
Effects of Involuntary Outpatient Commitment on Subjective Quality of Life in Persons with Severe Mental Illness

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Recent evidence suggests that involuntary outpatient commitment (OPC), when appropriately applied, can improve adherence with psychiatric treatment, decrease hospital recidivism and arrests, and lower the risk of violent behavior in persons with severe mental illness. Presumably these are benefits that improve quality of life (QOL); however, insofar as OPC involves legal coercion, the undesirable aspects of OPC could also exert a negative effect on quality of life, thus offsetting clinical benefits.

Involuntarily hospitalized subjects, awaiting discharge under outpatient commitment, were randomly assigned to be released or continue under outpatient commitment in the community after hospital discharge, and were followed for one year. Quality of life was measured at baseline and 12 months follow-up. Treatment characteristics and clinical outcomes were also measured.

Subjects who underwent longer periods of outpatient commitment had significantly greater quality of life as measured at the end of the 1 year study. Multivariable analysis showed that the effect of OPC on QOL was mediated by greater treatment adherence and lower symptom

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scores. However, perceived coercion moderated the effect of OPC on QOL.

Involuntary outpatient commitment, when sustained over time, indirectly exerts a positive effect on subjective quality of life for persons with SMI, at least in part by improving treatment adherence and lowering symptomatology. Copyright © 2003 John Wiley & Sons, Ltd.

INTRODUCTION

Health services researchers have long recognized *quality of life* as an important outcome variable in studies of treatment for chronic medical conditions such as cardiovascular disease, cancer, and diabetes. Understanding the impact of treatment on patients' overall quality of life is important to establishing the social value of healthcare interventions. While there is likely to be some correlation between symptoms of illness and quality of life, not all therapeutic outcomes translate into meaningful benefit to individual patients, given their own appraisal of their conditions and circumstances, and taking into account the adverse side effects that may be associated with treatment. Indeed, in some instances reduction in symptoms may not result in measurably higher quality of life. Increasingly, mental health services, too, are being evaluated from the patient's perspective, as empirical studies measure subjective quality of life along with other clinical outcomes (Awad & Voruganti, 2000; Skinner *et al.*, 1999).

One reason for renewed emphasis on quality of life in mental healthcare delivery is the recognition that serious psychiatric impairment often affects multiple dimensions of an individual's life—physical wellbeing and safety, social interaction, economic status, ability to work and engage in pleasurable activities. If psychiatric treatment merely controls certain problematic symptoms of a neurobiological disorder, but does not lead to meaningful recovery of whatever makes a life worth living *for the persons affected*, then such treatment is not likely to be accepted, and thus will not be viable in the long run. While efficacious therapies have been developed to control psychiatric symptoms (Marder, Davis, & Chouinard, 1997), consistent *adherence* to psychiatric medications remains problematic. Many persons suffering from serious psychiatric illnesses experience treatment as undesirable (even intolerable), and thus are inclined to resist, refuse, or drop out of treatment prematurely (Barnes & McPhillips, 1998; Fenton, Blyler, & Heinssen, 1997; Kane, 1983; Marder, 1998; Owen, Fischer, Booth, & Cuffel, 1996). Increasingly, mental health consumers and others with a stake in their care insist that psychiatric interventions must be developed and delivered in ways that are more acceptable and worthwhile to consumers themselves—i.e., treatment and services that demonstrably improve the quality of their lives overall.

As greater scientific understanding of psychiatric disorders blurs the distinction between so-called “physical” and “mental” illnesses—leading hopefully to less social stigma and more parity in resources applied to the treatment of these disorders—the greater societal goal of patient self-determination in healthcare decision-making must extend more fully to persons with psychiatric illnesses, i.e.,

as a part of the development of treatment protocols and guidelines, as well as evaluations of effectiveness in treating these illnesses. In the end, supporting patient autonomy means taking seriously the patient's subjectively perceived quality of life—and, importantly, the potential for that quality of life to improve meaningfully with a given form of treatment.

Legally mandated mental health treatment in the community, also known as involuntary outpatient commitment (OPC), poses a particular challenge with respect to such considerations of benefit to consumers' quality of life. On its face, OPC seems to preclude patient autonomy in treatment decision-making, insofar as it is, almost inherently, an unwanted intervention from the point of view of individuals subjected to it. At the same time, the main goal of OPC is to enable more consistent adherence to treatment (presumably needed and beneficial) for persons whose disorders by nature tend to impair one's ability to seek and comply voluntarily with treatment. Paradoxically, then, insofar as individual autonomy in decision-making is a component of a high quality of life, OPC may theoretically exert both negative and positive effects. By ensuring more consistent treatment and services delivery, it is hypothesized OPC may enhance quality of life. However, by infringing on an individual's liberty—suspending his or her right to refuse treatment in the community—OPC could also detract from quality of life, as perceived by the person under court-ordered treatment (Swartz, Wagner, Swanson, Hiday, & Burns, 2002).

While reliable measures of quality of life have been developed and used extensively as outcome variables in studies of psychiatric interventions, no study to date has directly examined whether legally mandated treatment in the community significantly affects quality of life one way or the other. This paper addresses that question empirically, using longitudinal data from the Duke Mental Health Study, a randomized clinical trial of involuntary outpatient commitment in North Carolina.

Studies of Quality of Life in Psychiatric Populations

Among persons with serious mental illness (SMI), quality-of-life ratings have been shown to be related to symptom type and severity, as well as socioeconomic status and demographic characteristics (Lehman, Kernan, DeForge, & Dixon, 1995). Studies have also shown that impaired insight into illness and lack of recognition of need for psychiatric treatment (common among persons ordered to OPC) are related to lower quality-of-life ratings (Lysaker, Bell, Bryson, & Kaplan, 1998; Smith et al., 1999). Conversely, treatment adherence has been shown to improve quality of life (Laini et al., 1999). A growing body of research has documented improved quality of life for persons with schizophrenia particularly after taking atypical antipsychotic medications, which are known to have fewer adverse side effects than conventional neuroleptics (Awad & Hogan, 1994; Laini et al., 1999; Meltzer, 1992, 1995; Naber, 1995; Wassermam & Criollo, 2000). A number of psychosocial interventions as well—including case management, assertive community treatment, psychoeducation, psychiatric rehabilitation, and health education—have been shown to improve quality of life for persons with serious mental illness (Awad & Voruganti, 2000; Bond, Drake, Mueser, & Latimer, 2001; Browne, 2000;

Byrne *et al.*, 1999; Curtis, Millman, Struening, & D'Ercole, 1998; Tarrier & Bobes, 2001). Rosenheck and colleagues (1998) have found that the *combination* of psychopharmacological and psychosocial treatments can reduce symptoms and also improve quality of life over time.

The way in which care is delivered may also enhance psychiatric patients' quality of life: Nordentoft, Knudsen, Jenson-Peterson, and Krasnik (1996) report that mental health systems providing a continuum of care and better communication between inpatient and outpatient facilities demonstrate greater increases in their patients' reported quality of life following treatment.

Involuntary Outpatient Commitment (OPC)

In recent years, outpatient commitment (OPC) has emerged as one of the most contentious issues in mental health law, and the focus of much inquiry (Monahan *et al.*, 2001). Most commonly, OPC refers to a court order mandating that an individual with a mental disorder adhere to a prescribed community treatment plan, under threat of being rehospitalized if the person fails to adhere to the prescribed treatment (and also meets criteria for involuntary hospitalization). While 40 U.S. jurisdictions have statutes authorizing different forms of outpatient commitment, until recently, few states made substantial use of these laws. With the 1999 enactment in New York State of "Kendra's Law," national interest in, and controversy over, outpatient commitment has grown in the United States.

Proponents of OPC assert that it can enhance patients' engagement in treatment, improve compliance with medication and other treatment, provide a better continuum of care, and create an incentive for the patient to avoid rehospitalization. It has also been argued that OPC may act as a lever on a mental health service system, mobilizing supportive services and motivating clinical vigilance (Swanson *et al.*, 1997). In North Carolina, where the present study was conducted, OPC statutes require compliance with recommended treatment, excluding forced medication in the outpatient setting. Under OPC, the responsible clinician may request that law officers escort the nonadherent patient to a community mental health center for examination and "hopeful persuasion" to accept treatment. Evidence from naturalistic studies (Fernandez & Nygard, 1990), as well as a randomized study (Swanson *et al.*, 2000, 2001; Swartz *et al.*, 1999; Swartz, 2001a), demonstrates that OPC may decrease hospital readmission rates, criminal arrests, community violence, and total days hospitalized. Nevertheless, OPC is strongly opposed by some mental health consumers and mental health law advocates, who argue that coerced outpatient treatment infringes on civil liberties, extends unwarranted social control into the community, and may actually drive people away from needed treatment (Allen & Smith, 2001; Stefan, 1987). Other commentators have noted that OPC poses difficulties not only in terms of ethical and legal challenges, but in terms of practical implementation. For example, OPC may impose additional burden on the already strained resources of public mental health systems. Moreover, OPC orders encounter logistical difficulties that hamper their enforceability in the community (Elbogen & Tomkins, 1999).

Given the controversy and potential drawbacks of OPC, it is all the more important to examine the impact of this intervention from the perspective of

consumers who undergo it. Hence, the purpose of the present study is to investigate whether and how OPC affects subjective quality of life among people with severe mental illness, and specifically those with a history of “revolving door” hospital admissions and poor adherence with community based treatment. Findings are presented from the first randomized study of the effectiveness of outpatient commitment (Swartz et al., 1999), using a sample of 221 people with psychotic or major mood disorders who were placed on OPC combined with case management, and were followed up for one year in the community, in the Piedmont region of North Carolina.

STUDY DESIGN AND SAMPLE

Selection Criteria

Subjects were screened sequentially from a population of involuntarily hospitalized patients who had been ordered to undergo a period of OPC upon discharge. Eligibility criteria for the study were (i) age 18 years or older, (ii) diagnosis of schizophrenia, schizoaffective disorder, other psychotic disorder, or major affective disorder, (iii) duration of disorder of one year or more, (iv) significant functional impairment in activities of daily living, (v) intensive treatment within the past two years, (vi) resident of one of nine counties participating in the study, and (vii) awaiting a period of court-ordered outpatient commitment. Legal criteria for OPC in North Carolina include SMI diagnosis and mental status limiting a person’s ability to seek or comply voluntarily with treatment, and the likelihood that without treatment the person will predictably decompensate to a point of dangerousness or grave disability. All subjects in this study signed documentation of informed consent to participate in the research, according to procedures reviewed and approved by the Duke University Medical Center Institutional Review Board. It was explained to all subjects prior to their enrollment that participation in the study was voluntary and would not affect their treatment; that the research procedures would include confidential interviews and periodic review of subjects’ medical records and arrest records; and that the direct benefits and risks of participation in this observational study were minimal. In addition to informed consent documents, subjects signed record release forms authorizing release and review of their medical records at all facilities from which they received treatment.

Study Group Assignment

By special arrangement with the court, subjects randomly assigned to a control group were released from OPC. Subjects in the experimental group, by law, received an initial period of OPC not longer than 90 days. Thereafter, the commitment order could be renewed for up to 180 days if a psychiatrist and the court determined that the subject continued to meet legal criteria for OPC. However, subjects in the control group received immunity from any OPC during the year of the study. All subjects in the study—both control and experimental subjects—received case management and other outpatient treatment at one of four participating area mental

health programs representing nine contiguous urban and rural counties. An exception to the randomization procedure was necessary in the case of subjects with a history of serious assault involving weapon use or physical injury to another person within the preceding year. These subjects (the violent group) were required to undergo at least the initial period of OPC as ordered. Renewals were left to the discretion of the clinician and court. The violent group did not differ significantly from the other subjects on baseline or follow-up measures of quality of life. However, a proxy variable for membership in the violent group was included in all multivariable analyses as a control for non-random assignment to at least an initial period of OPC.

Refusal, Attrition, and Differences in Length of Time on OPC

Of identified eligible patients, 12% refused consent to participate. Rates of refusal did not significantly vary by sex, race, or diagnosis. Subjects over age 45 were more likely to refuse than those under 45 (14% versus 7%). The baseline sample consisted of 331 subjects. At the 12 month follow-up, 69 subjects (20.9%) had withdrawn or were lost to follow-up, with 262 remaining—114 controls, 102 in the OPC group, and 46 in the OPC violent group. Attrition did not differ significantly by study group. Also, there was no association found between attrition and baseline QOL, or between attrition and baseline psychiatric symptomatology—two of the strongest predictors of 12 month QOL. Thus, there is no evidence that subjects lost to follow-up were predisposed to a higher or lower QOL score, or that the results would have differed in any way had they remained in the study.

Moreover, we found no evidence of sample bias in renewal of OPC orders, and thus duration of OPC, except for one variable: subjects with a baseline history of medication noncompliance were more likely to receive extended OPC (renewed court orders)—40.0% versus 18.75%. (The implications of this difference for interpretation of the results—potentially a conservative bias—will be discussed below.) Approximately one-third of subjects in both the OPC and violent-OPC groups received more than 180 days of court-ordered treatment. Of the 262 subjects retained at 12 months, 41 did not provide sufficient self-report data on the multiple QOL interview items to produce a valid score on the index, leaving a total of 221 subjects for the present analysis.

Data Collection

At baseline, structured interviews were conducted with each subject and with a family member or other informant who knew the respondent well. Hospital records were reviewed for additional information regarding clinical history. Follow-up interviews were conducted every 4 months with the subject, case manager, and collateral informant. Outpatient service records and hospital admissions were recorded as well. Baseline measures covered the period of 4 months preceding the subject's initiation in the study. Summary follow-up measures were coded to cover the 1 year period of the experiment, i.e., combining measures at 4, 8, and 12 months, unless otherwise noted, as described below.

MEASUREMENT

Quality of Life

The Lehman Quality of Life Index (QOLI) (Lehman, 1988) provides a widely accepted operational definition and a reliable, standard measure of quality of life in persons with chronic mental illness. The QOLI assesses quality of life by asking respondents to rate their feelings about their current life experience on a seven-point scale of satisfaction, covering a range of areas including social relationships, daily activities, finances, residential living situation, and global life satisfaction. The QOLI items do not overlap with measures of symptomatology and treatment. The QOLI yields a summary score for “objective” as well as “subjective” dimensions of quality of life. The measure has been used in numerous studies, such as for conducting needs assessments for persons with severe mental illness (Skinner et al., 1999), examining the relationship between economic indicators and QOL in mental illness (Koiyumma-Honkanen et al., 1996), and investigating the association between QOL and various psychiatric symptoms (Bellack, Morrison, Wixted, & Mueser, 1990).

As the dependent variable in the present study, quality of life was measured using the abbreviated form of the Lehman Quality of Life Index (Lehman, 1996). For purposes of the current analysis, only the subjective items of QOL were included. We also were interested in examining objective living conditions in the community—such as exposure to violence and victimization—as *predictors* of QOL and potentially important modifiers of the relationship between OPC and QOL. Hence, due to potential confounding of the QOL “objective” items (e.g. residential living conditions) with the study’s related measures of safety in the social environment, the objective QOL items were not utilized in these analyses.

While previous studies have often examined cross-sectional associations between the QOLI and putative predictors of quality of life among mental health consumers (e.g. inadequate housing and lower QOLI scores, Baker & Douglas, 1990), we were interested in using the QOLI *prospectively* to examine the longitudinal effects of the OPC intervention, controlling for other determinants of quality of life. This required measuring quality of life at two points in time—at baseline and 12 months follow-up. We present multivariable regression models of the net effect of outpatient commitment on QOL after 12 months, controlling for baseline QOL and other initial risk factors. We then test the effects of intervening variables—including treatment adherence, case manager cues to engage in treatment, perceived coercion, and clinical outcomes such as symptoms and hospital readmission—all of which may be affected by OPC, and which may, in turn, affect quality of life.

Scoring Procedures for the QOLI Scale

All of the subjective items in the QOLI were averaged to yield a single summary score at baseline and a comparable score at the 12 month follow-up. However, the shape of the distribution of raw item QOLI scores initially posed a methodological

problem with respect to the assumptions necessary for regression analysis. In particular, the item scores were not normally distributed across the seven-point scale, but heavily clustered in the middle to upper range, with fully 40% of the mean QOLI outcome scores falling between 4 and 5 (mean = 4.93, median = 4.96, standard deviation = 0.93). Another indicator of the clustering problem was that the interquartile range of the distribution (1.18) was confined to less than 20% of the full range of possible scores. We addressed this problem by truncating the scale into a three-level ranking, split above and below the modal cluster of scores. Thus, the mean QOLI item scores were re-coded as follows: 1–3 = low (1), 4 = medium (2), 5–7 = high (3). The re-coded scale resulted in a distribution more conducive to analysis, with mean = 2.34, median = 2.00, standard deviation = 0.72, and the interquartile range spread across 50% of possible scores.

Treatment Adherence

An index was constructed as a measure of the subject's overall degree of adherence with recommended psychiatric treatment, consisting of attendance at scheduled appointments as well as compliance with prescribed medication. For a detailed description of this measure, see Swartz, Swanson, Wagner, Burns, and Hiday (2001). Briefly, an index was computed from the average frequency of adherence with all planned treatment across three follow-up periods (4, 8, and 12 months), as reported by three interview sources (subject, family/collateral informant, and case manager).

Case Manager Reminders

At each follow-up wave, case managers were asked whether they had verbally reminded the client to take prescribed medication and keep scheduled clinic appointments, and, if so, whether they had warned the client that if they failed to comply, particular consequences could follow, including hospitalization, involuntary commitment, notification of sheriff or judge, and/or withholding of spending money. A summary score was calculated, which measured the total number of different types of "reminder" given over the three follow-up waves.

Coercion

Perceived coercion in mental health treatment was measured using the MacArthur Admission Experience Scale (Gardner *et al.*, 1993) as adapted for assessing coercion in outpatient treatment experience (Swartz *et al.*, 2002). This scale assesses whether respondents perceive that they have been forced or manipulated into treatment settings, have been able to voice their own preferences, have had their opinions taken into account in the process, and have experienced procedural justice during admission or involuntary commitment. This instrument was administered at the 12 month follow-up assessment.

Psychiatric Symptoms

Psychiatric symptoms were assessed using the Brief Symptom Inventory (BSI) (Derogatis & Melisaratos, 1983). The BSI was developed from its longer parent instrument, the SCULL-90-R, and has demonstrated very good test-retest and internal consistency reliabilities as well as good evidence of convergent validity with measures such as the Minnesota Multiphasic Personality Inventory (MMPI). The BSI summary score was used to supplement diagnostic information with a general, continuous measure of the amount of self-reported psychiatric symptomatology at baseline and each wave during the study year.

Functional Impairment

Functional impairment was assessed using the Global Assessment of Functioning Scale (GAF), a measure of functional status and severity of psychiatric disturbance rated on a continuum of 0–100 from most to least impaired (Endicott, Spitzer, Fleiss, & Cohen, 1976). This rating was conducted at baseline and at each 4 month follow-up wave. A study-year summary measure was coded which took the average of the GAF scores at the three follow-up waves.

Social Support

Social support was assessed using a subscale of the Duke Social Support Scale (George, Blazer, & Hughes, 1989), measuring respondents' subjective perception of their status and value in a social network, whether the network would provide help if needed, and satisfaction with the quantity and quality of received support. Only the baseline measure of this variable was included in the analysis presented here.

Substance Abuse

Substance abuse was assessed by combining interview data from three sources and (at baseline) the hospital record. Substance abuse was defined as the report of any occurrence of problems related to alcohol or drug use—problems with family, friends, job, police, physical health, or any recorded diagnosis of psychoactive substance use disorder (Swartz et al., 1998).

Violence

Incidence of violence was also assessed from three data sources. Subjects were asked every 4 months whether they had been picked up by police or arrested for physical

assault on another person, had been in fights involving physical contact, or had threatened someone with a weapon. Family members and case managers were asked comparable questions about the subject's behavior. A composite index was constructed measuring whether at least one violent act was reported by any source during the year of the study (Swanson, Borum, Swartz, & Hiday, 1999).

Outpatient Service Utilization

Outpatient service utilization was obtained from service records in the information systems of participating community mental health centers. All service encounters for case management, medication, psychotherapy, and other outpatient services were summed in a single index. Regular treatment was defined as three or more outpatient service encounters per month in the community (the median amount). This rate was adjusted for time spent hospitalized (Wagner, Swartz, Swanson, Burns, & Hiday, 2003).

Arrests

Arrests were obtained from North Carolina Department of Justice records, supplemented by self-report and case manager report. A baseline dichotomous measure was coded for any arrest during the 4 months preceding hospitalization, and for any arrest during the 1 year of the study. Arrests for any criminal offense were included (Swanson *et al.*, 2001).

Criminal Victimization and Homelessness

Criminal victimization and homelessness were assessed by subject self-report only. These measures were coded at baseline for the period of 4 months preceding the initiation of the study, and as summary dichotomous measures (any arrest, any period of homelessness) during the study year. For more detailed discussion of these measures (see Hiday, Swanson, Swartz, Wagner, & Borum, 2002) and Compton *et al.* (2003).

METHODS OF ANALYSIS

Ordinary least squares (OLS) regression analysis was used to examine the relative impact of total days of OPC on quality of life after 12 months, controlling for baseline QOL, other risk factors, and relevant intervening variables. Staged regression models were estimated by entering blocks of variables to examine the significance of potential mediating or moderating effects associated with service utilization, perceived coercion, and clinical, legal, and safety outcomes during the

study year. A logistic regression analysis was also conducted for the purpose of estimating and comparing the adjusted probabilities of achieving a high QOL (above median score) among subjects who received no OPC versus brief OPC (less than 180 days) versus sustained OPC (180 days or more).

SAMPLE DESCRIPTION

The sample of $n = 221$ individuals used for this analysis was representative of the population of patients admitted to state mental hospitals in North Carolina. Sample members were predominantly young to middle-aged adults (mean age = 39.6, $sd = 10.7$); of lower educational status (mean years of education = 12.3, $sd = 1.7$, with 37% having less than a high school education); and mostly not married and not cohabiting (80.0% single). Study subjects were mostly economically poor, with a median annual income of \$5,832. Males comprised 53.4%, females 46.6% of the sample. The racial distribution was 65.6% African American, 34.4% non-Hispanic white. While 54.3% were city residents, 45.7% lived in rural areas and small towns.

The majority (68.8%) had diagnoses of psychotic disorders, while 26.7% had bipolar disorder, and 4.5% had recurrent major depression. Co-occurring diagnosis of a personality disorder was identified in 14.5%. The majority of the sample had moderate functional impairment (GAF median score = 45). Alcohol and drug use (56.1%), medication noncompliance (74.7%), and violent behavior (51.1%) were common in the 4 months prior to hospitalization. More than one-third (39.3%) had experienced two or more psychiatric hospital admissions during the preceding year, while 22% had had an arrest or police encounter in the 4 months before baseline admission. For a more extensive presentation of the sample see the work of Swartz et al. (1999) and Swanson et al. (2000).

RESULTS

Effects of Outpatient Commitment on QOL

Considering this study strictly as a randomized controlled trial, subjects with a baseline history of serious violence must be excluded from analysis, since they were not randomly assigned to OPC, and all experimental subjects must be considered as a single group without regard to the length of exposure to OPC. On this basis alone, the study found no significant difference in prospective 12 month QOL between the two groups: mean QOL = 4.83, $sd = 0.93$, in the no-OPC group versus mean QOL = 4.97, $sd = 0.94$, in the OPC group ($F = 1.07$ with one df , $p = 0.30$.) Likewise, there was no significant difference using the re-coded three-level version of the QOL score: mean QOL = 2.28, $sd = 0.72$, in the no-OPC group versus mean QOL = 2.36, $sd = 0.69$, in the OPC group ($F = 0.69$ with one df , $p = 0.41$).

However, this narrow approach to the analysis does not adequately test the effect of OPC on quality of life in persons with SMI, for two reasons: (i) it excludes a key risk group to which OPC policy may be targeted (those with a history of violence);

and (ii) it fails to take into account varying amounts of exposure to the intervention, i.e., length of time actually spent under court-ordered treatment. In fact, time on OPC varied considerably. It was not amenable to experimental control, but depended on clinicians' and courts' discretion in applying the legal criteria for renewal of expiring OPC orders. As mentioned earlier, this may have selected into the long-term OPC group a greater proportion of clients with a history of nonadherence to treatment. However, insofar as this created a bias, its effect was likely conservative; it would work *against* finding a positive effect for extended OPC in improving quality of life, if those deemed to have greater clinical need and higher risk of nonadherence were more likely to receive renewed OPC orders for longer periods.

Alternatively, then, when subjects with a history of violence were included in the analysis and the OPC intervention was considered as a continuous variable—total number of days on OPC during the year—the results were significant. Specifically, as shown in Table 1, total days on OPC was positively and significantly associated with higher QOL at 12 months, and the effect remained significant in models controlling for baseline risk factors and baseline QOL. (The three-level re-coded versions of the QOL scores—both at baseline and 12 months—were used in all analyses.)

Specifically, as shown in Table 1, model 1 included only two independent variables: total days of OPC and history of violence (a dummy variable to hold constant any effect of nonrandom assignment.) In model 2, an array of potentially relevant baseline predictors of QOL was entered into the regression equation using stepwise selection. The model selected psychiatric symptoms (total BSI score) and history of recent homelessness as significant predictors of 12 month QOL. Baseline

Table 1. Effects of outpatient commitment on subjective Quality of Life (QOL) after 12 months, controlling for baseline risk factors and initial QOL

Independent variables	Unadjusted correlation coefficients (<i>r</i>)	OLS regression analysis Standardized <i>Beta</i> coefficients		
		Model 1	Model 2	Model 3
<i>Experimental intervention</i>				
Duration of outpatient commitment (total days)	0.19**	0.18**	0.14*	0.15*
Control for nonrandom assignment (history of serious violence)	0.07	0.02	0.05	0.04
<i>Selected baseline risk factors</i> ¹				
Psychiatric symptoms (BSI)	-0.18**		-0.14*	0.03
Homelessness	-0.17*		-0.14*	-0.09
<i>Baseline quality of life</i>				
Subjective QOL prior to study initiation	0.40***			0.39***
<i>Model statistics</i>				
N observations		220	220	220
Degrees of Freedom		2	4	5
Model significance: F Value		3.94*	4.5**	10.36***
Adjusted R ²		0.03	0.06	0.18

¹Stepwise selection was used with $p < 0.05$ as the criterion for retention in the model. Baseline variables that were tested in the model but not selected as independently significant included: age, sex, race, marital status, social support, diagnosis, functioning (GAF), history of treatment adherence, substance abuse, psychiatric hospital admissions, police contact/arrest, violent behavior, and criminal victimization. Statistical significance: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

variables that were tested in the model but not selected as independently significant included age, sex, race, marital status, social support, diagnosis, functioning (GAF), history of treatment adherence, substance abuse, psychiatric hospital admissions, police contact/arrest, violent behavior, and criminal victimization. In model 3, baseline QOL score was entered into the regression equation, and was shown to be strongly predictive of 12 month QOL, rendering nonsignificant the effects of psychiatric symptoms and homelessness. That is to say, baseline QOL was correlated with symptoms and homelessness, and thus functioned as a sort of proxy index incorporating other elements of quality of life.

Intervening Effects

Table 2 presents a staged multiple regression analysis that was conducted to examine the direct and indirect effects of duration of OPC on QOL at 12 months, controlling for relevant covariates and potential mediating or moderating variables. Control variables were included to hold constant the effects of baseline QOL (previously selected in the stepwise analysis of baseline predictors, as mentioned above and shown in Table 1); and history of serious violence resulting in initial assignment to OPC.

Table 2. Effects of outpatient commitment on subjective Quality of Life (QOL) after 12 months, controlling for intervening variables

Independent variables	Unadjusted correlation coefficients (<i>r</i>)	OLS regression analysis Standardized <i>Beta</i> coefficients		
		Model 1	Model 2	Model 3
<i>Baseline risk</i>				
Baseline quality of life	0.40***	0.39***	0.34***	0.27***
History of serious violence (control for nonrandom assignment)	0.07	0.03	0.05	0.07
<i>Experimental intervention</i>				
Outpatient commitment duration (total days)	0.19**	0.16*	0.12	0.10
<i>Treatment, services, and legal involvement during study year</i>				
Outpatient service intensity (monthly encounters)	-0.20**		-0.08	-0.02
Adherence with medications and appointments	0.19**		0.14*	0.01
Case manager reminders	0.07		0.14*	0.14*
Perceived coercion	-0.19**		-0.19**	-0.19**
Psychiatric hospital readmissions	-0.22**		-0.13*	-0.04
Arrests	-0.10		-0.02	-0.01
<i>Clinical, functional, and safety variables during study year</i>				
Psychiatric symptoms (BSI)	-0.42***			-0.30***
Functioning (GAF)	0.20			0.05
Substance abuse problems	-0.25***			-0.08
Violent behavior	-0.19**			-0.08
Criminal victimization	-0.31***			-0.04
Homelessness	-0.16*			0.04
<i>Model statistics</i>				
N observations		220	218	210
Degrees of Freedom		3	9	15
Model significance: F Value		16.61****	8.94****	8.17****
Adjusted R ²		0.18	0.25	0.34

Statistical significance: **p* < 0.05; ***p* < 0.01; ****p* < 0.001, *****p* < 0.0001.

An initial model (see Table 2, model 1) showed that greater duration of OPC was associated with significantly greater QOL at 12 months, controlling for baseline QOL and violence history ($\beta = 0.16, p < 0.05$). In model 2, a set of intervening services-related variables was added to the equation: outpatient service intensity, adherence with treatment, case manager reminders to participate in treatment, perceived coercion, psychiatric hospital readmissions, and arrests during the year. These variables had been previously shown to be affected by OPC in this sample (Compton *et al.*, 2003; Hiday *et al.*, 2002; Swanson *et al.*, 2000, 2001; Swartz *et al.*, 1999; Swartz *et al.*, 2001a, 2001b; Wagner *et al.*, 2003) and were hypothesized to subsequently affect QOL, *i.e.* to mediate or moderate the effect of OPC on quality of life. As shown in model 2, adherence and case manager reminders positively affected 12 month QOL score, while perceived coercion and readmissions negatively affected QOL. Moreover, controlling for these intervening variables rendered nonsignificant the direct effect of OPC on QOL ($\beta = 0.14$; ns).

Thus, the comparison of models 1 and 2 in Table 2 provides evidence indicating that increasing days spent on OPC had positive indirect effects on 12 month QOL—by increasing case manager reminders and treatment adherence (variables that, in turn, increased QOL), and by decreasing hospital readmissions (a variable that, in turn, decreased QOL). However, greater OPC simultaneously exerted a negative indirect on QOL via increased perceived coercion, which was associated with lower QOL scores. In short, increased case manager reminders and treatment adherence, and decreased hospital readmissions, functioned as causal mediators of the association between OPC on QOL, while perceived coercion moderated the effect of OPC on QOL.

Model 3 in Table 2 incorporates the effects of salient co-occurring clinical and safety outcomes: psychiatric symptomatology (BSI), functioning (GAF), substance abuse, violent behavior, criminal victimization, and homelessness. Among these variables, the BSI symptom score (averaged across follow-up waves) was found to exert a strong and significantly negative effect on QOL at 12 months ($\beta = -0.30; p < 0.0001$). Importantly, the impact of controlling for this variable in the multiple regression model was to render nonsignificant the net effect of treatment adherence on QOL. That is to say, symptomatology functioned as a strong mediator variable in the association between treatment adherence and QOL; if symptoms improved with adherence, then higher QOL was reflected at follow-up, but if symptoms remained constant—or did not improve—then treatment adherence *per se* did not affect QOL. Model 4 fits the data significantly better than does the previous model, as it explains 34% of the variance in 12 month QOL.

In summary, staged multiple regression analysis showed that longer duration of OPC was significantly associated with higher quality of life after 12 months, controlling for baseline risk QOL. The effect was mediated by increased case manager reminders and treatment adherence, and by decreased psychiatric hospital admissions; however, increased perceived coercion moderated the effect of OPC on QOL. In turn, the effects of treatment adherence and hospital readmissions on QOL were mediated by level of psychiatric symptomatology.

Finally, Figure 1 displays graphically the magnitude of the effect of sustained OPC on QOL. Logistic regression analysis was used to generate the predicted probabilities of obtaining a high (above median) QOL score at 12 months, as a

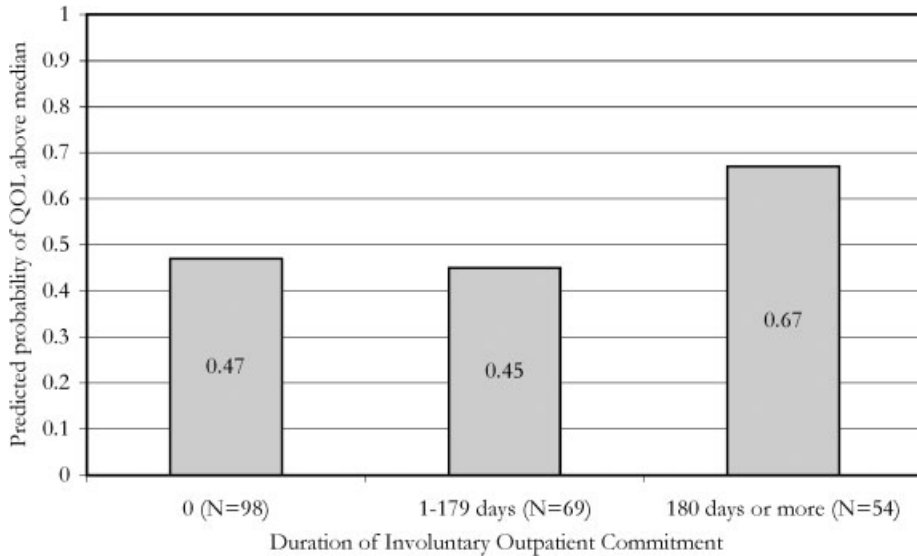


Figure 1. Probability¹ of high QOL at 12 months by duration of outpatient commitment during year.

¹Predicted probabilities were estimated from a logistic regression model controlling for the significant predictors shown in model 3 of Table 2.

function of the amount of exposure to OPC: 0, 1–179 days, and 180 days or more, controlling for the covariates shown in Model 3 of Table 2. As the figure shows, short-term OPC was not associated with increased probability of high (QOL 0.45 versus 0.47), but those who received at least 6 months of OPC had a higher probability (0.67) of obtaining a QOL above the group median at 12 months.

DISCUSSION

This experimental study examined jointly the effectiveness of outpatient commitment, and the impact of other key factors on subjective quality of life, over the course of one year, in a clinical sample of individuals with psychotic or major mood disorders. Our key finding was that longer outpatient commitment was associated with higher subjective quality of life measured at 12 months, controlling for baseline QOL and other covariates.

The court order for outpatient commitment *per se* was not associated with higher QOL; we found no significant difference between control and OPC groups on 12-month QOL score. Thus, analyzed strictly as a randomized controlled trial, our study found no evidence that OPC affects QOL. However, when *duration* of OPC was taken into account, we found that longer periods of outpatient commitment were associated with significantly higher QOL measured at follow-up. We also found that this effect was indirect in nature, being mediated by treatment adherence, case manager reminders, and hospital readmissions—all of which were affected by OPC, and which, in turn affected QOL. Perceived

coercion functioned as a moderating variable, insofar as it was increased by OPC but had a negative effect on QOL. Our final model also suggests that the positive effect of treatment adherence on QOL is mediated by decreased psychiatric symptomatology, and that the negative effect of hospital readmission is likely a proxy for severity of psychiatric symptomatology; with BSI score in the model, the independent main effects of treatment adherence and hospitalization were rendered non-significant. Thus, in sum, our findings provide significant evidence that subjects who underwent sustained periods of outpatient commitment had measurably greater subjective quality of life at the end of the study year, and it appears that OPC exerted its effect largely by improving treatment adherence and decreasing symptomatology.

Improved treatment adherence should not be interpreted as a simple effect of the OPC order, i.e., obligating the individual subject to comply with treatment. In other analyses of these data, we have reported that renewal of OPC was also associated with receipt of more intensive community-based services (Wagner *et al.*, 2003; Swartz *et al.*, 2001b). This suggests that renewal of OPC also represents a commitment on the part of clinicians and mental health facilities to intensify the provision of services for persons under a court order for treatment. These intensified efforts to engage OPC-renewed subjects in treatment should also result in improved treatment adherence and reduced symptomatology. Thus, the improvement in treatment adherence likely reflects a mutual effort by the individual under OPC and clinicians—both parties influenced by the order of the court—to improve treatment adherence and service delivery.

This study is limited in several ways. First, there was substantial attrition of subjects over the study year, with the result that about one-third of the original sample was lost to follow-up or had missing data on the dependent variable at 12 month follow-up. However, we found that attrition did not differ significantly by study group and also was not associated with known correlates of QOL measured at baseline. Thus, we looked for, but did not find, evidence that attrition biased our findings in any significant way.

The study design deviated in two respects from a strict randomized controlled trial. First, the sample included a subgroup of subjects who could not be randomly assigned to the control group (release from initial OPC), due to their recent documented history of violent behavior. However, to have excluded these subjects would have seriously limited the generalizability of the findings to an important subpopulation of persons with SMI who may be candidates for OPC. Since random assignment was not feasible for these subjects, they were followed as a naturalistic comparison group under OPC. Nevertheless, over half of these subjects *did not remain* on outpatient commitment. The nonrenewal of many of the initial court orders produced considerable variability in the amount of time that subjects spent under OPC, and thus allowed an informative comparison between short-term and long-term OPC. Specifically, those whose OPC orders were renewed spent an average of 330 days on OPC, while those not renewed spent an average of only 76 days on OPC during the year of the study.

Thus, the second deviation from a strict randomized controlled design was that the amount of time that subjects spent on OPC was not random, and could not be controlled experimentally, but varied as clinicians and the court applied the legal criteria for renewal of OPC orders. Potentially, this could have lead to a biased

conclusion—e.g. attributing a positive intervention effect to subjects who might have shown more improvement in QOL in any case, due to pre-existing conditions related to their selection for OPC renewal. However, this could only be a problem if higher-risk subjects were less likely to get renewal of their court order. In fact, the legal criteria for OPC work in the opposite direction. Renewal of the court order required a second determination (by a psychiatrist and the court) that the respondent would predictably become dangerous (or “gravely disabled”) without treatment and predictably would not comply with treatment. If, at that point, the psychiatrist and the court concluded that the respondent was no longer likely to become dangerous without treatment or—even if so—would comply *voluntarily* with treatment, then the legal criteria for OPC were not satisfied and the order could not be renewed. Thus, insofar as dangerousness and lower quality of life are significantly related, any bias in the selection of subjects for longer periods of OPC would be conservative, i.e. would seem to work *against* finding that extended OPC improves QOL. To some extent, then, our results may even understate the true impact of OPC on quality of life.

Clearly, there may be other effective ways to improve quality of life among persons with SMI who are unwilling or unable to adhere to treatment. OPC is not the only strategy—and perhaps not the best strategy—for all nonadherent individuals. For example, new clinical interventions focused on improving treatment compliance have shown promise (Kemp, Kirvov, Everitt, Hayward, & David, 1998). We did not test OPC against “adherence therapy” offered on a voluntary basis.

Nevertheless, these results show that OPC may be one effective approach to improve or maintain overall quality of life among people with SMI, despite its potentially coercive nature. That is to say, the advantages of OPC may outweigh its potential disadvantages to persons subjected to OPC initially against their will. Some individuals ordered to OPC may actually revise their earlier views in light of new personal experience, and come to believe that they had needed and benefited from OPC (Gardner et al., 1999; Swartz, Swanson, & Monahan, 2003). Others may believe that their quality of life improved in spite of OPC. In any event, our evidence suggests that, to be effective, OPC orders must be sustained and combined with a commitment on the part of mental health systems and clinicians to provide the necessary services and reminders that will enable persons with severe mental illness to adhere more consistently to treatment.

REFERENCES

- Allen, M., & Smith, V. F. (2001). Opening Pandora’s box: The practical and legal dangers of involuntary outpatient commitment. *Psychiatric Services*, 52, 342–346.
- Awad, A. G., & Hogan, T. P. (1994). Subjective response to neuroleptics and the quality of life: Implications for treatment outcome. *Acta Psychiatrica Scandinavica Supplement*, 89, 27–32.
- Awad, A. G., & Voruganti, N. P. (2000). Intervention research in psychosis: Issues related to the assessment of quality of life. *Schizophrenia Bulletin*, 26, 557–564.
- Baker, F., & Douglas, C. (1990). Housing environments and community adjustment of severely mentally ill persons. *Community Mental Health Journal*, 26, 497–505.
- Barnes, T. R., & McPhillips, M. A. (1998). Novel antipsychotics, extrapyramidal side effects and tardive dyskinesia. *International Journal of Clinical Psychopharmacology*, 13(Suppl. 3), S49–S57.
- Bellack, A. S., Morrison, R. L., Wixted, J. T., & Mueser, K. Y. (1990). An analysis of social competence in schizophrenia. *British Journal of Psychiatry*, 156, 809–818.

- Bond, G. R., Drake, R. E., Mueser, K. T., & Latimer, E. (2001). Assertive community treatment for people with severe mental illness: Critical ingredients and impact on patients. *Managed Health Outcomes*, 9, 141–159.
- Browne, S. (2000). Rehabilitation programmes and quality of life in severe mental illness. *International Journal of Social Psychiatry*, 45, 302–309.
- Byrne, C., Brown, B., Voorberg, N., Schofield, R., Browne, G., Gafni, A., Schuster, M., Watt, S., Roberts, J., & Hoxby, H. (1999). Health education or empowerment education with individuals with a serious persistent psychiatric disability. *Psychiatric Rehabilitation Journal*, 22, 368–380.
- Compton, S. N., Swanson, J. W., Wagner, H. R., Swartz, M. S., Burns, B. J., & Elbogen, E. B. (2003). Effects of involuntary outpatient commitment on homelessness in persons with severe mental illness. *Mental Health Services Research*, 5, 27–38.
- Curtis, J. L., Millman, E. J., Struening, E. L., & D'Ercole, A. (1998). Does outreach case management improve patients' quality of life? *Psychiatric Services*, 4, 351–354.
- Derogatis, L. R., & Melisaratos, N. (1983). The brief symptom inventory: A brief report. *Psychological Medicine*, 13, 595–605.
- Elbogen, E. B., & Tomkins, A. J. (1999). Therapeutic jurisprudence and the psychiatric hospital: Applying the law as a clinical tool. *New Directions in Mental Health Services*, 84, 71–84.
- Endicott, J., Spitzer, R., Fleiss, J., & Cohen, J. (1976). The global assessment scale: A procedure for measuring overall severity of psychiatric disturbances. *Archives of General Psychiatry*, 33, 766–771.
- Fenton, W. S., Blyler, C. R., & Heinsen, R. K. (1997). Determinants of medication compliance in schizophrenia: Empirical and clinical findings. *Schizophrenia Bulletin*, 23, 637–651.
- Fernandez, G., & Nygard, S. (1990). Impact of involuntary outpatient commitment on the revolving-door syndrome in North Carolina. *Hospital and Community Psychiatry*, 41, 1001–1004.
- Gardner, W., Hoge, S. K., Bennett, N., Roth, L. H., Lidz, C., Monahan, J., & Mulvey, E. (1993). Two scales for measuring patients' perceptions of coercion during mental hospital admission. *Behavioral Science and the Law*, 11, 307–322.
- Gardner, W., Lidz, C., Hoge, S. K., Monahan, J., Eisenberg, M., Bennett, N., Mulvey, E. P., & Roth, L. H. (1999). Patients' revisions of their beliefs about the need for hospitalization. *American Journal of Psychiatry*, 156, 1385–1391.
- George, L., Blazer, D., & Hughes, D. (1989). Social support and the outcomes of major depression. *British Journal of Psychiatry*, 186, 651–656.
- Hiday, V. A., Swanson, J. W., Swartz, M. S., Wagner, H. R., & Borum, W. R. (2002). The impact of outpatient commitment on victimization of persons with severe mental illness. *American Journal of Psychiatry*, 159, 1403–1411.
- Kane, J. M. (1983). Problems of compliance in the outpatient treatment of schizophrenia. *Journal of Clinical Psychiatry*, 44, 3–6.
- Kemp, R., Kirvov, G., Everitt, B., Hayward, P., & David, A. (1998). Randomised controlled trial of compliance therapy: 18-month follow-up. *British Journal of Psychiatry*, 172, 413–419.
- Koivumma-Honkanen, H. T., Viinamaki, H. H., Honkanen, R., Tanskanen, A., Antikainen, R., Niskanen, L., Jaaskelainen, J., & Lehtonen, J. (1996). Correlates of life satisfaction among psychiatric patients. *Acta Psychiatrica Scandinavica*, 94, 372–378.
- Laini, V., Arduini, A., Critelli, E., Rossetti, R., Mapelli, L., Boscatti, L., Regispani, F., Orlandi, R., Papa, P., & Mauri, M. C. (1999). Psychopharmacological treatment with risperidone and psychotherapeutic approaches to schizophrenia and personality disorders. *New Trends in Experimental and Clinical Psychiatry*, 15, 209–213.
- Lehman, A. F. (1988). A quality of life interview for the chronically mentally ill. *Evaluation and Program Planning*, 11, 51–62.
- Lehman, A. F. (1996). Measures of quality of life among persons with severe and persistent mental disorders. *Social Psychiatry and Psychiatric Epidemiology*, 31, 78–88.
- Lehman, A. F., Kernan, E., DeForge, B. R., & Dixon, L. (1995). Effects of homelessness on the quality of life of persons with severe mental illness. *Psychiatric Services*, 46, 922–926.
- Lysaker, P. H., Bell, M. D., Bryson, G. J., & Kaplan, E. (1998). Insight and interpersonal function in schizophrenia. *Journal of Nervous and Mental Disease*, 187, 432–436.
- Marder, S. R. (1998). Facilitating compliance with antipsychotic medication. *Journal of Clinical Psychiatry*, 59(Suppl. 3), 21–25.
- Marder, S. R., Davis, J. M., Chouinard, G. (1997). The effects of risperidone on the five dimensions of schizophrenia derived by factor analysis. *Journal of Clinical Psychiatry*, 58, 538–546.
- Meltzer, H. Y. (1992). Dimensions of outcome with clozapine. *British Journal of Psychiatry*, 160(Suppl. 17), 44–53.
- Meltzer, H. Y. (1995). Multiple-outcome criteria in schizophrenia: An overview of outcome with clozapine. *European Psychiatry*, 10(Suppl. 11), 19s–25s.
- Monahan, J., Bonnie, R. J., Appelbaum, P. S., Hyde, P. S., Steadman, H. J., & Swartz, M. S. (2001). Mandated community treatment: Beyond outpatient commitment. *Psychiatric Services*, 52, 1198–1205.

- Naber, D. (1995). A self-rating to measure subjective effects of neuroleptic drugs relationships to objective psychopathology quality of life, compliance and other clinical variables. *International Journal of Psychopharmacology*, 10(Suppl. 3), 133–138.
- Nordentoft, M., Knudsen, H. C., Jenson-Peterson, B., & Krasnik, A. (1996). Implementation of community mental health centers in Copenhagen: Effects of service utilization, social integration, quality of life and positive and negative symptoms. *Social Psychiatry and Psychiatric Epidemiology*, 31, 336–344.
- Owen, R. O., Fischer, E. P., Booth, B. M., & Cuffel, B. J. (1996). Medication noncompliance and substance abuse among patients with schizophrenia. *Psychiatric Services*, 47, 853–858.
- Rosenheck, R., Tekell, J., Peters, J., Cramer, J., Fontana, A., Xu, W., Thomas, J., Henderson, W., & Charney, D. (1998). Does participation in psychosocial treatment augment the benefit of clozapine? *Archives of General Psychiatry*, 55, 618–625.
- Skinner, E. A., Steinwachs, D. M., Handley, K., Lehman, A., Fahey, M., & Lyles, C. A. (1999). Met and unmet needs for assistance and quality of life for people with severe and persistent mental disorders. *Mental Health Services Research*, 1, 109–118.
- Smith, T. E., Hull, J. W., Goodman, M., Hedayat-Harris, A., Willson, D. F., Israel, L., & Munich, R. L. (1999). The relative influences of symptoms, insight, and neurocognition on social adjustment in schizophrenia and schizoaffective disorder. *Journal of Nervous and Mental Disease*, 187, 102–108.
- Stefan, S. (1987). Preventive commitment: The concept and its pitfalls. *Mental and Physical Disability Law Reporter*, 11, 288–302.
- Swanson, J., Borum, R., Swartz, M., & Hiday, V. (1999). Violent behavior preceding hospitalization among persons with severe mental illness. *Law and Human Behavior*, 23, 185–204.
- Swanson, J. W., Borum, R., Swartz, M. S., Wagner, H. R., Burns, B. J., & Hiday, V. A. (2001). Can involuntary outpatient commitment reduce arrests among persons with severe mental illness? *Criminal Justice and Behavior*, 28, 156–189.
- Swanson, J. W., Swartz, M. S., Borum, R., Hiday, V. A., Wagner, H. R., & Burns, B. J. (2000). Involuntary outpatient commitment and reduction of violent behaviour in persons with severe mental illness. *British Journal of Psychiatry*, 176, 324–331.
- Swanson, J. W., Swartz, M. S., George, L. K., Burns, B. J., Hiday, V. A., Borum, W. R., & Wagner, H. R. (1997). Interpreting the effectiveness of involuntary outpatient commitment: A conceptual model. *Journal of the American Academy of Psychiatry and Law*, 25, 5–16.
- Swartz, M., Swanson, J., Hiday, V., Borum, W., Wagner, H., & Burns, B. (1998). Taking the wrong drugs: Substance abuse, medication nonadherence, and violence in severely mentally ill individuals. *Social Psychiatry and Psychiatric Epidemiology*, 33, 75–80.
- Swartz, M. S., Swanson, J. W., Hiday, V. A., Wagner, H. R., Burns, B. J., & Borum, R. (2001a). A randomized controlled trial of outpatient commitment in North Carolina. *Psychiatric Services*, 52, 325–329.
- Swartz, M. S., Swanson, J. W., & Monahan, J. (2003). Endorsement of personal benefit of outpatient commitment among persons with severe mental illness. *Psychology, Public Policy and Law*, 9, 70–93.
- Swartz, M., Swanson, J., Wagner, H. R., Burns, B., & Hiday, V. (2001b). Effects of involuntary outpatient commitment and depot antipsychotics on treatment adherence in persons with severe mental illness. *Journal of Nervous and Mental Disease*, 189, 583–592.
- Swartz, M. S., Swanson, J. W., Wagner, H. R., Burns, B. J., Hiday, V. A., & Borum, W. R. (1999). Can involuntary outpatient commitment reduce hospital recidivism? Findings from a randomized trial in severely mentally ill individuals. *American Journal of Psychiatry*, 156, 1968–1975.
- Swartz, M. S., Wagner, H. R., Swanson, J. W., Hiday, V. A., & Burns, B. J. (2002). The perceived coerciveness of involuntary outpatient commitment: Findings from an empirical study. *Journal of the American Academy of Psychiatry and the Law*, 30, 207–217.
- Tarrier, N., & Bobes, J. (2001). The importance of psychosocial interventions and patient involvement in the treatment of schizophrenia. *International Journal of Psychiatry in Clinical Practice Supplement*, 11, S31–S51.
- Wagner, H. R., Swartz, M., Swanson, J., Burns, B. J., & Hiday, V. A. (2003). Does involuntary outpatient commitment lead to more intensive treatment? *Psychology, Public Policy and Law*, 9, 145–158.
- Wassermann, J., & Criollo, M. (2000). Subjective experiences of clozapine treatment by patients with chronic schizophrenia. *Psychiatric Services*, 51, 666–668.