generous grant from The Century Council. The conclusions drawn are those of the authors and do not necessarily reflect the views of

The Century Council or the National Drug Court Institute. The authors gratefully acknowledge Emily James and Michele Pich for their assistance in collecting and rating evaluation reports.

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ARTICLE SUMMARIES**SYSTEMATIC REVIEW OF
DWI COURTS**

[1] A systematic literature review was conducted of published and unpublished evaluations of DWI Courts released through April 30, 2007.

**RECENT EVALUATION OF
DWI COURTS**

[3] A newer evaluation released in October 2007 lends additional promising support for DWI Courts.

EFFECTS OF DWI COURTS

[2] Many evaluations had serious methodological shortcomings. Although results hint at emerging evidence favoring DWI Courts, it is not possible to reach scientifically defensible conclusions due to the inadequate state of the evaluation literature.

INTRODUCTION

Approximately 40% of traffic accidents and fatalities in the U.S. are alcohol related (Greenfield, 1998; NHTSA, 1998). A partially overlapping 20% involve abuse of illicit drugs alone or in combination with alcohol (Compton & Anderson, 1985; Marzuk et al., 1990; NIDA, 2005; Simpson et al., 2006). Although the majority of individuals arrested for driving while impaired (DWI)¹ do not go on to repeat the offense, between 20% and 35% will become recidivist DWI offenders (e.g., Cornish & Marlowe, 2003; Timken, 2002).

A number of policy initiatives have been aimed at reducing DWI conduct in the general population. These include increasing the legal drinking age, lowering the presumptive BAC level for impaired driving, and establishing random sobriety checkpoints. Such measures have been associated with significant reductions of approximately 7% to 15% in traffic accidents and fatalities (Shults et al., 2001; Wagenaar et al., 1995). The positive effects of these policies are generally attributed to deterring first-time DWI offenders as opposed to altering the conduct of individuals already engaged in recidivist DWI behaviors (e.g., Popkin & Wells-Parker, 1994).

Among individuals who have been arrested for DWI, a range of punitive and incapacitating sanctions may be applied. These include driver's license suspension or revocation, jail terms, fines, mandatory vehicle sales, and ignition interlock requirements. Evidence suggests such measures can elicit moderate reductions in DWI recidivism of approximately 5% to 10%; however, the effects often wane

¹ The term driving while impaired (DWI) is used generically in this article to encompass comparable offense terminology, including driving under the influence (DUI) and driving while intoxicated (DWI).

after the constraints are removed (Timken, 2002; Wagenaar & Maldonado-Molina, 2007; Wagenaar et al., 1995). Moreover, it appears such sanctions may be least effective for substance dependent individuals or those with other high-risk factors for DWI recidivism, including social isolation, poor educational or employment skills, serious criminal histories, or co-morbid psychiatric conditions (e.g., Popkin & Wells-Parker, 1994; Yu, 2000).

Approximately 30% to 50% of DWI offenders satisfy official diagnostic criteria for substance abuse or dependence (e.g., Timken, 2002). For these individuals, an integrated strategy that combines license restriction, sanctions and substance abuse treatment elicits the best results (DeYoung, 1997). A comprehensive meta-analysis concluded that substance abuse treatment or remedial education contributed an additional 8% to 9% reduction in DWI recidivism for problem drinkers over punitive approaches (Wells-Parker et al., 1995). Unfortunately, compliance with substance abuse treatment is often unacceptably poor as evidenced by high rates of premature dropout (e.g., Ball et al., 2006; Festinger et al., 2002; Simpson et al., 1997; Stark, 1992). Moreover, many DWI offenders fail to comply with other restrictive conditions of supervision, such as failing to install ignition interlocks and continuing to drive on a suspended or revoked license (e.g., McCartt, et al., 2002; Robertson et al., 2007; Timken, 2002).

DWI Courts were created to improve recidivist DWI offenders' compliance with substance abuse treatment and other supervisory conditions (Freeman-Wilson & Huddleston, 1999). Modeled after Drug Courts, DWI Courts require participants to attend on-going status hearings in court, complete an intensive regimen of substance abuse treatment along with indicated adjunctive services, and undergo random or continuous biological testing for substance ingestion (NDCI, 2006). Participants receive negative sanctions for program infractions and positive rewards for achievements

that steadily increase in magnitude over successive instances. The vast majority of DWI Courts are post-adjudication programs. Many require participants to serve some portion of an incarcerative sentence, with the remainder of detention being suspended pending completion of treatment. Failure to successfully graduate from the DWI Court typically results in a return to custody to complete the full sentence. As of December 31, 2007, there were 110 separately designated DWI Courts and an additional 286 hybrid DWI/Drug Courts in the U.S. (Huddleston, Marlowe & Casebolt, 2008).

[1] The current project involved a systematic literature review of DWI Court program evaluations released through April 30, 2007. [See Addendum for a subsequent evaluation released in October 2007]. To avoid a “publication bias” resulting from the fact that negative findings are less likely to make their way into the peer-reviewed literature, both published and unpublished evaluation reports were solicited. All evaluation reports were scored according to established scientific review criteria by at least two independent raters. To our knowledge, this is the first effort to systematically evaluate the state of research on DWI Court programs using standardized criteria for methodological rigor.

METHODS

Search Strategy

Published and unpublished DWI Court evaluation reports were collected through April 30, 2007, the official cut-off date for this systematic review. [See Addendum for a subsequent evaluation released in October 2007]. Unpublished reports were solicited from statewide problem-solving court coordinators and other primary points of contact (PPCs) in every state and territory in the U.S. The National Drug

Court Institute (NDCI) maintains a list of PPCs who are primarily responsible for tracking statewide problem-solving court activity in their respective jurisdictions. These individuals are typically employees of the state Supreme Court, administrative office of the courts, governor's office or single state agency for substance abuse services. In addition, many are officers of their state or regional drug court associations or representatives of the Congress of State Drug Court Associations.

The PPCs and statewide problem-solving court coordinators were contacted by phone, e-mail and in person at the annual meeting of the National Network of State and Territorial Drug Court Coordinators to solicit any and all evaluation reports that were available on DWI Courts in their jurisdictions. At least three follow-up reminders were sent to each individual who did not respond to a prior contact. Out of 53 states and territories, representatives of 29 (55%) responded to the solicitations. Of those, 17 provided at least one evaluation report and 12 indicated their jurisdiction either had no DWI Court, no evaluation had been completed, or the evaluation report was not yet available.

A literature search was also conducted of published studies on relevant electronic databases, including PubMed, Medline, PsychINFO and the Computer Retrieval of Information on Scientific Projects (CRISP). The CRISP database describes federally funded biomedical research projects conducted at universities, hospitals and other research institutions. An exhaustive list of logically derived search terms was entered into each database. The search terms and number of "hits" returned for each term are presented in Table 1. Abstracts of all citations returned from the searches were reviewed to determine their face validity by two doctoral-level scientists (i.e., whether they appeared to be reporting on the evaluation of a DWI Court program).

Table 1. Search Terms for Published Electronic Databases

Term	Hits	Term	Hits
DUI	226	“Drug court” + DWI	0
“DUI Court”	18	“Drug court” + DUI	1
DUI + Driving	157	“Impaired Driving”	0
DUI + Court	0	“Program Evaluation” + DWI	5
DWI*	1268	DUI + Traffic	68
“Driving while Intoxicated”	173	DWI + Traffic	79
DWI + Driving	160	“Drunk Driving”	255
DWI + Court	19	“Drunk Driving” + Court	11
“Drunk Driving Court”	20	“Drunk Driving” + Diversion	2
“Driving Under the influence”	347	“Drunk Driving” + “Treatment Court”	18
“Driving Under the influence” + Court	22	“Specialty Court”	0
“Drug Court”	35	“Problem Solving Court”	0
“Drug Court” + Traffic	0	“Treatment Court”	18

Pre-Screening

A total of 41 published and unpublished evaluations were identified from the above sources. These, in turn, were subjected to a pre-screening process to confirm that they were reporting outcomes from a DWI Court program evaluation. For example, several reports were of process evaluations and did not present client-level outcomes, such as alcohol use or recidivism. Others appeared to be reporting on a DWI Court, but further examination revealed they were actually reporting on a DWI treatment program or DWI probation track. Finally, several evaluations were of hybrid DWI/Drug Court programs and did not report the results separately for DWI offenders. Therefore, it was not possible to analyze the effects of the programs for DWI offenders.

Each report was independently reviewed by two trained raters to confirm that all of the following criteria for inclusion were met:

1. The participants must have been charged with a DWI offense.
2. The program must have involved a separately identified court docket or calendar as opposed to being administered by probation or a treatment program.
3. At least one client-level outcome must have been reported (e.g., criminal recidivism or alcohol use).
4. If the program was a hybrid DWI/Drug Court, outcomes must have been analyzed and reported separately for DWI offenders.

Prior to conducting the pre-screening, each rater completed a full-day didactic training on standardized procedures for coding critical aspects of evaluation studies according to established scientific criteria. Subsequently, the raters independently co-rated a minimum of six practice reports followed by discrepancy reviews. In most instances,

there was 100% exact agreement between the raters. In those instances when there were coding discrepancies, the raters met together with the principal investigators to resolve the discrepancies and develop explicit decision rules for handling similar issues in the future.

A total of 27 evaluations were excluded because they did not report client-level outcomes (n = 11), did not involve separately identified court dockets or calendars (n = 21) or did not report outcomes separately for DWI offenders (n = 9) (some reports were excluded for multiple reasons). Fourteen evaluations were retained for substantive review.

Methodological Quality Score (MQS)

The remaining 14 evaluations were scored by at least two independent raters for methodological rigor according to standardized review criteria. A Methodological Quality Score (MQS) was assigned to each evaluation pursuant to a scoring system adapted from the *Mesa Grande Coding System for Methodological Quality* (Miller & Wilbourne, 2002). The scoring criteria for the MQS are presented in Table 2.

Table 2. Criteria for Methodological Quality Score (MQS)*

Study Design	<ul style="list-style-type: none"> 1 = Single group, post-test only (e.g., comparison to national data) 2 = Single group, pre-to-post change 3 = Non-randomized comparison sample (e.g., drawn from a neighboring county or before the DWI Court was started) 4 = Quasi-experimental; i.e., drawn from the same population at the same time (e.g., waitlist control) 5 = Randomized
Replicability	<ul style="list-style-type: none"> 0 = Procedures not described in sufficient detail to permit replication 1 = Procedures described in sufficient detail re. inclusion criteria, comparison sample, assessments, interventions and statistical analyses
Baseline Measures	<ul style="list-style-type: none"> 0 = No client-level baseline measures reported 1 = Basic demographic information reported (e.g., age, gender, education) 2 = Baseline measures reported that are predictive of outcomes (e.g., severity of alcohol problem, DWI criminal history, prior treatment history)
Quality Control	<ul style="list-style-type: none"> 0 = Program not standardized or described 1 = Interventions standardized by manual, procedures, training, etc.

Table 2 continues . . .

Follow-up Interval	<ul style="list-style-type: none"> 0 = Follow-ups conducted during treatment only 1 = Follow-ups conducted < 6 months post-discharge 2 = Follow-ups conducted 6 to 11 months post-discharge 3 = Follow-ups conducted \geq 12 months post-discharge
Dosage	<ul style="list-style-type: none"> 0 = No discussion of the dosage or % of services received 1 = One of the following was reported: dosage of treatment services, court/criminal justice contacts or biological testing received 2 = Two of the following were reported: dosage of treatment services, court/criminal justice contacts or biological testing received 3 = Dosage of treatment services, court/criminal justice contacts and biological testing all reported
Collaterals	<ul style="list-style-type: none"> 0 = No collateral verification of clients' self-report (e.g., family members, employers) 1 = Collaterals interviewed
Objective Verification	<ul style="list-style-type: none"> 0 = No objective verification of clients' self-report 1 = Verification of client reports (e.g., criminal records, urine screens, pay stubs)
Dropout/attrition	<ul style="list-style-type: none"> 0 = Dropouts not accounted for 1 = Dropouts enumerated and attrition statistically accounted for

Table 2 continues . . .

Statistical Power	0 = Inadequate statistical power due to small sample size or attrition 1 = Adequate statistical power with adequate sample size
Analyses	0 = No statistical analyses or clearly inappropriate analyses 1 = Appropriate statistical analyses
Generalizability	0 = Evaluation conducted at single site 1 = Parallel evaluations conducted at two or more sites
Follow-up Rate	0 = < 70% follow-ups completed 1 = 70 to 84% follow-ups completed 2 = 85 to 100% follow-ups completed

**Adapted from Miller & Wibourne (2002); Vaughn & Howard (2004)*

The *Mesa Grande Coding System* was selected for several reasons. First, it is the only coding system specifically developed for evaluations of substance abuse treatment interventions (e.g., Becker & Curry, 2008; Miller et al., 1995). Second, it has been frequently used in reviews of various types of substance abuse treatments (Miller & Wilbourne, 2002; Vaughn & Howard, 2004) and therefore provides a basis for comparing the quality of DWI Court evaluations against those of other substance abuse programs. Third, unlike coding systems such as CONSORT that were developed for tightly controlled, experimental studies (Moher et al., 2001; Moja et al., 2005), the MQS employs more liberal scoring criteria that can be used for evaluations in “real-world” treatment settings. For example, it applies partial credit for non-randomized designs and does not require strict adherence to treatment manuals or therapist-competency measures.

The *Mesa Grande* system does, however, require scientifically defensible evaluation designs that permit inferences of causality to be reached about the effects of the programs. Some DWI Courts may lack sufficient resources or scientific expertise to pass muster, even under this more liberal scoring system; however, the alternative of lending credence to unreliable findings is not acceptable for a systematic literature review. Importantly, it should be recognized that the MQS assesses the quality of the evaluation designs, and not the quality of the DWI Courts themselves. The MQS criteria generally relate to research procedures and statistical analyses and do not address matters of professional competence, training or team functioning.

The MQS ranges from 0 to 23 with higher scores reflecting greater methodological rigor. A score satisfying at least 80% of recommended criteria (i.e., $MQS \geq 19$ out of 23) was considered to be “good” and a score satisfying at least 65% of recommended criteria ($MQS \geq 15$) was considered to be “marginally acceptable” (cf., Miller & Wilbourne, 2002).

A relatively liberal cut-off score of 65% was set for marginally acceptable evaluations because most DWI Court evaluations are conducted in real-world programs by local evaluators and not in scientifically controlled research settings. Setting more stringent criteria could have the effect of excluding evaluations that provide useful and practical information about how these programs perform in day-to-day practice.

As with the pre-screening process, the raters were required to complete a didactic training on standardized coding procedures and independently evaluated at least six practice reports. No rater participated in the project until he or she attained $\geq .80$ inter-rater reliability (IRR) with other raters on anchoring protocols. All scoring discrepancies were resolved as a group with the principal investigators and the agreed-upon scores were used in substantive data analyses.

Program Maturity Index (PMI)

Each DWI Court was also assigned a Program Maturity Index (PMI) reflecting the number of years it had been in operation prior to the initiation of the evaluation. Generally speaking, data collected during the first year of operations should be used to inform programmatic modifications, and should ordinarily be included in a process analysis as opposed to an outcome analysis (e.g., Heck, 2006; Rempel, 2007). Ideally, DWI Courts should be given ample time to pilot-test their operations and implement indicated modifications before outcome analyses are conducted. The PMI was not included as part of the MQS because it does not relate to the evaluation procedures, but rather to the experience and maturity of the program.

The PMI ranged from 0 to 3 with higher scores indicating longer-standing programs. The PMI scores were assigned according to the following criteria:

- 0 = program was < 1 year old
- 1 = program was \geq 1 year old and < 2 years old
- 2 = program was \geq 2 years old and < 3 years old
- 3 = program was \geq 3 years old

Importantly, some evaluations were conducted over an extended period of time and reported outcomes for participants who entered during the first year of operations as well as during subsequent years. If it was not possible to disentangle the results of the first year of operations from those of subsequent years, the evaluation received a PMI of 0 (i.e., < 1 year).

RESULTS

The proportion of evaluations satisfying various methodological criteria is presented in Table 3. One-half (50%) of the evaluations employed non-randomized comparison samples, such as DWI offenders who were arrested in a neighboring county or prior to the establishment of the DWI Court program. Twenty-nine percent of the evaluations were single-group studies that compared outcomes to national data, and 21% were randomized experiments.

Table 3. Proportion of Evaluations Satisfying Methodological Criteria: n (%)

Study Design	Single group, post-test	4(29%)
	Single group, pre-to-post change	0(0%)
	Non-randomized comparison sample	7(50%)
	Quasi-experimental	0(0%)
	Randomized	3(21%)
Replicability	Procedures not described in sufficient detail	5(36%)
	Procedures described in sufficient detail	9(64%)
Baseline Measures	Client-level variables not reported	5(36%)
	Basic demographics reported	1(7%)
	Predictors of outcomes reported	8(57%)
Quality Control	Interventions not described or standardized	3(21%)
	Interventions described and standardized	11(79%)
Follow-up Interval	Follow-ups during treatment only	6(43%)
	Follow-ups < 6 months post-discharge	1(7%)
	Follow-ups 6 to 11 months post-discharge	2(14%)
	Follow-ups \geq 12 months post-discharge	5(36%)

Table 3 continues . . .

Dosage	No dosage of services reported	11(79%)
	Dosage of one service reported	1(7%)
	Dosages of two services reported	0(0%)
	Dosages of three services reported	2(14%)
Collaterals	No collateral verification of client reports	14(100%)
	Collaterals interviewed	0(0%)
Verification	No objective verification of client reports	4(29%)
	Verification of client reports	10(71%)
Dropout/attrition	Dropouts not accounted for	5(36%)
	Dropouts accounted for	9(64%)
Statistical Power	Inadequate statistical power	8(57%)
	Adequate statistical power	6(43%)
Analyses	No statistical analyses or inappropriate analyses	9(64%)
	Appropriate statistical analyses	5(36%)
Generalizability	Single site	13(93%)
	Two or more sites	1(7%)
Follow-up Rate	< 70% follow-up rate	6(43%)
	70% to 84% follow-up rate	0(0%)
	85% to 100% follow-up rate	8(57%)

Roughly two-thirds (64%) of the evaluations described the research methods in sufficient detail to permit replication by other investigators. Over three-quarters (79%) of the DWI Court programs followed a standardized regimen that was sufficiently described in the evaluation report to permit the reader to understand the type of program that was being assessed.

Nearly three-quarters of the evaluations (71%) reported on objectively verifiable outcome measures, such as urine results or graduation rates; however, none collected information from collateral persons, such as family members or employers. Unfortunately, nearly two-thirds of the evaluations failed to properly account for participant dropout (64%) or used inappropriate or no statistical analyses (64%). The evaluations were about evenly split in terms of whether they had a large enough sample size for statistical power (43%), achieved a minimally adequate follow-up rate of at least 70 percent (57%) and measured outcomes over a period of at least six months post-discharge (50%).

A large proportion (79%) of the evaluations failed to report any information on the dosages of services that were actually received by participants, such as the number of counseling sessions or status hearings that were attended (as opposed to what was planned or scheduled). Only 14% of the evaluations reported dosage information on several key services for a DWI Court program, including counseling sessions, court hearings and biological tests for substance use. As a result, it was not possible in most instances to determine which components of the programs, if any, might have contributed to effective outcomes or how well the programs were implemented in practice.

Figure 1 depicts the distribution of MQS scores for the 14 evaluations. One evaluation exceeded 80% of recommended methodological criteria and an additional four evaluations exceeded 65% of recommended criteria.

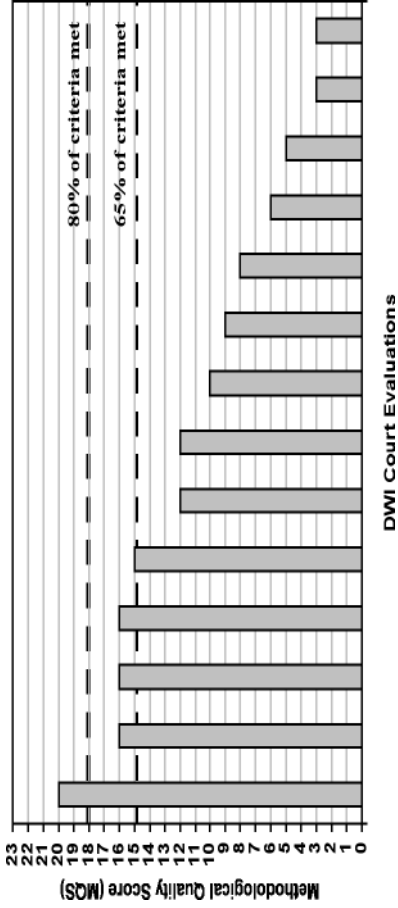


Figure 1. Distribution of Methodological Quality Scores (MQS) for DWI Court Program Evaluations Released Through April 30, 2007

The five evaluations satisfying at least 65% of recommended criteria are summarized in Table 4 and described below. Of these, three had PMI scores of 0 indicating they evaluated the programs, at least in part, during the first year of operations. The remaining two programs had been in operation for at least two years prior to initiating the evaluation.

Table 4. Summary of DWI Court Program Evaluations with Good to Marginally Acceptable MQS Scores

Citation	MQS (0 – 23)	PMI (0 – 3)	Primary Outcome(s)	Follow-up Interval	Comparison Sample	Summary of Results
Jones (2005)	20	0	Convictions for alcohol-related traffic offenses	2 years post-entry	Random assignment to DWI probation	Intent-to-treat sample: n.s. Completers: 3.6% vs. 6.4% $p < .05$, ES = .13 (small)
MacDon- ad et al. (2007)	16	0	Arrests for alcohol- related offenses	2 years post-entry	Random assignment to DWI probation	n.s.
			Self-reported DWI events Self-reported alcohol abuse			n.s. n.s.
						<i>Table 4 continues . . .</i>

Lapham et al. (2006a) *	16	0	Convictions for DWI	3 to 6 years post-entry	Adjudication as usual in neighboring counties; matched on baseline variables	9.8% vs. 18.3%
			Convictions for driving with a suspended or revoked license			$P < .01$, ES = .25 (small)
			Convictions for moving traffic violations			14.6% vs. 27.2%
Meredith (2007)	16	3	Arrests for any felony offense	24 months post-graduation	DWI offenders from same counties prior to the DWI Courts; selected on similar basic demographic features	28.0% vs. 38.4%
			Arrests for any misdemeanor offense			$P < .01$, ES = .22 (small)
			Arrests for drug offenses			Graduates: 14% vs. 33%
						Graduates: 17% vs. 30%
						$P < .05$, ES = .31 (small)
						Graduates: n.s.
						<i>Table 4 continues . . .</i>

Brecken- ridge et al. (2000)	15	2	Arrests for DWI offenses	24 months post-arrest	Random assignment to adjudication as-usual	Graduates: 5% vs. 19% $P < .05$, ES = .45 (medium)
			Convictions for traffic offenses			
			Convictions for alcohol, drug or other serious offenses			n.s.

Notes: MQS = Methodological Quality Score. PMI = Program Maturity Index. n.s. = not statistically significant. ES = effect size expressed as h for proportional data.

* Reflects an intensive court supervised probation program.

Good to Marginally Acceptable Evaluations of Immature Programs

Three evaluations employed good to marginally acceptable research methodology, but involved programs that had been in operation for only a short period of time. As a result, the implications of the findings for the efficacy of those DWI Courts remain somewhat questionable.

Maricopa County DWI Court.

The evaluation receiving the highest MQS (20 out of 23; 86%) was an experimental study of the Maricopa County (Arizona) DWI Court (Jones, 2005). Individuals convicted of a felony DWI offense were randomly assigned either to the DWI Court ($n = 387$) or to the county's standard probation program ($n = 397$). Recidivism was measured as the statistical probability of being convicted of a new alcohol-related traffic offense, including DWI, at two years post-entry. Proportional hazards survival analysis was performed on recidivism data extracted from State Department of Motor Vehicle (DMV) records.

Among the intent-to-treat sample (i.e., all individuals who initially entered the study), 5.4% of the DWI Court participants and 7.4% of the standard probationers were convicted of a new alcohol-related traffic offense. Although this difference was not statistically significant ($p = .15$), it did reveal a marginal trend in the predicted direction. Among completers of their respective programs, the re-conviction rate was 3.6% for DWI Court graduates ($n = 270$) and 6.4% for probation completers ($n = 284$), which was statistically significant after controlling for the number of prior alcohol-related traffic offenses ($p < .05$).

On one hand, these results are in support of the DWI Court. Among graduates, outcomes were significantly better than for probation completers. However, the magnitude of

this effect according to Cohen's (1988) criteria was small ($h = .13$) and did not hold up for the original intent-to-treat sample. At a minimum, this requires replication in order for one to place confidence in the results.

It is also noteworthy that the evaluation was performed over a 63-month period beginning at or near the founding of the program. It is unclear what proportion of the sample entered the program after the DWI Court had been in operation long enough to develop and improve its services. If a sizeable proportion of the sample entered the program during its infancy year, this could have diminished the results to some degree.

Rio Hondo DWI Court.

Another randomized experimental evaluation was conducted of the Rio Hondo DWI Court in Los Angeles County, CA (MacDonald et al., 2007). Offenders convicted of a second or third misdemeanor DWI between May of 2000 and December of 2002 were eligible to participate. Consenting individuals were randomly assigned either to the DWI Court ($n = 139$) or to standard adjudication ($n = 145$). Outcomes included re-arrest rates for DWI and other alcohol-related crimes, as well as self-reported drunk-driving events and alcohol abuse. At the two-year follow-up, results revealed no significant differences on any outcome measure between the two conditions.

Importantly, the Rio Hondo DWI Court was created as an "experimental" program concurrently with the initiation of the research study (MacDonald et al., 2007, p. 9). It had not previously been in existence and ceased its operations upon conclusion of the research. There was apparently no opportunity for the program to pilot-test or improve its operations, nor was the outcome evaluation preceded by a process evaluation that documented the program's fidelity to applicable professional standards (NADCP, 1997; NDCI,

2006). Moreover, no dosage information was reported on how often the participants actually attended treatment sessions or status hearings or had been tested for substance use. As such, it is difficult to know whether the operations of this program were reflective of a typical DWI Court program.

It is also important to note that participants in the control condition received interventions that are ordinarily associated with a DWI Court, and not with probation as-usual—a confound known as “bleeding” or “contamination”. For example, the control participants were ordered to attend status hearings in court twice during the first six months of the program whereas DWI Court participants were ordered to attend status hearings only three times during the first six months (MacDonald et al., 2007, p. 11). The control participants were ordered to attend a total of five to seven court hearings whereas the DWI Court participants were ordered to attend a total of eight to ten hearings. This might have represented a negligible difference between the two groups on the one ingredient (court hearings) that most clearly distinguishes DWI Courts from other interventions for DWI offenders (e.g., Marlowe, 2006; Marlowe et al., 2004). It should not be surprising that outcomes were similar between the two groups because the probation subjects received key elements of the DWI Court model.

Multnomah DUI Intensive Supervision Program.

Multnomah County, Oregon developed a court-supervised intensive probation program for felony and misdemeanor DWI offenders. Referred to as DISP (DUI Intensive Supervision Program), this program is primarily managed by the probation department but includes continuing court jurisdiction and court appearances at roughly four to six-month intervals. It is scheduled to be three years in length and incorporates a wide range of interventions, including intensive treatment and probation contacts, victim impact panels, electronic monitoring,

telephonic breath testing, driver's license suspension, mandatory vehicle sales and polygraph testing.

Outcomes from the DISP program ($n = 460$) were compared to those of standard adjudication for DWI offenders drawn from neighboring counties ($n = 497$) and matched on relevant baseline variables, including current age and number of prior DWI offenses (Lapham et al., 2006a?). Recidivism data were extracted from the state DMV and included the proportion of subjects convicted of a new DWI offense, driving with a suspended or revoked license, or moving traffic violation. The samples were drawn on a rolling basis from the start of the program in January, 1998 through March, 2001 and outcomes were evaluated through March, 2004. As such, outcomes were assessed between three and six years post-entry depending upon when a particular participant first entered the program.

Results revealed that DISP participants were less likely to be convicted of a subsequent DWI offense (9.8% vs. 18.3%), driving with a suspended or revoked license (14.6% vs. 27.2%) or traffic violation (28.0% vs. 38.4%). These effects were all statistically significant ($p < .01$) and were in the small range ($h = .22$ to $.31$) according to Cohen's (1988) criteria. The time-delay until the first recidivist event was also significantly longer for DISP participants ($p < .001$), suggesting they refrained from DWI conduct for a longer time after leaving the program.

While potentially supportive of the DWI Court model, it is difficult to know whether these superior effects were attributable to the court-based elements of the program as opposed to the exhaustive regimen of probationary interventions that were also available. The DISP program differed from standard probation on so many dimensions that it is not possible to determine which aspects may have elicited the beneficial effects. Indeed, against the backdrop of such an intensive and multifaceted program, it is often

difficult to experimentally isolate the effects of any one component. This could explain, in part, why the investigators were unable to detect specific effects for certain sanctioning elements of DISP, such as mandatory vehicle sales (Lapham et al., 2007).

Marginally Acceptable Evaluations of Mature Programs

Two evaluations received marginally acceptable MQS scores and involved DWI Courts that had been in existence for an extended period of time prior to initiating the research.

Georgia's Athens-Clarke, Chatham and Hall County DWI Courts.

A multi-site evaluation was completed of three DWI Courts in Georgia (Meredith, 2007). Recidivism data were extracted from state criminal justice databases on re-arrests for any felony offenses, any misdemeanor offenses, drug offenses and DWI offenses at 12 and 24 months post-completion. Comparison samples were drawn from the same counties (n = 281) prior to the founding of the DWI Courts. Although 645 offenders initially entered the DWI Court programs, analyses were only reported on 364 (56%) graduates.² Results revealed the DWI Court graduates had significantly fewer re-arrests in all offense categories at 12 months post-completion and in all offense categories other than drug crimes at 24 months post-completion.

Unfortunately, the failure to report outcomes on the entire intent-to-treat sample (i.e., on all individuals who initially entered the DWI Courts) renders the comparisons of

²A re-analysis of the data was completed in July of 2008, which included the entire intent-to-treat sample (Fell et al., 2008). The preliminary results, which have not yet been published, suggest there were superior outcomes for the DWI Court participants when the drop outs and terminated cases were included in the analyses.

questionable utility. It is not appropriate to select out successful cases from the DWI Court group (i.e., successful graduates) and compare them to the entire cohort of control subjects (e.g., Heck, 2006). Analyses should have been conducted on the intent-to-treat sample, or at a minimum the comparison group should have included only successful probation completers. Otherwise, there is a serious risk of a biased comparison unfairly favoring the DWI Court programs.

Las Cruces, New Mexico DWI Court.

A randomized experimental study was conducted in the Las Cruces, New Mexico DWI Court (Breckenridge et al., 2000). First and second-time DWI offenders who were determined by clinical staff to be alcohol dependent were randomly assigned either to the DWI Court ($n = 39$) or to adjudication as usual ($n = 36$). Recidivism data were obtained from the county Municipal Court database and included new convictions for traffic offenses as well as for alcohol, drug and other serious offenses at 24 months post-arrest.

Results revealed no significant differences between the two randomized groups in terms of convictions for any of the enumerated offenses. However, due to the small sample sizes in this study, there might have been insufficient statistical power to detect differences if they were present. In fact, approximately 15% of the DWI Court participants were convicted of an alcohol, drug or other serious offense, as compared to 22% of the control participants. This difference could reflect a small to moderate effect, but the sample sizes (n 's = 39 and 36) were only sufficient to detect relatively large effects (Cohen, 1988). With a larger sample size, this difference might have turned out to be statistically significant. At a minimum, it points to a potential trend favoring the DWI Court over adjudication as usual.

DISCUSSION

This systematic literature review examined published and unpublished DWI Court program evaluations released through April 30, 2007. [See Addendum for a subsequent evaluation released in October 2007]. Although the results hint at emerging evidence potentially favoring the effects of DWI Courts, conclusions are seriously hampered by the disappointing state of the research in this area. A mere five evaluations were determined by independent raters to have employed good to marginally acceptable research methodology, and several of those evaluations still had serious flaws. These include: evaluating potentially immature programs, failing to conduct intent-to-treat analyses, and bleeding of the interventions across conditions.

In many ways, the current state of DWI Court research mirrors that of Drug Courts during the late 1990s to early 2000s when the U.S. Government Accountability Office (GAO, 2002) concluded that data were largely lacking to support the programs. Of course, an absence of data does not imply that a program is ineffective, as evidenced by a subsequent GAO report (GAO, 2005), several recent meta-analyses (Lowenkamp et al., 2005; Shaffer, 2006; Wilson et al., 2006) and numerous review articles (e.g., Aos et al., 2006; Belenko, 1998; Cissner & Rempel, 2005; Marlowe et al., 2003). All concluded that Drug Courts significantly reduce crime and drug use while participants are enrolled in the programs, and significantly reduce criminal recidivism following discharge. Unfortunately, until those data were appropriately collected and disseminated, Drug Courts remained vulnerable to serious criticisms, encroachments from competing philosophies, and funding cuts. At this juncture, DWI Courts are vulnerable to the very same criticisms and encroachments.

There is no alternative but to sponsor scientifically defensible studies that can fairly establish the effects of DWI

Courts as compared to adjudication as usual and as compared to alternative intervention approaches (e.g., intensive DWI probation). Because the methodological criteria outlined in Table 2 reflect best practices for the field of evaluation research, criteria such as these should be used to guide future designs of DWI Court program evaluations.

Most of the evaluations reviewed in this project provided insufficient information for determining how DWI Courts work and for what types of offenders. A large proportion (79%) of the evaluations failed to report any information on the dosages of services that were received by participants, such as the number of counseling sessions or status hearings that were attended. As a result, it was not possible to examine which services, if any, might have contributed to effective outcomes or how well the programs were implemented in practice. Future DWI Court evaluations should report on the dosages of services received by participants and conduct mediational analyses to determine which components contributed to effective outcomes.

The evaluations also generally limited outcome analyses to recidivism rates and graduation rates. Therefore, there was no way to examine effects on proximal or short-term outcomes, such as counseling attendance or abstinence rates, and to determine whether these proximal effects mediated longer-term outcomes. It is important to know, for example, whether reductions in alcohol or drug use lead to longer-term reductions in DWI recidivism, or whether these outcomes are relatively independent of one another. Future evaluations should report information on proximal outcomes and examine whether these proximal outcomes influence recidivism rates.

Virtually all of the evaluations reported recidivism rates over a specified time period following entry into or discharge from the programs. It would be useful to further break down recidivism events as having occurred either

during participants' active enrollment in the program or following graduation or termination. This would provide important information about whether outcomes tend to degrade after the period of intensive court supervision has ended.

Finally, it is important to recognize that no program would be expected to be effective for all DWI offenders. Drug Courts, for example, have been shown to be most effective for high-risk drug offenders characterized by more serious criminal backgrounds or treatment-refractory courses (Fielding et al., 2002; Lowenkamp et al., 2005; Shaffer, 2006). Alternative probation programs or treatment programs may be equally effective or more cost-efficient than Drug Courts for low-risk offenders (e.g., DeMatteo et al., 2006). DWI Courts might turn out to be necessary only for certain types of DWI offenders as well. Approximately one-half (57%) of the evaluations examined in this review reported client-level characteristics in their samples that are known to predict DWI recidivism and none conducted statistical analyses aimed at detecting potential interaction effects or moderator effects. If, in fact, DWI Courts are more effective for some types of DWI offenders but not others, failing to examine interaction effects could wash-out the results and lead to the unwarranted conclusion that DWI Courts are ineffective for the DWI population as a whole (e.g., Taxman & Marlowe, 2006).

A substantial literature base is available that identifies reliable and robust predictors of DWI recidivism. The most commonly identified DWI risk factors include current age, marital status, educational attainment, employment status, arrest BAC, number of prior DWI arrests, number of prior criminal arrests, alcohol use severity, and comorbid psychiatric disorders (e.g., Beerman et al., 1988; C'de Baca et al., 2001; Lapham et al., 2006b; Nochajski et al., 1993; Nochajski & Stasiewicz, 2006; Peck et al., 1993; Schell et al., 2006; Timken, 2002). These risk variables should be

carefully measured and examined in interaction analyses in future DWI Court program evaluations.

In addition, when non-randomized comparison samples are being used, it is incumbent upon the researcher to match the groups on at least some of these predictor variables, rather than simply matching on convenient demographic characteristics (e.g., race or county of residence) that may be easy to measure but do not necessarily relate to a risk for DWI recidivism. If matching is not feasible, then at a minimum it is necessary to statistically control for baseline differences between the study conditions on significant risk variables. Failing to do so renders the findings suspect and opens the study to the legitimate criticism that the “deck was stacked” from the outset in favor of the DWI Court program.

Limitations

The primary limitation of this review relates to the coding procedures that were employed. The *Mesa Grande Coding System* was selected because it is commonly used in evaluations of substance abuse treatment interventions. Therefore, it provides a basis for comparing DWI Court evaluations against those of other substance abuse treatment programs. However, it could be argued that this coding system may be too strict or too lenient in terms of assessing the scientific integrity of program evaluations.

A relatively liberal cut-off score of 65% was set for “marginally acceptable” evaluations because most DWI Court evaluations are conducted in real-world programs by local evaluators and not in scientifically controlled research settings. Setting more stringent criteria could have the effect of excluding many evaluations that provide useful and practical information about how these programs perform in day-to-day practice. On the other hand, it is possible for evaluations having a single major flaw, such as failing to

include dropouts or terminated cases in the data analyses, to receive marginally acceptable scores using this liberal cut-off. Ultimately, each evaluation must be further assessed regarding its specific methodology, and some evaluations that received marginal scores may still need to be excluded from consideration on other grounds. Setting a relatively liberal cut-off score merely avoids prematurely excluding evaluations from further consideration.

As noted, the *Mesa Grande* system does require scientifically defensible evaluation designs that permit inferences of causality to be reached about the effects of the programs. Some DWI Courts may lack resources or scientific expertise to pass muster under this system. However, this is not to imply that their evaluations are useless. Although some evaluations may not be rigorous enough from a scientific perspective, they may still be acceptable and useful for local purposes, such as reporting process findings and cost data to funders or state or local governments. Being excluded from this systematic review should not be taken as an indication that evaluation findings have no value, and certainly should not be taken as an indication that the program itself is not effective. There are undoubtedly many effective programs that simply have not, as yet, been adequately studied.

Finally, there is room for debate about how to interpret the Program Maturity Index (PMI). As discussed earlier, it is generally viewed as preferable to give programs ample time to pilot-test their operations and implement indicated modifications before outcome analyses are conducted (Heck, 2006; Rempel, 2007). However, newer programs may also have certain advantages, such as motivated leadership, fresh political will, and new funding sources. It is possible that the effects of programs may degrade over the years as a result of reduced funding, changing political priorities, staff turnover or staleness of the operations. As such, it is not necessarily the case that

evaluations with low PMI's should be excluded from consideration or their results afforded less weight. Ideally, programs should be repeatedly evaluated over multiple years to permit a determination of whether outcomes tend to improve with experience or degrade from loss of interest or newer priorities.

Summary

[2] In summary, although the results of this systematic review hint at emerging evidence potentially favoring the effects of DWI Courts, it is not possible at this juncture (as of 4/30/07) to reach scientifically defensible conclusions about the effects of DWI Courts due to the current state of the evaluation literature. It is hoped that the methodological criteria outlined in this review can serve as a template for future DWI Court program evaluations and assist practitioners and policymakers to become competent and effective consumers of DWI Court program evaluation findings.

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Citations marked with an asterisk () reflect DWI Court program evaluations that received Methodological Quality Scores (MQS) in the “good” to “marginally acceptable” range.

ADDENDUM

Research Update: Michigan DUI Courts' Outcome Evaluation

[3] This addendum summarizes the results of a three-county evaluation of DWI Courts conducted in the State of Michigan and released after the official cut-off date for the systematic review (Michigan State Court Administrative Office & NPC Research, 2007).

Methods

With funding from the Michigan Office of Highway Safety Planning, data for the evaluation were compiled by the Michigan Supreme Court State Court Administrative Office (SCOA), and outcome analyses were performed independently by NPC Research. Three DWI Courts located in Ottawa and Bay Counties and the City of Clarkston were evaluated. The Ottawa DUI Court serves individuals charged with a second DWI offense, the Bay County DUI Court serves second and third-time repeat DWI offenders, and the Clarkston DUI Court serves first-time and repeat DWI offenders.

The comparison samples consisted of DWI offenders from the same counties who would have been eligible for the DWI Courts, but had been arrested in the year prior to the founding of the programs. The comparison individuals were subjected to adjudication as usual and were commonly sentenced to probation. Outcomes were evaluated at one and two years post-entry to the DWI Court or to probation. For Clarkston County, recidivism data on felony and serious misdemeanor offenses were extracted from the Michigan State Police Criminal History Records Database and driving records were obtained from the Michigan Secretary of State. For the other two counties, recidivism data were extracted from the Michigan Judicial Data Warehouse, which includes

data on criminal arrests and drug or alcohol-related traffic offenses.

Outcome analyses were performed on an intent-to-treat basis including both graduates and unsuccessful terminations. Primary statistical analyses compared the percentages of individuals arrested for any new offense and the average number of arrests at one and two year follow-ups as well as DWI arrests at two-year follow-up. Survival analyses also compared the average length of time to the first arrest during the two-year follow-up period.³

Results

The evaluation received a Methodological Quality Score (MQS) of 19 out of 23, satisfying 83% of recommended criteria. As such, it would have been included in the previous systematic review had the study been released prior to the cut-off date of April 30, 2007.

Table 5 presents re-arrest rates by county for the DWI Court and comparison samples as reported in the original evaluation report. Participants in DWI Court were significantly less likely in two out of the three counties to be arrested for any new offense within two years of entry, and significantly less likely to be arrested for a new DWI offense in one of the counties. In most of the comparisons, the trends favored better outcomes for the DWI Court participants; however, small sample sizes

³ Within-group analyses involving only the DWI Court participants were also conducted. These analyses examined rates of positive drug and alcohol tests over time, compared outcomes between graduates and non-graduates, and identified predictors of successful completion. Because these analyses did not involve a comparison sample, they are not summarized in this update, but are available from the original evaluation report.

appear to have contributed to insignificant results in some instances due to inadequate statistical power. The estimated effect sizes (ES) ranged from $h = .18$ to $.57$, which is in the small to moderate range according to Cohen's (1988) criteria, and most were between approximately 0.30 and 0.50. In many instances, however, the sample sizes only provided sufficient statistical power to detect large effects.

Table 5. Recidivism Outcomes for DWI Court Clients and Comparison DWI Probationers in Three Michigan Counties

	DWI Court	Comparison	<i>p</i>	ES
Ottawa County				
<i>1 year post-entry</i>	<i>n</i> = 143	<i>n</i> = 66		
% arrested	4%	15%	< .01	0.39
<i>2 years post-entry</i>	<i>n</i> = 72	<i>n</i> = 66		
% arrested	8%	24%	< .01	0.45
% arrested for DWI	1%	14%	< .05	0.57

Table 5

continues . . .

Bay County

<i>1 year post-entry</i>	<i>n</i> = 85	<i>n</i> = 49	
% arrested	15%	22%	n.s.
<i>2 years post-entry</i>	<i>n</i> = 54	<i>n</i> = 47	
% arrested	18%	31%	< .05
% arrested for DWI	1%	6%	n.s.

Clarkston

<i>1 year post-entry</i>	<i>n</i> = 89	<i>n</i> = 146	
% arrested	5%	6%	n.s.
<i>2 years post-entry</i>	<i>n</i> = 37	<i>n</i> = 144	
% arrested	5%	14%	n.s.
% arrested for DWI	2%	10%	n.s.

Notes: n.s. = not statistically significant. ES = effect size expressed as *h* for proportional data.

Similar differences were found when comparing the average numbers of arrests; however, those data are not presented in the interests of brevity. Some of the comparisons were not statistically significant presumably because the data were skewed (i.e., there were many zero values); however, the trends were virtually the same, favoring the DWI Court participants. In addition, survival analyses revealed DWI Court participants remained arrest-free for significantly longer periods of time than did the comparison probationers in two out of the three counties.

Conclusion

Results of this study lend promising support for the DWI Court model. Given the limited research on DWI Courts, more high-quality evaluations are needed to confirm the effects of DWI Court programs. These evaluations are also needed to enhance practitioners' understanding of how DWI Court programs may exert positive effects and for which target populations they may be best suited.

**BUILDING THE EVIDENCE BASE FOR FAMILY
DRUG TREATMENT COURTS: RESULTS FROM
RECENT OUTCOME STUDIES**

**Beth L. Green, Ph.D., Carrie J. Furrer, Ph.D.,
Sonia D. Worcel, M.A., M.P.P., Scott W. M. Burrus, Ph.D.,
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Family Drug Treatment Courts (FDTCs) are an increasingly prevalent program designed to serve the multiple and complex needs of families involved in the child welfare system who have substance abuse problems. It is estimated that over 301 FDTCs are currently operational in the United States. Few rigorous studies of FDTCs have examined the effectiveness of these programs. This paper reviews current FDTC research and summarizes the results from four outcome studies of FDTCs. Results suggest that FDTCs can be effective programs to improve treatment outcomes, increase the likelihood of family reunification, and reduce the time children spend in foster care. However, further research is needed to explore how variations in program models, target populations, and the quality of treatment services influence effectiveness.

Data collected for the four-site study (Green, Furrer, Worcel, Burrus, & Finigan, 2007) were supported under contract number 270-02-7107 from the Substance Abuse and Mental Health Services Administration (SAMHSA), U.S. Department of Health and Human Services (USDHHS). The views, policies, and opinions expressed are those of the authors and do not reflect the views of SAMHSA or USDHHS.

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Carrie Furrer, Ph.D., is a Research Associate at NPC Research. She has been working on behalf of children and their families for over 15 years. Her experience includes program evaluation related to early family drug courts, childhood prevention and intervention, youth development, family support, drug and alcohol abuse prevention, and child welfare, research on adolescent motivation and health behavior, and child and family counseling. Dr. Furrer earned a Ph.D. in Systems Science: Applied Developmental Psychology from Portland State University, with an emphasis on applied research methods, and an MS in Counseling Psychology from Lewis & Clark College.

Michael W. Finigan, Ph.D., President of NPC Research, has been involved in research and evaluation in the criminal justice arena since 1986. His work has focused on substance abuse treatment and prevention for both adolescents and adults, particularly in criminal justice settings. He currently serves as principal investigator on drug court cost benefit evaluations in California, Maryland, Vermont and Michigan. Other current roles include co-principal investigator on a CSAT-funded national evaluation of family treatment drug courts.

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ARTICLE SUMMARIES**FAMILY DRUG
TREATMENT COURTS**

[4] Family Drug Treatment Courts (FDTCs) were developed to improve substance abuse treatment outcomes and increase the likelihood of family reunification for substance abusing parents in dependency proceedings.

**RESEARCH ON FAMILY
DRUG TREATMENT COURTS**

[5] Few studies have examined the effectiveness of the FDTC model. Four outcome studies of FDTC programs are summarized here.

**CURRENT STUDIES
ON FAMILY DRUG
TREATMENT COURTS**

[6] The studies included 739 participants in four FDTCs in California, Nevada and New York. Matched comparison cases were selected from the participating sites or adjacent comparison counties. Outcome data were collected from court, treatment and child welfare records.

**RESULTS OF CURRENT
STUDIES ON FAMILY DRUG
TREATMENT COURTS**

[7] Parents in FDTCs entered treatment more quickly, remained in treatment longer, and were more likely to complete treatment. Their children spent less time in foster care and were more likely to be reunified.

INTRODUCTION

Parents or guardians with substance abuse problems represent the majority of caretakers involved with the child welfare system. Studies have found that 25% to 80% of parents involved with the child welfare system have substance abuse problems (U.S. Department of Health and Human Services [USDHHS], 1999; Magura & Laudet, 1996; Murphy, Jellnick, Quinn, Smith, Poitras, & Goshko, 1991; National Center on Addiction and Substance Abuse [CASA], 1999). Furthermore, an increase in methamphetamine use over the past decade has been associated with a concurrent rise in rates of reported child maltreatment. This pattern is especially true in the western part of the U.S., although increasingly elsewhere as well (Huddleston, 2005).

Working with families with substance abuse issues who are involved with child welfare continues to be a challenge to the family court and child welfare systems (USDHHS, 1999; Young, Gardner, & Dennis, 1998). These parents tend to have lower rates of successful reunification and their children have longer foster care placements compared to other families involved with dependency courts (Gregoire & Schultz, 2001; Murphy et al., 1991; Tracy, 1994). Federal legislation mandates limited timelines for parents to achieve sobriety and be successfully reunified with their children (*Adoption and Safe Families Act* [ASFA], 1997). These requirements further challenge the child welfare system to adequately protect the safety of the child, provide sufficient resources to the family, and support parents who are struggling to overcome addiction. Given that recovery from addiction is often a lifelong process characterized by cycles of relapse and sobriety, the courts must make difficult decisions concerning parents struggling to attain stability and sobriety (USDHHS, 1999; Young, Gardner, & Dennis, 1998).

[4] In response to these challenges, Family Drug Treatment Courts (FDTCs)—also known as Family Treatment Drug Courts, Dependency Drug Courts, and Child Protection Courts—have dramatically grown in popularity over the past 10 years. As of December 31, 2007, there were 301 FDTCs operating in 38 states in the U.S., almost doubling the number of FDTCs in just three years (Huddleston, Marlowe, & Casebolt, 2008). FDTCs are court-based interventions that were adapted from the adult drug court model. The basic FDTC model includes frequent court hearings and drug testing, intensive judicial monitoring, provision of timely substance abuse treatment and wrap-around services, and rewards and sanctions linked to service compliance (Center for Substance Abuse Treatment [CSAT], 2004; Edwards & Ray, 2005). FDTCs work to provide a non-adversarial judicial milieu in which parents receive intensive monitoring and services through a collaborative drug court team. The team typically includes representatives from the judicial, child welfare, and treatment systems (and sometimes from related systems such as public health and mental health) who work together to support and monitor the parent. Parents appear before the FDTC judge more frequently than in the case of traditional child welfare processing, often with a diminishing schedule of hearings as parents make progress. FDTCs work to facilitate rapid entry into treatment for participants. Close communication is maintained among treatment providers, child welfare caseworkers and the judicial system to monitor progress and provide swift intervention should relapse occur (Wheeler & Fox, 2006). Programs typically last about one year with a graduation ceremony at the end of services.

Although adult drug courts work primarily with criminally involved adults who participate in the drug court in lieu of a criminal record or jail sentence, this is often not the case with parents in FDTCs. Rather, these adults have civil family court charges brought against them. The primary goal is to support parental sobriety and work towards family

reunification while maintaining child safety (Harrell & Goodman, 1999). Thus, the FDTC meets the dual challenges of supporting parents and attending to the protection of the child. It is important to note that although successful reunification of families and child wellbeing are key goals for the courts, in practice many FDTC teams focus primarily on parents' drug treatment and other collateral issues. Indeed, in some FDTCs the family's dependency case and the final decision regarding reunification is not made by an FDTC judge but by a separate judge (Boles, Young, Moore, & DiPirro-Beard, 2007; Edwards & Ray, 2005). This *parallel* model is in contrast to the *integrated* family court model (also referred to as a *unified* family court model) in which the same judge presides over both the parent's drug court proceedings as well as the family's dependency case (Boles et al., 2007).

Although research has garnered sound evidence for the effectiveness of adult drug courts (Belenko, 2001; U.S. Government Accountability Office [GAO], 2005), research on FDTCs is relatively new. A review of the research literature by American University in 2005 cited only four studies of FDTCs. Of those studies, none were in the published literature and only two included comparison groups. Other publications have reported promising graduation rates and reunification rates for FDTCs in the absence of any comparison group data (CSAT, 2004). Although some local evaluation studies may be underway or reported informally, a thorough computer-based search of the literature and internet resources revealed only two additional evaluation reports of FDTCs in Butler County, Ohio (Center for Interventions, Treatment and Addictions Research, 2002)¹ and Billings, Montana (Roche, 2005). This is in addition to the four studies previously noted by American University. Although the Billings report described some positive

¹ This report was primarily a process evaluation and included only limited outcomes relating to the parents (e.g., employment, arrests, and income). Therefore, this study was not included in this review.

outcomes for the FDTC programs (e.g., fewer days in out-of-home placements and reductions in terminations of parental rights), the methodology and results (especially sample detail and significance tests) were not reported sufficiently to allow a clear interpretation of the findings. However, two recent special issues of the journal *Child Maltreatment* focusing on substance abuse included two rigorous outcome studies of FDTCs (Green, Furrer, Worcel, Burrus, & Finigan, 2007; Boles et al., 2007).

In this paper, we summarize the results of previous FDTC outcome studies, including one unpublished report and two published reports. We also summarize results from a recently completed, large-scale outcome study (Worcel, Green, Furrer, Burrus, & Finigan, 2008).² Results from these four studies will be discussed in an attempt to understand how differences in the FDTC program model may influence the model's effectiveness. Lastly, areas in need of additional research will be described.

RESEARCH ON FAMILY DRUG TREATMENT COURTS

[5] In 2004, a study of family drug courts in Pima County, Arizona found that families participating in the FDTC had higher rates of treatment completion and were more likely to be reunified compared to parents who refused to participate in the FDTC (Ashford, 2004). Although this study involved a very small sample (N = 33), it was one of the first to find that FDTCs were associated with improvements on both treatment and child welfare outcomes. This study relied on two quasi-experimental comparison groups: parents who refused to participate in the FDTC and parents in dependency proceedings from a geographically matched

² Note that the data presented here overlap substantially with data reported in Worcel et al. (2008).

jurisdiction that did not have a FDTC. Although neither comparison group was ideal, the findings were similar across both groups. Specifically, compared to parents who did not participate in the FDTC, parents served in the FDTC were more likely to enter substance abuse treatment (97% vs. 69%) and complete treatment (48% vs. 26%), reached permanency more quickly (mean = 8.4 months vs. 7.7 months), and were more likely to be reunified with their children (52% vs. 30%) (Ashford, 2004).

Green et al. (2007) found similar results in a larger study involving four sites. Using matched comparison samples ($n = 50$ for the comparison samples and $n = 50$ for the FDTC samples at each site), it was reported that families in all four sites were more likely to enter treatment and remained in treatment longer if they participated in the FDTC. Additionally, in two of the four sites FDTC parents were more likely to complete treatment. Child welfare outcomes were more mixed across the four sites. In one site, FDTC families were more likely to be reunified (60% vs. 25%). In two sites, FDTC cases were more likely to be closed within 24 months of the initial petition. Finally, in one site the children of parents in the FDTC received a permanent placement within a shorter period of time.

Comparisons at all four sites relied on retrospective pre-FDTC comparison groups. Thus, other historical factors, including potential changes in judicial processes or in the treatment system, could have influenced the results. For example, in one site where permanency was achieved more quickly for FDTC families, the comparison group was comprised of families who came through the family court system prior to the implementation of the ASFA legislation, which mandated a reduced time to permanency. Consequently, the results were potentially influenced by this new legislation or by other changes in child welfare policies.

A recent evaluation of the Sacramento Dependency Drug Court (Boles et al., 2007) found that parents participating in the FDTC had more admissions to treatment; however, their treatment episodes were somewhat shorter in duration. In addition, they were no more likely to complete treatment than were parents whose cases were processed through the traditional dependency court. Child welfare outcomes showed more consistently positive results. Children whose parents participated in the FDTC were more likely to be reunified (42% vs. 27%). More than half of these children spent less time in out-of-home care (mean = 683 days vs. 993 days). This study, like the Green et al. (2007) study, relied on a pre-FDTC comparison group. It is also important to note that the Sacramento Dependency Drug Court involves two separate court processes: one monitoring the child welfare case and one monitoring the parents' recovery. Thus, instead of having an integrated court in which a judge makes decisions both about the parents' recovery status and the child's placement, these issues are handled by separate judges. This parallel model for court processing differs from the integrated model used by three of the four sites studied by Green et al. (2007).

In March of 2007, Worcel and colleagues (Worcel, Green, Furrer, Burrus, & Finigan, 2007) completed a four-year longitudinal study of four FDTCs. The sites included the same programs reported in prior work (Green et al., 2007); however, the researchers used a longitudinal design with a matched comparison group consisting of families who were eligible for the FDTCs, but were not served due to limited program capacity or a lack of appropriate referrals.³ The methodology for this study is summarized below and described in detail in Worcel et al. (2008).

³At the San Diego site, all eligible substance-using families were served by the FDTC program. Therefore contrasts were made against a matched comparison group recruited from a geographically matched county.

CURRENT STUDIES ON FAMILY DRUG TREATMENT COURTS

Program Sites

[6] The four FDTCs were located in San Diego, CA; Santa Clara County (San Jose), CA; Suffolk County (Long Island), NY; and Washoe County (Reno), NV. All four of these programs excluded cases that:

- Involved child fatalities or sexual abuse;
- Involved serious mental illness on the part of the parent or guardian;
- Involved voluntary rather than court-ordered participation with child protective services;
- Were being immediately moved toward termination of parental rights (i.e., “fast tracked”); or
- Involved parental incarceration that would preclude attendance at the FDTC.

Other aspects of the programs varied, including referral and eligibility criteria, the availability of treatment and other resources in the communities, and the structure and procedures of the child welfare and dependency court systems. These differences are briefly described below.

San Diego

The San Diego site offered a unique program for substance-abusing parents known as the Substance Abuse Recovery Management System (SARMS). The SARMS program served every identified substance-abusing parent involved with the child welfare system in a system-wide reform adopted in 1998. SARMS involved two levels of service for parents. “Tier One” services were provided to all parents with substance abuse problems. This included assignment to a specialized case manager, immediate assess-

ment and referral to indicated substance abuse treatment services, and frequent drug testing. Parents who were non-compliant with treatment services in Tier One were court-ordered into the more intensive FDTC, which offered the more traditional array of family drug treatment court services. Approximately 10% of Tier One cases went on to enter the FDTC. Consequently, this site represents the least traditional FDTC model, as a number of clients received case management and recovery support services outside of the judicial context. Only those parents with more serious or treatment-refractory problems received the FDTC intervention. Furthermore, the FDTC followed a parallel judicial model in which dependency decisions were made by a different judge from the one presiding over the parents' drug court proceedings. This site drew from a large pool of treatment services. Parents could be referred to any of several dozen treatment providers, including a variety of residential and outpatient facilities.

Santa Clara County

The Santa Clara site offered a traditional FDTC program, and employed an integrated model in which the same judge supervised both the dependency case and the parents' recovery. Initially, parents participated in weekly court hearings and received support services through a drug court team. In addition to providing immediate assessment and referral to treatment, this program had a substantial transitional housing service and used graduates as mentors for current participants ("Mentor Moms"). Moreover, midway through the study, this program offered a Head Start-like program that provided early childhood services and parenting classes to parents. FDTC clients utilized a variety of treatment services, including short and long-term residential treatment and a variety of outpatient treatment providers.

Suffolk County

The Suffolk County site offered a traditional array of FDTC services and followed an integrated judicial model. However, this program served only cases involving neglect allegations and a relatively large number of families whose children were not (at least initially) removed from the parents' physical custody. In contrast, the majority of children at the other three sites were initially domiciled in out-of-home care. In addition to traditional FDTC services, this program offered Court Appointed Special Advocates (CASAs) who conducted individual family meetings and regular case conferences with Child Protective Services (CPS) and other allied team members. Similar to the California sites, this program referred FDTC parents to a wide variety of treatment providers throughout the county.

Washoe County

Founded in 1994, the final study site in Reno, NV was the first FDTC in the U.S. This court used an integrated judicial model and pioneered the standard array of FDTC protocols and services. In addition to traditional FDTC services, this site used foster grandparents as mentors for the participants and held weekly team meetings to discuss and monitor participants' progress. Unlike the other study sites, the Washoe site used only three treatment providers. All FDTC parents were referred to one of these three providers for residential or outpatient treatment.

Sample Characteristics*San Diego*

Four hundred and thirty eight participants were included from the San Diego site (SARMS $n = 334$, FDTC $n = 104$). The comparison group was comprised of a matched sample of 388 parents drawn from two demographically similar counties in

California. Within the FDTC group, the families were 48% Caucasian and 27% Hispanic. Almost half (46%) of the parents did not have a high school diploma or GED, and 23% were currently married. The primary drug of choice for the parents was methamphetamine (57%), followed by marijuana (16%), alcohol (14%), cocaine (5%), and other drugs (7%). Fifteen percent had a prior substance abuse treatment episode. Forty-five percent (45%) had prior referrals to Child Protective Services (CPS).

Santa Clara County

One hundred FDTC parents and 553 comparison parents were included from the Santa Clara site. Within the FDTC group, the families were 33% Caucasian and 53% Hispanic. More than half of the parents (56%) did not have a high school diploma or GED, and only 10% were married. The primary drug of choice was methamphetamine (54%), followed by alcohol (14%), marijuana (9%), cocaine (8%), and other drugs (15%). Nineteen percent of the parents had a prior treatment episode and 34% had prior CPS referrals.

Suffolk County

One hundred and seventeen FDTC participants and 239 comparison participants were included from the Suffolk site. The FDTC parents were 77% Caucasian, 13% African American, and 9% Hispanic. Thirty-nine percent did not have a high school diploma or GED, and 28% were married. The primary drug of choice was alcohol (43%), followed by cocaine (34%), marijuana (9%) and other drugs (15%). Thirty-two percent of the parents had a prior treatment episode and 38% had prior CPS referrals.

Washoe County

Eighty-four FDTC parents and 127 comparison parents were included from the Washoe site. Within the FDTC

group, most of the families were Caucasian (81%) with smaller proportions being African American (6%) or Hispanic (4%). Almost two thirds of the parents (61%) did not have a high school diploma or GED, and 37% were married. The primary drug of choice was methamphetamine (60%), followed by marijuana (14%), alcohol (14%), cocaine (8%), or other drugs (4%). Eleven percent had a prior treatment episode and 51% had prior CPS referrals.

Comparison Samples

Comparison cases within each site were selected if they: (1) met eligibility requirements for the FDTC in that county, (2) had substance abuse problems as a presenting issue on the child welfare petition, and (3) did not receive FDTC services. Two demographically matched counties with no functional FDTC were used to draw a comparison group sample for San Diego and to supplement the comparison sample for Santa Clara. Eligible comparison parents were individually matched to program participants in terms of race, gender, child welfare allegation, and substance abuse history. Analyses indicated very few significant differences between the comparison and FDTC samples across a broad range of demographic and risk factors (see Worcel et al., 2007).

Research Design and Variables

Data were collected on all primary caregivers and children named in the case. Mothers were named as the primary caregiver in 97% of the cases. Fifty-eight percent of the cases included both a mother and a father or father-surrogate figure, and 3% involved only a father. Three primary data sources were used for this study: (1) child welfare records and case files, (2) drug and alcohol treatment records, and (3) court records. Data were collected on each case for two years after the initial petition. The data elements that were collected are described below.

Demographic and Background Information.

Demographic and background data were collected at case inception. Variables included (a) age of the parent (usually a mother), (b) number and age of the children, (c) race and ethnicity of the parent (usually a mother), (d) education level of the parent, (e) employment status of the parent, (f) marital status, (g) history of child welfare system involvement (yes/no), and (h) prior substance abuse treatment (yes/no). Two risk-factor variables were collected as well, one relating to the parent and one relating to the children. Parental risk factors included a history of (a) mental illness, (b) learning disabilities or developmental delays, (c) chronic medical problems, and (d) domestic violence (yes/no for each). Each variable was coded as 1 if the presence of the risk factor was clearly documented, and a summary index was calculated ranging from 0 to 4. Child risk factors were collected in a similar manner and included (a) educational or developmental issues, (b) alcohol or drug abuse, (c) behavioral or emotional problems, (d) prenatal substance exposure, (e) sexual acting out by the child, and (f) sexual abuse of the child. Each variable was coded as 1 if the presence of the risk factor was clearly documented, and a summary index was calculated ranging from 0 to 6.

Substance Abuse Treatment Outcomes

Data were collected on three variables related to substance abuse treatment outcomes for the parents. These variables included the time delay before entering treatment, the number of days in treatment, and treatment completion (yes/no).

Time to treatment was defined as the number of days from the case petition date to the first substance abuse treatment episode beginning post-petition. Parents who did

not access treatment were coded as “missing data” on this variable.⁴

The number of days in substance abuse treatment was defined as the total number of non-overlapping days in treatment between the initial petition date and the date the case was closed or the data-collection window ended, whichever came first. If a treatment episode was still ongoing at the time the case was closed or data collection ended, the discharge date was defined to be the date of case closure or the end of the data-collection window. Parents who did not enter treatment while their case was active were assigned a ‘0’ because they spent zero days in substance abuse treatment.

All treatment episodes were coded as completed or not completed based on the treatment discharge record. Parents received a “1” if they had at least one successful treatment completion and a “0” if they had no successful treatment completion. Parents with an ongoing treatment episode at the end of the data-collection window who did not have any prior successful treatment completions were coded as “missing” in this analysis, because their treatment outcome was not yet known.

Child Welfare Variables.

Three child welfare outcomes were of primary interest: time to permanent placement, permanency outcome, and number of days spent in out-of-home placements.

⁴ For this analysis, we were only interested in the time to treatment for parents who were successfully linked with treatment. Thus, the results should be interpreted as restricted only to parents who actually entered treatment. Survival analysis, which accounted for the censored nature of these data, resulted in comparable results to those presented here (Worcel et al., in press).

Time to permanent placement was defined as the number of days from the case petition to the date the child was placed in a permanent placement. Missing values were assigned to mothers whose children were not removed from their care (i.e., permanent placement was not applicable).

Each child was also coded in terms of whether he or she was reunified with the parent, parental rights were terminated, permanency was not yet reached, or there was another permanent placement (e.g., long term foster care, guardianship, or juvenile detention). Finally, the number of days spent in out-of-home placements included both kinship care and non-relative foster placements.

RESULTS OF CURRENT STUDIES ON FAMILY DRUG TREATMENT COURTS

[7] Outcome analyses used regression models based on linear mixed models that adjusted for cluster-correlated outcomes (i.e., inter-correlated outcomes for children within the same families) and included propensity-score adjustments for any pre-existing differences between the FDTC and comparison groups (Worcel et al., 2008). Table 1 presents substance abuse treatment outcomes for each site.

Table 1. Substance Abuse Treatment Outcomes

	San Diego		Santa Clara		Suffolk		Washoe	
	FDTC	Comp.	FDTC	Comp.	FDTC	Comp.	FDTC	Comp.
Days to first treatment entry	Mean (SD)	101 (229.7)	110 (301.6)	120 (150.4)	58 (121.7)	133 (188.6)	84 (147.3)	114 (119.3)
	<i>n</i>	243	77	291	82	117	54	69
	<i>F</i>	0.2	0.6		21.3*		3.2	
Days in sub stance abuse treatment	Mean (SD)	179 (248.4)	298 (527.6)	135 (193.2)	297 (394.4)	172 (252.6)	330 (393.0)	132 (233.9)
	<i>n</i>	437	100	553	117	239	84	127
	<i>F</i>	2.4	115.2*		29.5*		43.9*	

Table 1 continues . . .

Table 1. Substance Abuse Treatment Outcomes

	San Diego		Santa Clara		Suffolk		Washoe		
	FDTC	Comp.	FDTC	Comp.	FDTC	Comp.	FDTC	Comp.	
Completed at least one treatment episode	Mean % (SD)	31% (51.6%)	40% (79.4%)	69% (117.1%)	32% (50.8%)	61% (85.9%)	32% (56.6%)	62% (78.0%)	37% (62.2%)
<i>n</i>	365	184	83	511	98	201	70	111	
<i>F</i>	4.7		89.4***		27.4***		12.2**		

*p < .05, **p < .01, ***p < .001. Comp. = comparison sample

Table 1 indicates that FDTC parents entered treatment significantly more quickly than comparison families at the Suffolk site, with trends in that same direction at the Santa Clara and Washoe sites. The FDTC parents also spent significantly more days in treatment at all sites with the exception of San Diego. The FDTC parents averaged approximately ten months in substance abuse treatment at these sites, whereas comparison parents averaged only about five months in treatment. The length of stay in treatment has been shown to be important to sustained recovery and permanency outcomes (e.g., Green, Rockhill, & Furrer, 2007). Finally, in all sites except San Diego, FDTC parents were significantly more likely to complete treatment than were parents who went through traditional family court proceedings. Approximately one-third of the comparison parents completed at least one treatment episode, whereas twice as many (approximately two-thirds) of the FDTC parents successfully completed at least one treatment episode.

Table 2. Child Welfare Outcomes

	San Diego		Santa Clara		Suffolk		Washoe		
	FDTC	Comp.	FDTC	Comp.	FDTC	Comp.	FDTC	Comp.	
Days to permanent placement	Mean (SE)	286 (11.6)	255 (14.98)	347 (16.9)	243 (9.0)	238 (30.8)	178 (22.2)	278 (20.0)	262 (17.7)
	<i>n</i>	597	354	180	947	55	119	130	179
	<i>F</i>	2.6		29.2***		2.5		0.3	
Days in parental care	Mean (SE)	150 (8.4)	143 (10.8)	207 (16.7)	128 (7.7)	284 (24.1)	269 (17.7)	286 (14.6)	90 (12.2)
	<i>n</i>	788	456	174	1,100	262	495	164	244
	<i>F</i>	0.2		18.4***		0.3		105.6***	
		<i>Table 2 continues . . .</i>							

Table 2. Child Welfare Outcomes

	San Diego		Santa Clara		Suffolk		Washoe	
	FDTC	Comp.	FDTC	Comp.	FDTC	Comp.	FDTC	Comp.
Days in out-of-home placements	477 (12.2)	477 (16.0)	437 (20.9)	504 (10.1)	312 (24.9)	310 (18.1)	301 (21.1)	466 (17.8)
<i>n</i>	817	457	194	1,112	262	495	164	244
<i>F</i>	< 0.01		8.1**		< 0.01		35.7***	
% children reunified	56% (2.6%)	45% (3.5%)	76% (4.5%)	44% (2.1%)	57% (7.2%)	55% (4.3%)	91% (4.9%)	45% (3.9%)
<i>n</i>	662	393	185	1,001	85	238	144	216
<i>F</i>	6.3*		41.6***		0.1		53.9***	

*p < .05, **p < .01, ***p < .001. Comp. = Comparison sample.

Table 2 reports the child welfare outcomes for the four study sites. Notably, FDTC parents had *longer* wait times to permanency compared to traditional court processing; however, this difference was only statistically significant at the Santa Clara site. On average, in both the Santa Clara and Washoe sites, FDTC children spent more time with their parents and fewer days in out-of-home placements than the comparison group children. The FDTC children were also significantly more likely to be reunified with their families than were the non-FDTC children in the Santa Clara, Washoe and San Diego sites (although the percentage of children reunified in the San Diego program was far less than in the other two sites). Washoe County reunified 91% of the families who participated in the FDTC, compared to only 45% in the comparison group.

DISCUSSION

Results from at least four studies find evidence for the effectiveness of FDTCs in supporting parents to successfully enter, remain, and complete treatment and to be reunified with their children. It appears, however, that different program models may achieve different patterns of outcomes. The Pima County study found positive effects in terms of treatment completion, reunification, and reduced times to permanency. In the longitudinal study conducted by Worcel and colleagues (2007), the Santa Clara and Washoe programs showed consistent positive treatment and child welfare outcomes. However, none of the sites produced reduced times to permanent placements; in fact, the trend appeared to be towards longer times to permanency. The two most successful sites were both longstanding FDTCs whose models align closely with the core program elements supported by organizations such as the National Association of Drug Court Professionals (Wheeler & Siegerist, 2003) and the Bureau of Justice Assistance, and who use an integrated judicial processing system. Although the populations served

by these courts differed to some degree, this did not appear to influence the program's effectiveness. The Suffolk County site revealed evidence of positive treatment outcomes without significant differences in reunification and permanency outcomes. This is potentially a result of the targeted population of children, many of which were never removed from their homes. Interestingly, children in that program were no more likely to spend more days with their parents than were comparison children, despite their parents' treatment success. Because the time period for this study was too short to track longer-term outcomes, and given the levels of treatment success, potential long-term implications for increased stability of these FDTC families remains a question for future research. Finally, results from the Sacramento Dependency Drug Court study also indicated positive outcomes in terms of length of time in substance abuse treatment and permanency. It is interesting to note, however, that 42% of the Sacramento Dependency Drug Court families were unified, a rate similar to the *comparison* groups in the Worcel et al. (2007) study and in contrast to reunification rates of 91% and 76% in the two integrated court sites. This was a favorable statistic within Sacramento, CA context, where only 27% of the comparison families were reunified.

The reasons for these site-level differences are difficult to discern; however, these results suggest that the integrated, traditional family drug court model may be somewhat more effective than other variations. Further research that can begin to identify and systematically test such model differences is needed to build a better understanding of what aspects of the FDTC are most important. Integrated models may capitalize on the importance of close collaboration and communication between service providers and the judge, leading to differences in decision-making that favor reunification (e.g., Green, Rockhill, & Burrus, in press). Integrated sites may also be better able to operationalize the non-adversarial court process that has been hypothesized as critical to effective

FDTCs (Edwards & Ray, 2005). Furthermore, as demonstrated in the adult drug court literature, FDTCs may have larger impacts on families that are at higher risk for negative outcomes (e.g., those in which the child has been placed out of home at the start of the dependency case) (Marlowe, Festinger, Foltz, Lee, & Patapis, 2005; Marlowe, DeMatteo, & Festinger, 2003).

It should be recognized that differences in results in these studies might also be attributed to differences in the methodologies of the studies. Studies using pre-FDTC comparison groups (Boles et al, 2007; Green et al, 2007) revealed mixed results, especially in terms of permanency. Given the national trend towards improving both family court proceedings (see Dobbin, Gatowski, & Maxwell, 2004) and services for substance-abusing families involved in the child welfare system (Green et al, 2007; National Center for Substance Abuse and Child Welfare [NCSACW], 2008), the general dependency court process may be improving its ability to support these parents over time. Thus, it is important to draw concurrent, prospective comparison samples for proper evaluation of the effectiveness of FDTCs. As evidence builds in support of the effectiveness of the FDTC model, research aimed at uncovering *how and for whom* the model works best will be critical areas for future investigation.

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**ACCOUNTING PRACTICES FOR DRUG COURTS:
SUGGESTIONS FOR DEVELOPING A FUNDING
FORMULA AND MAINTAINING
PROGRAM EXPENDITURES**

By Cary Heck, Ph.D. and Caskey Russell, Ph.D.

Problem-solving courts are locally driven programs that frequently rely on state and federal dollars to maintain operations. While most of the federal dollars allocated to problem-solving courts have been for the purpose of program implementation and expansion, state funds are increasingly being relied upon for long-term program maintenance. This change in purpose makes it increasingly difficult for state program administrators to develop funding strategies for their programs. One reason for this is the difference in administrative requirements between a one-time allocation and a commitment of long-term funding. This article is intended to provide insight into good accounting practices for problem-solving court programs and to give suggestions to state administrators and legislators as they consider viable ways of establishing and maintaining problem solving courts.

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ARTICLE SUMMARIES

**ACCOUNTING PRINCIPLES
FOR PROBLEM-SOLVING
COURTS**

[8] This article describes fundamental accounting practices applicable to drug court programs.

**A FISCAL ACCOUNTING
MODEL FOR PROBLEM-
SOLVING COURTS**

[9] This article provides suggestions for the equitable management of state funds being distributed to local programs.

INTRODUCTION

The rapid growth of drug courts and other problem-solving court programs throughout the United States has been challenging for state court administrators and executive branch program managers. A major challenge revolves around the issue of developing responsible funding strategies for problem-solving court programs. More than 30 state legislatures have appropriated funds for the establishment and sustainability of problem-solving courts (Huddleston, Marlowe and Casebolt, 2008). These funds were often provided to executive or judicial branch agencies with little guidance as to how the funds were to be spent. Many state legislatures enacted legislation that defined the programs in general terms without giving specific direction for the management of federal or state dollars (Heck and Roussell, 2007). Consequently, many state program administrators are left with the difficult task of establishing funding strategies that provide accountability while maintaining the independence of local initiatives.

State administrators frequently adhere to the federal model of providing grants for problem-solving courts. In many cases, local programs are required to submit an annual or bi-annual grant application. While cumbersome for many programs, this process serves the needs of state and local programs that are in the developmental stages. One inherent problem with the annual grant process, however, is its tendency to give the impression that the programs are tenuous or not secure. Program managers have frequently complained about the inability to maintain good staff without the promise of long-term funding. This staffing problem can lead to high turnover rates for key positions within the problem-solving court. Additionally, it may be counterproductive to the program's ability to foster a sense of stability and continuity among its clients.

Despite these concerns, many problem-solving court programs around the country have moved past the implementation stage to become well-established enterprises. Although the granting process has some strengths, including the documentation of program activities, there are observable weaknesses that need to be addressed. Weaknesses identified include a perceived lack of continuity, a concern over sustainability and, perhaps more importantly, a concern about programmatic accountability.

In addition to these weaknesses, three significant challenges have emerged for state funding agencies. The first challenge is the issue of fairness in the allocation of funds across competing problem-solving court programs in a given state or region. Although costs can vary dramatically by location, state legislators and drug court coordinators, often make comparisons of allocations by focusing on the number of clients being served. The second challenge is the issue of fiscal oversight. Although the granting process allows for innovation at the local level, it can also raise accountability concerns for those who write the checks. Thirdly, the traditional granting process creates oversight difficulties for those who have to report on the spending of local programs. While flexibility may be a benefit to local program managers, it can pose difficulties for those collecting data on program expenditures and outcomes. In other areas of government, this problem has induced a decided shift in governmental funding to a performance-driven approach.

The purpose of this article is to offer suggestions concerning the state management of problem-solving court funding. These suggestions are based upon generally accepted principles of accounting and U.S. Government Accountability Office (GAO) publications. The objective here is to describe a secure financial platform at the state level upon which problem-solving courts might operate and sustain their funding. Fiscal accountability and transparency need to be the hallmarks of any program supported by state

governments (GAO, 2001). Best practices of public accounting must be incorporated into every fiscal transaction. This article describes the basic principles that should apply to line item budgeting and funding of local programs when the monies are allocated from a state budget. Additionally, this paper illustrates a suggested funding formula for problem-solving courts that addresses issues of fairness and responsible spending.

Some Basic Principles

Problem-solving court programs generally take pride in being locally driven initiatives. As such, no two problem-solving court programs are exactly alike. However, although program staff may discern distinct differences among programs, the central tenets of these programs are similar. From the research, it is safe to say that these programs are “principle driven.” The principles at work in drug courts are summarized in the “Ten Key Components” (NADCP, 1997).

In the same way, there are principles of responsible fiscal management that fit problem-solving court programs. These principles can be summarized under two general headings: accountability and transparency. Accountability refers to the ability to document or account for every dollar that is allocated to a particular program. Transparency, on the other hand, ensures that records are complete, up to date, and available for inspection. The *Government Auditing Standards* (GAO, 2007), commonly called the *Yellow Book*, provides a wealth of information about acceptable accounting practices that can be applied to problem-solving court programs. The continued financial support of problem-solving courts is likely to be dependent upon the application of these basic accounting principles.

Beyond the basic principles, there are generally accepted accounting principles (GAAPs) that may be applied to the funding of problem-solving court programs. The

GAAPs are generally applied to for-profit businesses that prepare fiscal reports for shareholders or other interested parties (Pratt, 2000). Although problem-solving court programs are non-profit or public entities, the principles still may apply. Of the multiple GAAP principles, there are five that are most relevant to problem-solving court program management (Pratt, 2000).

The first of these principles is called the *Reliability Principle*. This principle states that all information gathered from various sources and used by problem-solving courts should be accurate. Accountants, local program managers and state funding agencies are responsible for checking and double-checking their auditing work.

The second principle is the *Principle of Regularity*, also referred to as the *Principle of Consistency*. The Principle of Regularity provides that entities should conform their accounting practices to applicable rules and laws. In the case of problem-solving courts, state managers have responsibility for ensuring that local program administrators follow federal accounting guidelines as well as state administrative rules.

The third principle is the *Cost Principle*. This principle states that when accountants record transactions that involve assets and services, the transactions should be recorded using actual costs or historical costs. For example, if a problem-solving court bought equipment that was worth \$15,000 but was purchased for \$10,000, the record should reflect an expenditure of \$10,000 since that was the actual amount.

The fourth principle is the *Principle of Sincerity*. This principle states that accounting generated by the program should reflect a good faith effort at accuracy and completeness. Problem-solving court programs should reveal their assets, including funding from secondary sources, when

documenting program assets. Likewise, program liabilities should be clearly outlined in the overall fiscal plan.

Finally, the fifth principle is the *Principle of Permanence of Methods*. This principle requires that consistent reporting methods be used at both the local and state levels. Because this principle is applied over time, it is clear that sound methodology for fiscal reporting should be established early in program development. These standards should be followed without exception over time.

ACCOUNTING PRINCIPLES FOR PROBLEM-SOLVING COURTS

[8] The following recommendations are derived from general principles of accounting as well as common problem-solving court practices. Although they are designed to be a guideline for state program operations, the principles can also be applied at the local level. The purpose for adopting these principles is to maintain the essential operations of the problem-solving court through accountability and transparency.

Principle #1. Funds should be disbursed based upon a cost-reimbursement model

It is common practice for state funding sources to allocate funds using one of two approaches: the granting approach or the cost-reimbursement approach. The granting approach is commonly used for new programs and those without long-term financial commitments. This approach involves annual granting requests with frequently cumbersome application processes stemming from Requests for Proposals (RFPs). Grants with basic conditions attached are then made to programs. These conditions often include requirements concerning budgeting categories as well as some fundamental program operations such as compliance with

the “Ten Key Components” (NADCP, 1997). Grants provide an excellent means of distributing available one-time appropriations of funds to those who apply.

Although grants bring great strength to problem-solving courts, they also bring some concerns. These concerns generally fall into two categories. The first relates to the perception of fund stability. Problem-solving court managers often have difficulty maintaining quality staff when all contracts have to be limited to the term of the grant. In many locations, particularly those in rural jurisdictions, there are limited treatment and supervision resources available. Oftentimes, short-term contracts are not conducive to retaining personnel.

The second concern relates to the perception that grant funds are often given with limited controls over spending. This may create distress among legislators and state program administrators as actual expenditures may not be tied to program payments. Thus, it is possible for programs to retain dollars or redirect unspent money into other ventures. It is clear that few eventualities can damage the operations or reputation of a program, even a good program, more than misspent state or federal dollars.

Termed here as the “cost-reimbursement” model, this approach provides a different means for distributing state funds to local programs. It involves a shift in the mechanisms through which funds to local programs are transmitted. Rather than a general allocation of funds, the cost-reimbursement model focuses on actual program expenditures. Thus, programs are only given funds to the level of their documented expenses. The cost-reimbursement approach is commonly used with ongoing programs that have relatively stable budget categories and that require functional oversight at the state level. Problem-solving courts seem to fit best in this second category. While all state funded programs that are not constitutionally created could be

in jeopardy of losing funding whenever their authorization bills are re-considered, the cost-reimbursement model creates a greater perception of program stability. Further, there is better fiscal oversight afforded to state administrators.

The cost-reimbursement model allows programs to operate as “ongoing concerns” within state budgets. That is, there is an expectation that these programs will continue to operate and that funds will continue to be made available. This expectation makes cost-reimbursement an appealing model of funding at the state level. With federal implementation grants, the expectation is that the federal dollars will only serve to get the program running and are not expected to last beyond the initial granting period.

Instead of a grant application process, operational programs should be expected to submit an annual budget request and documentation of any proposed programming changes in the upcoming fiscal cycle. This process eliminates much of the time-consuming grant-writing process for local courts. As programs are awarded funds for the upcoming cycle, those funds are held by the state until invoiced by the local programs.

The distinctions between these two models are sometimes blurred in common practice. While grants tend to provide the greatest latitude in spending, they are also time-limited and thus create a sense of uncertainty among program managers and employees. Cost-reimbursement models tend to provide greater program accountability; without the requirement of annual grants, the programs are better able to develop long-term fiscal plans and retain valuable staff.

Principle #2. Funds should be allocated, in part, based upon the program population.

Generally speaking, funding should be based, at least in part, upon the number of clients being served. This might

be seen as the fairest way to distribute funds. While it is clear that income and expenses vary from location to location, this model provides greater incentives to all programs to streamline expenses and increase productivity. This is reflected in the *economy of scale*, in which programs that serve more clients tend to provide greater services at a reduced price. Further, as problem-solving courts are designed to use existing resources from collaborative partners, this model helps to ensure that programs get all of the necessary partners to the table. The development of a fair and reasonable funding formula is discussed below.

Population census should not, however, be the only consideration, as there are indeed several other outcomes that should be considered, including retention, participation levels, and program completion. One means by which these outcomes can be taken into account is through *performance contracting*. Performance contracting is an approach used in developing contracts between state and/or federal funding agencies and local service providers. This approach focuses on linking funds to client-level outcomes. In the case of problem-solving court programs, these outcomes might include substance abuse and criminal measures of individual performance. These measures could then be aggregated to determine the effectiveness and efficiency of each program under contract. Outcomes should be considered in the annual review process; programs that perform well could then be used as models for other programs in each state. Performance contracting can also be used as a means to ensure that best practices by treatment providers through subcontracts with local programs are employed. Research has linked performance contracting to improved client outcomes (Commons, McGuire, and Riordan, 1997).

Another important consideration is the variation among the populations being served. Courts having large numbers of individuals requiring special services, such as those with mental health issues, may require additional funds

to meet the needs of their clients. Additionally, programs with limited access to treatment and other service resources (for example, those in rural jurisdictions) might require individual consideration and augmented funding. It is important that state administrators consider these issues in the allocation of funds in addition to the client census.

One means for accomplishing the allocation of funds is to allow programs to present *special circumstances* that require variations in the allocation process. State administrators could provide a platform to request variations in the annual budget request form. These requests should be supported by documentation of the need for additional spending. One example might be the issue of limited means of public transportation faced by many jurisdictions. This is of particular concern in large rural jurisdictions. Clients frequently need to travel long distances for court appearances and treatment sessions. For many clients, particularly those with limited financial resources and/or restricted driving privileges, the transportation issue could make program participation impractical. One rural jurisdiction in Wyoming resolved this problem by contracting with a local elder-care facility for the use of its vans and drivers. This contract was an unexpected expense that did not fit into any of the usual state budget categories. Therefore, it was necessary to provide a variation in the funding request to accommodate this documented need.

Principle #3. Annual accounting reviews should be conducted.

Funding for programs should be allocated only if there are guarantees of appropriate accounting oversight. Usually, guarantees take the form of a required letter from an accountant certifying that the program is being operated in a fiscally responsible manner. It is good practice for states to perform periodic reviews of program records to ensure compliance with applicable policies. The combination

of a letter from an accountant and periodic program reviews should be sufficient to ensure accurate and reliable documentation and to thwart any problems before they become intractable.

Principle #4. Zero-balance budgeting should be pursued.

Program balance sheets should be zeroed out at the end of each fiscal year. Operating capital should be provided at the beginning of the year and program expenses should be documented with the state receiving invoices for all expenses. Funds should be distributed to programs based on actual expenses. These expenses should be reported to the funding source in monthly or quarterly invoices. All receipts and invoices should be maintained in the program offices available for review. At the end of the fiscal year, any residual (unspent) operating capital should be retracted. This is best done over a period of two or three months in order to ensure continuity of ongoing program operations.

Principle #5. Training is essential.

Court program personnel should be adequately trained on maintaining accurate accounting ledgers, including receipts and invoices. All accounting transactions and documentation should be made available for review. It is unfair to have expectations for program managers without ensuring that they are adequately trained and have the knowledge necessary to implement the policies. Fiscal accountability is an area in which clarity is essential. It is the responsibility of the state administrator to ensure that new rules and policies are thoroughly explained, understood and adhered to by all staff personnel.

A FISCAL ACCOUNTING MODEL FOR PROBLEM-SOLVING COURTS

[9] State funding for problem-solving courts is typically allocated as part of the judicial or executive branch budgets. In the case of Wyoming, for example, funds are given to an executive branch agency that is responsible for the oversight and licensing of substance abuse or mental health treatment facilities and providers. Other states, such as Louisiana, include the problem-solving court designated funds in the judicial branch budget (Heck and Roussell, 2007). In either case, the process of allocating funds to local programs has typically taken the form of annual or bi-annual grants. Once the allocation is received, state administrators prepare an RFP and notify local program managers of available funds. Local programs then rush to meet grant application requirements and hope that they are awarded funding. If funding is received, programs typically spend their allocations and report expenditures back to the state.

The model proposed in this paper is different. First, a standardized process of budget submission should be established for state administrative review. Programs that have been operational for a period of time could simply make a short budget request to the state administrative office. The review of these requests would focus on program performance, including services offered and participant outcomes, coupled with the ability to fund the program at a level that is appropriate given the nature of its client population and the available resources within its community.

Funding formulas are a fundamental and necessary part of problem-solving court accountability and sustainability. A funding formula is designed to distribute allocations fairly based upon the actual activities of a program. For example, in many cases a program that is serving 20 people should not receive the same level of funding as one serving 150 people. While this

appears to be a simple calculation, it is often difficult to create an equitable calculation of expenditures as issues of economy of scale and available resources must also be taken into consideration. As noted previously, economy of scale refers to the manner in which services and products can be purchased for lower costs as program populations grow. Thus, the cost per individual participant in a program that serves 150 people is ordinarily less than for a participant in a program that serves 20 people. Local resources must also be considered when developing a funding formula. In some locations, the cost of treatment services may be much higher than in others. This is often due to a lack of adequate resources and market competition between programs in a particular area.

Calculating a funding formula can be a difficult task. In order to accomplish this task, program coordinators should collect all available data and chart historical program expenditures. It is advantageous to consider per client cost when calculating a funding formula. For example, a particular program may maintain an average of 40 clients and have an average annual expenditure of \$200,000. For this example, the court would spend an average of \$5,000 a year per client.¹ Table 1 is an illustrative example of how the data might be represented. After the table has been developed, state administrators can estimate an average annual cost per client, which in some cases might serve well as the final cost per client.

¹ These numbers are for illustrative purposes only and do not necessarily reflect expected program costs for problem-solving courts.

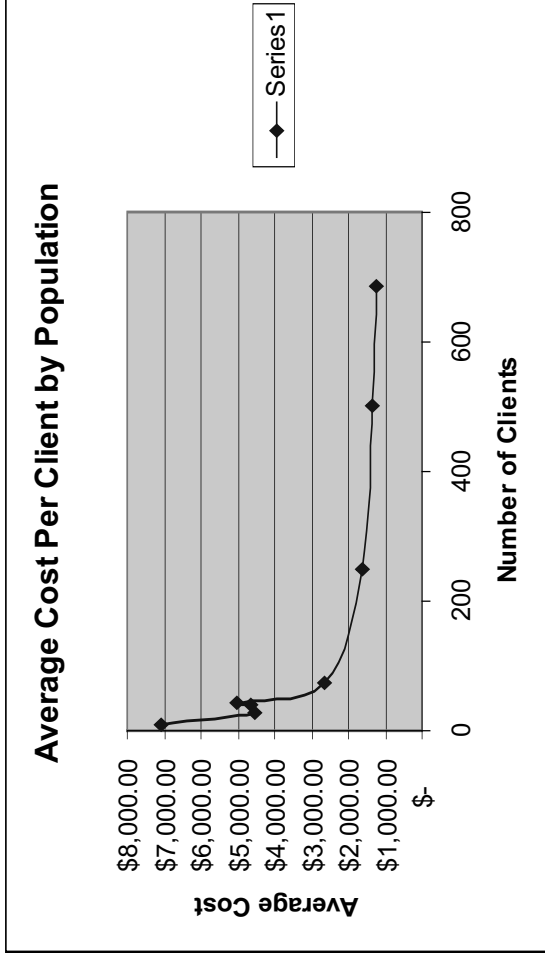
Table 1. Sample Average Cost per Client by Court

Court Name	Annual Expenditure	Clients Served Annually	Average Annual Cost Per Client
Jonestown DC	\$ 71,000.00	10	\$ 7,100.00
Smithville DC	\$ 185,000.00	40	\$ 4,625.00
Littleton DC	\$ 211,000.00	42	\$ 5,023.81
Metro DC	\$ 840,000.00	685	\$ 1,226.27
Big Piney DC	\$ 122,000.00	27	\$ 4,518.51
Fremont DC	\$ 600,000.00	500	\$ 1,333.33
Coalville DC	\$ 400,000.00	250	\$ 1,600.00
Muddy Gap DC	\$ 200,000.00	75	\$ 2,666.67
Total	\$ 2,629,000.00	1629	\$ 1,613.87

Notes: These are fictitious programs and do not represent any actual jurisdictions or cost figures.
 DC = drug court.

If data are available and multiple programs are considered, it is possible to establish an average annual expenditure for each program and combine the numbers into a relatively simple graph. Once the graph is developed, it is easy to identify the broad range of program costs from the jurisdictions in question. In many cases this chart will appear curvilinear; that is, the number of clients that a program carries will be correlated with the average expense per client. The chart will likely reflect a point at which the economy of scale becomes apparent as programs with more clients tend on average to be more cost effective. For the purposes of this analysis, the point identified as the number of clients at which the economy of scale becomes a factor is called the *break point*. This break point provides state administrators with a good estimate of the optimum number of clients needed to ensure maximum cost efficiency. With this number established, managers of programs operating with fewer clients may be encouraged to strive for this as a target census. The sample graph in Chart 1 shows a break point of approximately 100 clients.

Chart 1. Sample Average Cost per Client by Population



There are several additional issues that must be considered. The first of these is that *outliers* may have a disproportionate influence on the analysis. Outliers in this scenario are problem-solving courts that influence the model to a greater degree than is appropriate. If, for example, a particular court serves 1000 clients at very low cost, the effect of this could be to imbalance the scale. Likewise, a court that serves only one client at a very high cost can unduly impact the analysis. In many research situations, outliers are eliminated to avoid skewing the analysis in this manner. Alternatively, the data can be “smoothed out” using what is called a log-linear mathematical transformation to reduce the skewedness. For problem-solving court spending, this approach may be called for if the relative impact of including or excluding a particular program creates vastly different results.

A second, perhaps more difficult problem with this analysis is the lack of context provided in the simple model. Most states are comprised of both rural and urban jurisdictions that may have vastly different resources at their disposal. While there is no empirical methodology in place to determine the relative values of such resources, there are some guidelines that can be considered. In problem-solving court cost analyses, substance abuse treatment tends to be one of the largest expenditure categories. To assist in the determination of appropriate cost levels for this service, it is beneficial to consider the rates at which other state and federal agencies contract for such services. This can be accomplished by contacting the relevant agencies. For example, the Wyoming Department of Health, Substance Abuse and Mental Health Division maintains a standardized scale by which state funded agencies are reimbursed for services provided. It may become necessary to take any major differences in the costs of services across jurisdictions into consideration when interpreting the results of the model.

After a standardized cost per client is established for the state, the program administrator should develop a system to distribute funds equitably. The proposed model suggests that the best means for distributing these funds is through an allocation based upon the expected number of clients to be served in the program. These expected numbers are referred to as *program slots*. A program slot is simply the allocation given for each client. Thus, a program that has been approved to work with 60 clients will be allotted 60 program slots. One of the performance measures for the next fiscal cycle should be the program's effectiveness at servicing the 60 participants that will be paid for by the state. State administrators should gather information about jurisdictions and target populations before making program slot allocations.

When the number of program slots has been set for a jurisdiction and special circumstances have been considered, the overall budget for that jurisdiction can be established. The budget can then be given to the local program in the form of an award letter. The award letter should detail the methods used to establish the going rate for a program slot and the expectations of the program in terms of the number of participants to be served. A signed copy of the award letter should be returned to the state administrator's office and kept on file.

At the beginning of each fiscal cycle, it is important to allocate some operating capital to the programs. In this instance, operating capital is defined as funds provided to a program for basic expenses prior to the submission of the first reimbursement request. In Louisiana and Wyoming, for example, it was determined through fiscal analyses that the programs needed approximately 10 to 15 percent of their total budgets to ensure that bills could be paid in a timely manner. This operating capital should then be recovered to create a zero balance at the end of the fiscal cycle. While this seems somewhat difficult to do, it will ensure that funds are not

carried over from one cycle to the next. Most state agencies already operate in this manner. It not only makes bookkeeping easier, it helps to maintain the fiscal integrity of the state program.

During the remainder of the fiscal cycle, it is recommended that funds be distributed based upon signed invoices from local programs. As local programs spend money, they can request reimbursement from the state for those expenditures. The state should develop a simple form for monthly submission to the funding agency that lists actual expenditures in agreed-upon categories. A database of program expenditures should be maintained by the state that lists up-to-date invoices and remaining balances in each budgeting category. By following these procedures, the state will be able to ensure that programs do not find themselves in a situation in which they get over-extended before the end of the fiscal cycle. The cost-reimbursement model requires a strong commitment from state administrators to make sure that invoices are timely paid. Failure to make payments on time could result in suspended services, which would negatively impact participants.

Funds that are not spent during the fiscal year would then be available for reallocation in subsequent years. However, many states do not allow state agencies to rollover unspent funds. Thus, this system can help protect state and local agencies against claims of crossing fiscal year requirements. More importantly, residual dollars will allow state program managers to reassess their funding strategies on a regular basis to determine how such funds may be used to promote and study particular innovations at the local level.

At the local program level, records must be kept of all invoices received, payments made, and receipts when appropriate. A simple way of maintaining these records is by creating a fiscal filing system. Therefore, it is recommended that a file be kept for each month. The file should contain a copy

of the invoice sent to the state as well as documentation of all expenditures paid during that particular month. The file can be divided into the budget categories defined by the state. Regardless of the model chosen for record keeping, it is the responsibility of the local program manager to ensure that these records are current and accessible in keeping with the principles of regularity and transparency.

State administrative personnel should routinely audit local records to ensure that there are no gaps in record keeping. This will give state program administrators some assurance of appropriate spending. Additionally, the state administrator should be responsible to train local program managers on fiscal management expectations. Inadvertent mistakes in this aspect of program funding can lead to serious repercussions if they are made public.

Finally, if programs are lacking in their local fiscal management, a policy should be established to allow for corrections. In general, a discovery of fiscal problems should lead to a program developing a *corrective action plan* that should be monitored closely. Any issues that arise need to be resolved as quickly as possible. Failure to comply with state mandated fiscal management policies might result in suspensions of payments until problematic issues are resolved.

CONCLUSION

Problem-solving courts have grown and expanded at a rapid pace. The growth of these programs has frequently exceeded the legislative and administrative mechanisms designed to promote them (Heck and Roussell, 2007). Many problem-solving courts were established as pilot programs to intervene more effectively with repeat substance-abusing and addicted offenders coming into contact with the judicial system. When the evidence supporting the success of these courts started to accumulate, so did the number of programs.

With the revolutionary growth in problem-solving courts, the need for state funding and an administrative structure for their management also increased.

The administrative structure requires careful consideration of not only the amount of funding that should be distributed to programs, but also the means by which that funding may be protected and justified. The problem-solving court model can only be successful if it is supported over time. Substance abuse treatment takes time to be effective. The principles described above are designed to provide both accountability and transparency to local programs that operate with state funding. The goal of building a long-term funding plan is to allow for the development and sustainability of problem-solving courts in all jurisdictions.

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**EFFECTIVENESS OF THE SCRAM ALCOHOL
MONITORING DEVICE: A PRELIMINARY TEST**
By Victor E. Flango, Ph.D., & Fred L. Cheesman, Ph.D.

This article reports the results of a preliminary study of how a transdermal alcohol-detection bracelet device, the Secure Continuous Remote Alcohol Monitor (SCRAM®), might affect recidivism. The probability of recidivism for a sample of convicted driving while impaired (DWI) offenders ordered to use SCRAM was compared to that of a matched sample of non-SCRAM-using DWI offenders. Multivariate survival analysis revealed that use of the SCRAM device for 90 days or longer by offenders with at least one prior DWI offense significantly reduced the probability of recidivism. The recidivism incidence for DWI offenders while they were wearing the SCRAM device was only 3.5%, which suggests the potential usefulness of SCRAM as an effective monitoring technology. These findings provide potential supporting evidence for a minimum 90-day threshold for effective use of the SCRAM device and reveal its applicability to a target population of recidivist DWI offenders. The results must be viewed cautiously because the study was conducted in a single locale and was an uncontrolled, retrospective study. More rigorous research is needed to validate these preliminary findings.

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ARTICLE SUMMARIES

**TRANSDERMAL
ALCOHOL MONITORING**

[10] Ethanol is excreted through the skin in sufficient quantities to reliably estimate blood alcohol concentrations (BAC).

SCRAM

[11] The SCRAM ankle bracelet draws and analyzes insensible perspiration every half hour from the air above an offender's skin. SCRAM is currently being used in 45 states by more than 5,000 offenders.

**PRELIMINARY
EFFECTS OF SCRAM**

[12] In a preliminary study, the use of SCRAM was associated with a reduced probability of recidivism for driving while impaired (DWI) offenders who had at least one prior DWI and who used the device for at least 90 days. These results are tentative until validated by replication or a stronger design.

INTRODUCTION

The costs of driving while impaired (DWI) in terms of human and fiscal capital losses are only partially reflected in the statistics reported below by the National Highway Traffic Safety Administration (NHTSA, 2008).¹

- Motor vehicle crashes are the leading cause of death for Americans aged 2 through 34.
- In 2006, there were 17,602 alcohol-related fatalities in motor vehicle crashes.
- Alcohol was involved in 41 percent of all fatal crashes in 2006.
- About every 30 minutes, someone is killed in the U.S. in an alcohol-related crash.
- Alcohol-related crashes in the U.S. cost the public more than \$50 billion in 2000 (75% of the costs occurred in crashes when a driver or non-occupant had a blood alcohol concentration [BAC] of at least .08 grams per deciliter).
- Inpatient rehabilitation costs for motor vehicle injuries average \$11,265 per patient.
- Impaired driving is the most frequently committed crime in the U.S.
- Drivers with prior DWI convictions are overrepresented in fatal crashes, and thus have a greater risk of involvement in a fatal crash.

Society has responded to this loss of human life with resources on many levels, including public education, law enforcement, and the judiciary.

¹ <http://www.nhtsa.dot.gov/staticfiles/DOT/NHTSA/Communication%20&%20Consumer%20Information/Articles/Associated%20Files/810879.pdf>.

Traditional sentencing sanctions available to the judiciary have not been particularly effective against people convicted of DWI, and least so against repeat DWI offenders (Wallace, 2008). Consequently, several jurisdictions have developed sobriety courts or DWI courts, most of which are based on the drug court model, to better deal with impaired driving (Flango, 2008). An essential feature of DWI courts is intense alcohol addiction treatment and extensive court supervision. Many DWI courts also require offenders to serve some portion of their jail sentence, and jail sentences are used as a last resort for participant noncompliance with court-mandated treatment programs. Compliance with treatment and other court-mandated requirements is verified by frequent alcohol and drug testing, close community supervision, and interaction in non-adversarial court review hearings with the judge. Many judges and policymakers would like to see DWI courts expand because of their apparent success in reducing recidivism,² and their methods transferred to traditional courts to the extent practicable. The cost of implementing DWI courts, driven in part by the need for intensive monitoring, slows their expansion. (Flango and Flango, 2006).

Technology, however, is now providing judges with improved monitoring capabilities. One of the newest monitoring technologies being used in the battle against DWI is transdermal

² See: <http://www2.potsdam.edu/hansondj/DrivingIssues/20070705120731.html> that contains an article by David J. Hanson entitled "DWI/DUI Courts Work." Flango and Flango (2006) note that the drop in recidivism rates for courts that track these statistics appear to be impressive, but many courts do not yet report recidivism rates. Some DWI courts have been established too recently to develop a track record. Wallace (2008) also notes the need to evaluate the effectiveness of DWI courts. He recognizes that Mothers Against Drunk Driving (MADD), the Governor's Highway Safety Association, and the Highway Safety Committee of the International Association of Chiefs of Police consider DWI courts to be a useful tool in the struggle against impaired driving.

(i.e., through the skin) alcohol monitoring (Hawthorne and Wojcik, 2006). Judges may be less familiar with transdermal methods of alcohol monitoring than with more conventional blood, breath or urine testing methods.

TRANSDERMAL ALCOHOL MONITORING

Despite the failure of traditional methods of sanctioning offenders to impact DWI recidivism, new technologies have made possible transdermal methods of alcohol monitoring that show promise for producing such impacts. The first practical device that utilized transdermal alcohol testing was an alcohol “sweat patch.” The sweat patch is applied to the user’s skin for a period of several days where it absorbs sweat excreted through the skin. The patch is removed and analyzed using separate equipment to determine the amount of ethanol that each sweat patch had absorbed. These results are then tied to the consumption of alcoholic beverages.

[10] A significant amount of research was performed with the sweat patch between 1980 and 1984 (Phillips and McAloon, 1980; Phillips, 1980, 1982, 1984a, 1984b). This research concluded that there was a statistically significant linear relationship between the concentration of ethanol in sweat and the average concentration of ethanol in blood (BAC).³ Results of this testing were 100% sensitive and specific; i.e., the testing clearly differentiated drinkers from nondrinkers and had no false positives (Phillips and McAloon, 1980).

While sweat patch research focused on ethanol concentrations in liquid sweat, other research was conducted in

³ Blood Alcohol Concentration, or BAC, is the amount of alcohol per fixed unit of blood. It is usually defined as grams of ethanol per deciliter of blood (g/dL) or percent weight of ethanol per volume of blood (%w/v). For example, 0.05 g/dL is the same as 0.05%.

the late 1980s that measured the ethanol concentration in vapors formed above the skin. Since that time, researchers have performed significant transdermal alcohol measurement research using a number of different research techniques with very consistent results. Based on the published literature, Hawthorne and Wojcik (2006) concluded that ethanol is excreted through the skin in sufficient quantities to reliably estimate BAC.

There are currently two transdermal measuring devices—the Wrist Transdermal Alcohol Sensor (WrisTAS) by Giner, Inc. and the Secure Continuous Remote Alcohol Monitor (SCRAM) bracelet by Alcohol Monitoring Systems, Inc. The former device, though clinically tested, is not yet commercially available, perhaps because it is not yet sufficiently water or tamper resistant (Robertson, Vanlaar, and Simpson, 2006).

[11] The SCRAM ankle bracelet has been commercially available since 2003 (www.alcoholmonitoring.com). It consists of a transdermal sensor attached to the ankle that detects alcohol from continuous samples of vaporous or insensible perspiration (sweat) collected from the air above the skin and transmits data for remote monitoring via the Web (Robertson, Vanlaar, and Simpson, 2006). Anti-circumvention features include a tamper clip, an obstruction sensor, a temperature sensor, and communication status monitoring to ensure that the bracelet is functioning properly and transmitting information on the designated offender. Robertson, Vanlaar, and Simpson (2006) note that the SCRAM bracelet contains an electrochemical alcohol sensor that draws a sample of insensible perspiration every half hour from the air above an offender's skin. The sample is analyzed for ethyl alcohol. The SCRAM also contains a flash memory chip to store alcohol readings, a device to detect tampers, and remote transmit features to transfer readings by means of a wireless radio frequency to the SCRAM modem at scheduled times.

The SCRAM device was tested by the Michigan Department of Corrections, which concluded that:

the [SCRAM] product is able to detect circumvention of alcohol test sampling, reliably ensures that test samples are from the intended test subjects, and detects drinking episodes around the clock regardless of a subject's schedule or location (Bock, 2003:4).

SCRAM is currently being used in 45 states by more than 5,000 offenders.

METHODOLOGY AND RESEARCH DESIGN

The National Center for State Courts (NCSC) was contracted by Alcohol Monitoring Systems to conduct a comparative evaluation of the effectiveness of the SCRAM bracelet in reducing DWI recidivism while it is being worn and after its removal. The objective of the study was to determine the factors that influence the effectiveness of the SCRAM bracelet so that a more extensive, experimental study could be designed later.

Data on the treatment group (i.e., SCRAM users) were obtained from the SCRAM service provider in North Carolina (Rehabilitation Support Services of North Carolina, Inc.). Inclusion in the treatment group was based on two criteria: 1) the offenders must use the SCRAM (after conviction) as a condition of court-ordered sentences and 2) the convictions had to occur in North Carolina between April 1, 2005 and July 31, 2007. These criteria resulted in a sample of 114 SCRAM users. Vantage Point Services, a private firm, was hired to provide criminal history data from North Carolina's Statewide Criminal Information System on the sample of SCRAM users, and also to provide similar data on a randomly selected pool of 3,000 DWI offenders who did not use

SCRAM. Data for the two groups included offender demographics, conviction offenses, prior offense history, and post-conviction offense history. Additionally, the dates that the SCRAM anklets were placed on the offenders and subsequently removed were collected for SCRAM users. Information about treatment, probation and community-service status, participation in DWI court, and other aspects of post-conviction supervision and service provision, unfortunately, were unavailable for both groups.

From the pool of comparison group offenders, matches were identified as precisely as possible for each SCRAM user. By making the comparison group as similar as possible on relevant characteristics to the treatment group, internal validity was maximized. This permitted us to draw inferences about the effectiveness of SCRAM in reducing post-sentencing recidivism. Matches for each SCRAM user were selected from the large pool of other DWI offenders based upon the following variables:

- Age
- Race
- Sex
- Conviction county
- Number of prior DWI offenses
- Number of prior offenses

A match was identified for each SCRAM user in the same county where the SCRAM user's conviction occurred. Offenders were then matched in accordance with gender and were within three years of age of each other. Offenders were subsequently matched by race, number of prior DWIs, and finally by the number of prior offenses. Two hundred sixty-one matched cases were selected from the pool of approximately 3,000 DWI offenders.

The matching process eliminated or attenuated most differences between the two groups, as reported in Table 1. Despite the matching, however, some differences persisted; notably, an under-representation of Hispanics among the SCRAM users and a higher average number of prior DWIs for the SCRAM users as compared to the matched comparison group. The requirement to match within each county made it difficult to find perfect matches for the other variables. The multivariate analysis employed statistical controls for these persistent differences.

Table 1. Comparison of SCRAM Users to Matched Comparison Group

	<u>SCRAM Users</u>	<u>Matched Comparison Group</u>	<u>Significant Difference?</u>
Average Age (years)	32.8	33.6	No
% White	72.8%	62.4%	
% African American	20.2%	21.5%	Yes (p< .044)
% Latino	7.0%	16.1%	
% Female	11.4%	13.4%	No
Average # of Prior DWIs	2.2	1.5	Yes (p< .000)
Mecklenburg County	79.8%	85.8%	No
Average Number of Prior Offenses	7.5	6.1	Yes (p< .043)
Average Number of Charges	1.2	1.5	Yes (p< .016)

To determine whether SCRAM use influenced the probability of recidivism, a multivariate survival analysis was conducted to identify factors influencing recidivism, including the use of the SCRAM device. Multivariate analysis has the advantage of controlling for more than one potential confounding factor at a time. Confounding factors are factors other than the SCRAM intervention that could potentially explain differences in recidivism rates between the SCRAM users and the matched comparison group, including differences in age or gender. Since the probability of recidivism may change differently over time for SCRAM users than for the matched comparison group, a survival analysis was required. Survival analysis originated in the medical field where survivors were patients who survived a particular medical treatment over an extended period of time. In the current study, “survivors” are DWI offenders who were not caught re-offending. A survival analysis technique known as multivariate Cox regression was used to analyze the recidivism data by statistically controlling for known confounds to detect differences in the probability of recidivism over time between SCRAM users and the matched comparison group.

Recidivism for the comparison group was defined operationally to occur when there was an arrest for any offense after the arrest date for the offense that produced the conviction that led to inclusion in the comparison group (the conviction had to occur between April 1, 2005 and July 31, 2007) and when the arrest for the later offense resulted in a conviction. Time-to-recidivism, in this case, was the number of days between the two arrest dates.

Recidivism for SCRAM users occurred when there was an arrest for any offense after the arrest date for the offense that produced the conviction resulting in a SCRAM disposition (the conviction had to occur between April 1, 2005 and July 31, 2007) and when the arrest for the later offense resulted in a conviction. Similar to the comparison

group, time-to-recidivism was the number of days between the two arrest dates.

THE SCRAM INTERVENTION

The way in which the alcohol-monitoring intervention is implemented can affect the conclusions that may be drawn; therefore, a brief description of the SCRAM implementation approach is necessary before the analysis is discussed.

We hypothesized that SCRAM use should reduce the probability of recidivism for offenders who were required to use the device because it promotes sobriety on the part of the user—a necessary, if not sufficient, condition for effective substance abuse treatment. Additionally, the treatment literature suggests that SCRAM should be used for at least 90 days in order to keep users sober long enough to impact their behavior (e.g., Marlowe, DeMatteo, and Festinger, 2003).

What happened in practice? The average amount of time that the SCRAM anklet was worn was 70 days, with a median time of 61.5 days. The minimum and maximum number of days the anklet was worn was eight days and 212 days, respectively. Only 25% of the sample wore the anklet for 90 days or more. It was surprising to see that the SCRAM intervention for the majority of sentences resulted in such a short duration of usage; too short, perhaps, to realistically expect it to impact alcohol use over the long term.

Moreover, the average amount of time between arrest and the SCRAM intervention was 283 days. In short, it was nearly nine and 1/3 months after arrest before the SCRAM intervention was initiated. Although very late in the game, this is not unexpected because the SCRAM users were selected for the study based on the SCRAM intervention occurring after conviction. It is not unusual for a DWI or

related case to take this amount of time to be processed from arrest to conviction, especially considering that a jury trial may have been involved in some cases. We know however, that early identification and rapid processing of addicted offenders improves the likelihood of positive outcomes (e.g., Anspach, Ferguson, and Collum, 2005).

SCRAM AND RECIDIVISM: PRECURSOR TO THE MULTIVARIATE ANALYSIS

Before examining the impact of SCRAM use on recidivism, holding other potential effects constant with multivariate analysis, we investigated a couple of additional questions. First, to what extent did SCRAM users engage in re-offenses while wearing the ankle bracelet? The answer to that question was very infrequently. Only four out of the 114 SCRAM wearers committed a new offense while wearing the anklet. This 3.5% re-offense rate for offenders while wearing SCRAM is relatively low and suggests that the SCRAM device could be an effective or useful monitoring tool.

The research literature also suggests that the number of prior DWI convictions is likely to influence the probability of recidivism, since repeat offenders are at greater risk for additional DWIs (Gould and Gould, 1992). To investigate whether these factors jointly influenced the probability of recidivism, a preliminary contingency-analysis was conducted. Table 2 shows the results of this analysis.

Table 2. Percent Recidivating for Any Offense by Number of Prior DWIs and Group

# Prior DWIs	% Recidivating						N
	SCRAM >=90 days	N	SCRAM <90 days	N	Comparison Group	N	
0 or more	9.4%	32	20.7%	82	20.3%	261	
1 or more	6.9%	29	20.3%	69	21.2%	241	
2 or more	0.0%	18	21.2%	52	28.6%	91	
3 or more	0.0%	10	20.7%	29	36.7%	30	

In Table 2, as the range becomes more restricted to offenders with larger numbers of prior DWIs, the recidivism rate increases consistently for the comparison group. For SCRAM users that wore the anklet for less than 90 days, the recidivism rates reflected a small variation (between 20% and 21%) with the number of prior DWIs. These rates, however, were generally lower than for the comparison group. For SCRAM users who wore the anklet for 90 days or more, recidivism rates decreased as the range became more restricted to offenders with larger numbers of prior DWIs. The recidivism rate became zero for offenders with two or more prior DWIs. From these results, it may be argued that the SCRAM device appears to be most effective for offenders who have two or more prior DWIs (i.e., third-time offenders) and who wear the anklet for at least 90 days.

These results also suggest that the duration of the SCRAM intervention may influence outcomes. In particular, it appears that the intervention must last at least 90 days to reduce the probability of future re-offenses. This is consistent with research that suggests that 90 days of drug treatment may be the minimum threshold for the detection of dose-response effects. Six to twelve months, however, may be the threshold for meaningful reductions in drug use from a clinical perspective. Twelve months of drug treatment appears to be the “median point” on the dose-response curve; i.e., the point at which approximately 50% of clients who complete 12 months or more of drug abuse treatment remain abstinent for an additional year following completion of treatment (Marlowe, DeMatteo, and Festinger, 2003).

The results in Table 2 suggest that the number of prior DWIs and the length of time the SCRAM was used may influence the probability of recidivism, which is about as far as bivariate analysis will permit. These findings, however, prompted us to include interdependency terms in the Cox multivariate regression that reflect the joint influence of SCRAM use and prior DWIs.

**RESULTS OF THE MULTIVARIATE
SURVIVAL ANALYSIS**

Table 3 presents the results of the Cox regression on the probability of recidivism. The last row in the table shows the findings for SCRAM users who wore the device for at least 90 days and who had at least one prior DWI. The associated temporal influences on the probability of recidivism are explained below.

Table 3. Cox Regression of Probability of Recidivating Over Time

No. of subjects	=	375	Number of obs	=	375	
No. of failures	=	73				
Time at risk	=	233914				
Log likelihood	=	-382.289	LR chi2(10)	=	45.42	
			Prob > chi2	=	0	
	Coef.	Std. Err.	z	P > z	[95% Conf. Interval]	
Comparison Group, no prior DWIs	-0.502	0.754	-0.670	0.505	-1.980	0.975
SCRAM used less than 90 days, no prior DWIs	-0.024	0.631	-0.040	0.970	-1.261	1.214
SCRAM used less than 90 days, at least one prior DWI	-10.714	4.173	-2.570	0.010	-18.892	-2.535
SCRAM used more than 90 days, no prior DWIs	0.171	1.052	0.160	0.871	-1.890	2.233

Table 3 continues

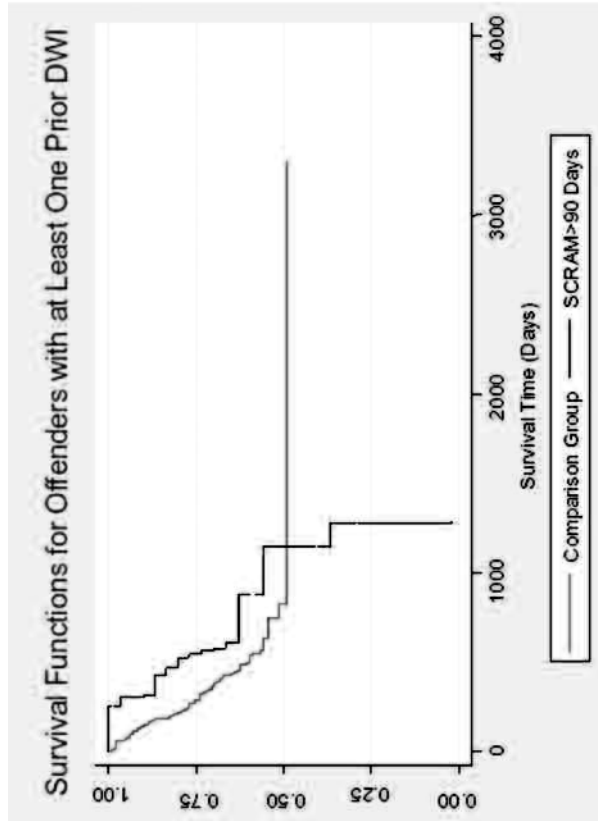
SCRAM used more than 90 days, at least one prior DWI	-1.482	0.734	-2.020	0.044	-2.921	-0.043
Age	-0.032	0.014	-2.250	0.025	-0.059	-0.004
Number of Prior DWIs	-0.106	0.105	-1.010	0.311	-0.312	0.100
Number of Prior Offenses	0.104	0.022	4.730	0.000	0.061	0.147
Gender	0.017	0.433	0.040	0.969	-0.832	0.865
Number of Charges	-0.008	0.093	-0.090	0.929	-0.190	0.173
Race	-0.416	0.260	-1.600	0.110	-0.926	0.094
Gaston County	-0.131	0.554	-0.240	0.813	-1.217	0.955
Mecklenburg County	-0.121	0.438	-0.280	0.782	-0.979	0.737
t						
SCRAM used less than 90 days, at least one prior DWI	1.769	0.686	2.580	0.010	0.425	3.114

In examining all of the variables that simultaneously affected recidivism in the single survival analysis, the following findings were produced:

1. Age was a significant predictor of recidivism. For every annual increase in age, there was an approximate 3% reduction in the probability of recidivism.
2. The number of prior offenses was a reliable predictor of recidivism. For every incremental increase in the number of prior offenses, there was an approximate 11% increase in the probability of recidivism.
3. Offenders with no prior DWI offenses (in either the SCRAM or comparison groups) were not significantly different in terms of their propensity to recidivate from comparison group members who had at least one prior DWI offense. That is, SCRAM did not significantly influence the probability of recidivism for offenders with no prior DWIs.
4. Overall recidivism rates for offenders with at least one prior DWI offense were essentially the same for SCRAM users and comparison group members (21.7% and 21.2%, respectively) when the SCRAM device was worn for *less than 90 days*. The pattern of recidivism, however, varied over time. Offenders with at least one prior DWI offense who wore the ankle bracelet less than 90 days were significantly less likely to recidivate than comparison group members with at least one prior DWI offense. This indicates that SCRAM exerted a “short-term” effect on the probability of recidivism for offenders with at least one prior DWI. For example, considering recidivism within a 324-day period, the recidivism rate for SCRAM users who wore the device less than 90 days was 33%, compared to 57% for the

comparison group. Longer term, the probability of recidivism changed and the SCRAM advantage deteriorated. For example, considering recidivism over a 648-day period, we find the rate for SCRAM users who wore the device less than 90 days was 30% compared to 32% for the comparison group. Figure 1 illustrates how the probability of recidivism changed differently over time for SCRAM users who wore the device for less than 90 days, and their comparison group. SCRAM users had a lower probability of recidivism than their comparison group until well after 1,000 days from date of arrest. Beyond a 1,000-day period, the trends reversed.

Figure 1. Adjusted Survival Functions for SCRAM Users (less than 90 Days) and Similar Comparison Group Members



5. The overall recidivism rate for offenders with at least one prior DWI who wore the SCRAM ankle bracelet for at least 90 days (N = 29) was about one half the rate for the comparison group (N = 241); i.e., 10.3% versus 21.2%, respectively. The Cox regression indicated that this difference was statistically significant and was not time dependent. The use of SCRAM was associated with a reduced probability of recidivism at all times during the tracking period for offenders who had at least one prior DWI and who used the device for at least 90 days.

CONCLUSIONS

The 3.5% re-offense rate while offenders were wearing the SCRAM ankle bracelet is relatively low and suggests that SCRAM may be useful as a monitoring tool. Because half of the SCRAM users re-offended at some other point in time, these results further suggest that offender behavior while wearing the SCRAM device may have the potential to predict future recidivism. The small sample size, however, precludes us from reaching definitive conclusions about this use of the SCRAM device.

[12] The results of the multivariate survival analysis suggest that the use of SCRAM may influence the long-term probability of recidivism if it is worn for at least 90 days or more by offenders with at least one prior DWI offense. Consistent with the substance abuse treatment literature, wearing the device for at least 90 days appears to reduce the probability of recidivism over what it would be if the device were worn for a shorter period of time. These findings suggest that SCRAM may be effective with repeat offenders; however, the results must be regarded as tentative until validated by replication or a stronger experimental design.

Research regarding the effectiveness of monitoring devices is limited. There is little in the literature about monitoring devices to suggest that monitoring alone, without being used in conjunction with treatment, will have a long-term influence on offender behavior (Gable and Gable, 2007). The data from this study were not extensive enough to address the question of how the SCRAM produces the observed effects.

A plausible hypothesis is that SCRAM must be used in conjunction with substance abuse treatment to produce long-term impacts on offender behavior. SCRAM promotes sobriety on the part of the user, a necessary first step for substance abuse treatment to have an impact on offender behavior. Because no data were available on whether the SCRAM users received substance abuse treatment while wearing the SCRAM device, this hypothesis could not be tested in this study.

In lieu of data about attendance in substance abuse treatment, conclusions reached must be considered preliminary as the data were insufficient to explore all of the complexities of the use of the SCRAM bracelet. Key among them was the lack of information on treatment received while the ankle bracelet was worn. However, data clearly indicate that offenders whose SCRAM intervention lasted at least 90 days and who had at least two prior DWIs had a lower probability of recidivating than other offenders. Consequently, if SCRAM is used as a component of a comprehensive treatment program, the data support the SCRAM intervention for at least 90 days, targeting offenders with at least one prior DWI. In addition to determining the effectiveness of the SCRAM bracelet, this study developed hypotheses with regards to the types of offenders for whom the SCRAM bracelet is most likely to be effective. The results of this study and future studies may serve as a guide for judges and other criminal justice partners in determining which offenders would most benefit from use of monitoring and the use of the SCRAM bracelet.

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RESEARCH UPDATE

**UNDERSTANDING RACIAL DISPARITIES
IN DRUG COURTS**

By Michael W. Finigan, Ph.D.

EXECUTIVE SUMMARY

The issue of potential racial disparities in drug court graduation rates has been prevalent for much of the history of the drug court movement. The controversy has largely centered on findings from several studies indicating that a considerably smaller percentage of African Americans graduated from the drug courts as compared to non-Hispanic Caucasians (Brewster, 2001; Hartley & Phillips, 2001; Schiff & Terry, 1997; Shichor & Sechrest, 2001; Wiest et al., 2007). In several of these evaluations, the magnitude of the difference was quite large, as high as 25 to 30 percentage points (Belenko, 2001; Shichor & Sechrest, 2001; Wiest et al., 2007). This finding is by no means universal, as a smaller number of evaluations have found no racial differences in drug court graduation rates (Sau, Scarpitti, & Robbins, 2001) or even superior outcomes for African Americans as compared to Caucasians (Belenko, 1999; Vito & Tewksbury, 1998). Regardless, a trend does appear to be emerging from the research literature that African Americans may be succeeding at lower rates in many drug courts as compared to their non-racial minority peers (Shaffer, 2006).

A critical unanswered question is whether these disparities are a function of race per se, or whether they might reflect the influence of other factors that are themselves correlated with race. Many of the studies cited above found that other variables—including participants' drug of choice (e.g., cocaine or heroin), employment status, and

criminal history—also predicted poorer outcomes in drug courts, and racial groups differed on these variables (Belenko, 2001; Brewster, 2001; Schiff & Terry, 1997). For example, in some of the communities that were studied, African Americans were more likely than Caucasians to be abusing cocaine, and it is possible that the severely addictive and destructive nature of this particular drug could have been largely responsible for their poorer outcomes. Perhaps in other communities in which Caucasians are equally likely to abuse cocaine, or more likely to abuse other dangerous drugs such as methamphetamine, racial differences might disappear or Caucasians might have relatively poorer outcomes.

This possibility requires evaluators to use slightly more advanced statistical procedures, which first take into account the influence of other variables such as drug of choice, and then determine whether race continues to portend poorer outcomes after those variables have been factored out. Only then would it be scientifically defensible to conclude that there are disparate racial impacts in drug courts.

EXAMINING OTHER POSSIBLE EXPLANATIONS

A recent study (Dannerbeck, Harris, Sundet & Lloyd, 2006) published in the *Journal of Ethnicity in Substance Abuse* shed additional important light on this issue. The study examined outcomes on a relatively large number of participants (N = 657) who were treated in 10 adult drug courts located throughout the State of Missouri. Because the study had the benefit of being multi-site and including a large sample, the investigators were capable of conducting the more nuanced statistical analyses that are necessary to better understand racial disparities.

The outcome data consisted of both self-report and externally validated indicators. However, criminal history data appear not to have been available. All of the variables were de-

financed categorically. Chi square analyses were used to determine for each variable whether significant differences existed between African American and Caucasian drug court participants. Subsequently, multivariate analysis was conducted to examine how all of the variables related to one another in influencing whether drug court participants graduated or were terminated from the programs.¹

Significant differences were found in outcomes by race. Fifty-five percent of the Caucasian participants graduated from the drug courts as compared with only 28% of the African American participants. In addition, the African American and Caucasian participants differed significantly by employment status, marital status, living arrangements, parental status, family support, and drug of choice. Specifically, significantly higher proportions of the African American participants were unemployed when they entered the drug courts (56% vs. 39%), were unmarried (91% vs. 83%), were living with unrelated individuals (51% vs. 37%), did not have children (69% vs. 56%), reported cocaine as their primary drug of choice (45% vs. 13%), and reported low levels of family support (38% vs. 29%). In addition, African Americans had significantly lower scores on a composite variable labeled “community socioeconomic [SES] status,” which reflected a combination of their income, the adequacy of their housing, their neighborhood environment, and their employment status.

One important weakness of the study was its inability to collect criminal history records. However, a larger proportion of the African Americans entered the drug courts from prison. This finding suggests that the criminal histories might have been more serious among the African American partici-

¹ Forward, stepwise binary logistic regression was used to estimate the models.

pants, or perhaps that they were more likely to have been incarcerated for comparable prior convictions.

It is the multivariate analyses in this study, however, that proved the most interesting. While race was, indeed, a significant variable in the preliminary model predicting graduation rates, it dropped out of the final multivariate model. The top explanatory factors in predicting graduation from the drug courts were (1) employment status upon entry, (2) community SES status, and (3) an interaction between race and cocaine as the primary drug of choice. Specifically, being unemployed and/or having a lower SES was predictive of a lesser likelihood of graduating from the drug courts. In addition, the interaction effect revealed that being African American and also reporting cocaine as one's primary drug of choice was predictive of a lower likelihood of graduation; however, race in and of itself was not predictive of graduation.

DISCUSSION

The results of this study suggest that racial disparities in drug court graduation rates (at least within the State of Missouri) might be explained by broader societal problems, such as lesser educational or employment opportunities for some minority citizens or a higher infiltration of cocaine into some minority communities, but appear not to be a byproduct of racial identity per se.

Of course, this crucial matter is far from settled. This was only one study and it must be replicated in other jurisdictions and with other client populations. The results might be confined to the 10 drug courts in Missouri that were the focus of the study. In addition, the fact that an important variable such as offenders' criminal records could not be included in the analyses is unfortunate. Criminal history is highly predictive of outcomes in most substance abuse treatment and correctional

programs, and it is possible that controlling for this particular variable might have significantly reduced the apparent influence of SES. Most lower-SES individuals do *not* resort to substance abuse or crime, and it may only be an unduly influential subset of those individuals who engage in recalcitrant antisocial conduct and give the rest a “bad name.” More research is needed to determine whether the findings from this study are, indeed, representative of most drug court programs, and how we should interpret the influence of SES on drug court outcomes.

This study also tells us nothing about the critical influence of *access* to drug court programs. In other sectors of the criminal justice system, not specifically involving drug courts, there is ample justification for concluding that racial minority citizens are granted lesser access to treatment-oriented diversionary dispositions than are non-minorities (e.g., Dannerbeck-Kanku & Yan, 2009; Huebner & Bynum, 2008; University of California, Los Angeles, 2007). This process could lead to a form of racially relevant “sifting” in the pipeline prior to entry into drug courts. If, for example, Caucasian offenders are more readily admitted into drug court programs than minorities (an issue which has not been adequately studied at this juncture), it is possible that only those African Americans with relatively more severe criminal records or drug abuse problems may be making their way into the programs. An analysis of unpublished data from a variety of drug courts in California, Oregon, and Indiana showed significant differences in the criminal histories of African American drug court clients as compared to non-African Americans (Carey & Finigan, unpublished).² In all three of the jurisdictions, African Americans had significantly more prior arrests.

² On file with the author at Finigan@npcresearch.com.

If African Americans have lesser access to drug court programs, this could explain why those in drug courts tend to have poorer employment histories, lower incomes, and more serious drug problems and criminal backgrounds. These differences might not reflect general patterns in the population at-large, but rather differences that emerged in the drug courts as the result of differential access to the programs. Research is critically needed to determine whether African American citizens have an equal opportunity as non-minorities to enter drug court programs, given equivalent criminal backgrounds and substance abuse histories. And, if it is determined that access is not equivalent for minorities, it is essential to understand how this sifting process may alter the specific profile of clinical needs that are presented by African American participants.

Finally and most importantly, we need to move beyond simply documenting the nature of the problem, and begin to find ways to address deficiencies and improve outcomes. Clearly, race plays a major factor in drug court success rates, albeit in a manner that is not as yet fully understood. Regardless, we do have some evidence that providing culturally proficient or culturally sensitive interventions can serve to counteract this negative process and improve results. At least one drug court program run by an African American clinician and utilizing culturally sensitive interventions has demonstrated superior effects for African American participants (Vito & Tewksbury, 1998). We need more studies of this ilk which can point the way toward finding desperately needed solutions for minority citizens who are caught in the destructive web of drugs and crime, and entangled within our imperfect criminal justice system.

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