Predictive validity of treatment allocation guidelines on drinking outcome in alcohol-dependent patients

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HIGHLIGHTS

► Purpose was to establish the predictive validity of allocation guidelines to LOC.
► Strengths are prospective design and execution in routine practice.
► Allocation to recommended LOC gave equal outcomes than to a less intensive LOC.
► Allocation to more intensive LOC had favorable outcomes compared to recommended LOC.
► No support for predictive validity of a priori LOC allocation guidelines.

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ABSTRACT

The purpose of this study was to establish the predictive validity of guidelines for allocating patients to outpatient or inpatient treatment for an alcohol-use disorder. It was hypothesized that patients who were matched to the recommended level of care would have (a) better outcomes than patients treated at a less intensive level of care, and (b) outcomes equivalent to those of patients treated at a more intensive level of care. Matched patients were allocated according to an algorithm based on their treatment history, addiction severity, psychiatric impairment, and social stability at baseline. Outcome was measured in terms of self-reported alcohol use 30 days prior to follow-up and changes in number of abstinent and heavy drinking days between intake and follow up. Of the 2,310 patients, 65.4% were successfully followed up 9.67 months after intake. Only 22% of the patients were treated according to the level of care prescribed by the guidelines; 49% were undertreated; and 29% were overtreated. The results were not in line with our hypotheses. Patients treated at a more intensive level of care than recommended had favorable outcomes compared to patients treated at the recommended level of care (55.5% vs. 43.9% success). Patients allocated to the recommended level of care did not have better outcomes than those treated at a less intensive level of care (43.9% vs. 38.3% success). Based on these results, we suggest ways to improve the algorithm for allocating patients to treatment.

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1. Introduction

According to the Institute of Medicine (1990), no treatment is generally effective but some treatments are effective for some persons. The "matching hypothesis" states that patients who are matched to a form of treatment that is known to be especially suitable for them, will have better outcome than patients who are mismatched (Project Match Research Group, 1997). Despite considerable research, empirical support for the predictive validity of patient-treatment matching has been inconsistent.

Matching patients to different psychosocial treatment modalities does not seem to work (e.g., Project Match Research Group, 1997). There has been some evidence that patients with a specific problem who are matched to an appropriate treatment for that problem do better at addressing that specific problem than patients who did not receive this treatment. However, the two groups of patients did not differ on alcohol-specific outcomes (see McLellan et al., 1997).

Allocating patients to an appropriate treatment intensity has been more promising. Several patient characteristics have been shown to be important. For example, more intensive treatment seems to be associated with better alcohol-specific outcomes in patients with more

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severe alcohol problems (McKay et al., 2002; Orford, Oppenheimer, Egert, Hensman, & Guthrie, 1976; Rychtarik et al., 2000), a co-morbid psychiatric disorder (Alterman, McLellan, & Shifman, 1993; Timko & Moos, 2002), and less social stability (Kissin, Platz, & Su, 1970; McLellan, Woody, Luborsky, O'Brien, & Druley, 1983; Rychtarik et al., 2000).

The challenge is to match patients to different levels of care (LOC) in routine practice (Finney, Hahn, & Moos, 1996). An important strategy for matching patients to an appropriate LOC is to use allocation guidelines. An example is the Patient Placement Criteria of the American Society of Addiction Medicine (ASAM PPC) (Mee-Lee, Shulman, Fishman, Gastfriend, & Griffith, 2001). However, for alcohol-dependent patients, the predictive validity of these allocation guidelines for treatment outcome has been limited (Magura et al., 2003; McKay, Cacciola, McLellan, Alterman, & Wirtz, 1997). Moreover, all studies were conducted retrospectively, using a passive matching design.

Because of the relative lack of empirically-based allocation guidelines, adopting a pragmatic approach for allocating alcohol-abusing patients to an appropriate LOC seems justified. We, therefore, developed allocation guidelines that can be used in routine practice. They are based on the *stepped-care* approach by which patients are first allocated to the lowest level of treatment from which a successful outcome can be expected (Sobell & Sobell, 2000). Patient-matching variables that were needed for implementing a stepped-care strategy included patient treatment history, addiction severity, psychiatric impairment, and social stability. The allocation guidelines contain four LOCs, namely brief outpatient treatment (LOC-1), standard outpatient treatment (LOC-2), intensive outpatient/inpatient treatment (LOC-3), and a harm-reduction program (LOC-4).

We have previously demonstrated that the use of this allocation protocol was feasible in routine practice in some Dutch substance-abuse treatment centers (Merkx et al., 2007). However, we found no support for the predictive validity of these allocation guidelines for the outpatient LOCs (LOC-1 and LOC-2). Patients allocated to the recommended outpatient LOC had outcomes comparable to patients treated at either a less intensive or at a more intensive outpatient LOC (Merkx et al., 2011).

The lack of predictive validity of our allocation guidelines could be due to the fact that our sample was relatively small ($n = 427$) and our follow-up rate was relatively low (52.9%). Another explanation could be that we tested the predictive validity in only two outpatients LOCs, excluding patients receiving higher levels of care (Merkx et al., 2011). Therefore, in the present observational study, which was conducted under naturalistic, real world conditions, we examined the predictive validity of our allocation guidelines in a considerable larger sample, with a higher follow-up rate, and with patients allocated to an inpatient LOC being included.

The following hypotheses were tested: (a) patients treated at the recommended LOC would have better outcomes than those mismatched with a less intensive LOC, and (b) patients treated at the recommended LOC would have comparable outcomes with those mismatched with a more intensive LOC.

2. Material and methods

2.1. Sample

Eligible participants were patients with an alcohol-use disorder who were admitted to a regional substance abuse treatment center (SATC) between January 2004 and February 2007 for inpatient or outpatient treatment; 2953 patients met this criterion. Patients were excluded if (a) they did not consent to being contacted at follow up ($n = 107$) or (b) their pre-treatment assessment did not yield valid data ($n = 523$) because the data were lost because of technical problems related to data storage ($n = 383$) or because the patient's characteristics were inadequately recorded during the intake ($n = 140$). Of the remaining

2323 patients, 13 were allocated to a harm-reduction program for chronic substance abusers, 1,510 of whom (65.4%) were contacted for follow-up. Of these, 238 were excluded because they were still in treatment at follow-up, and 19 because they had language problems that made it difficult for them to understand the telephone interview. The final sample comprised 1252 patients (see Fig. 1). At intake, all patients had been informed about the routine procedure that would be followed, and informed consent was taken for the telephone follow-up interview.

2.2. Procedure: instrument and process

The SATC used a manual-guided procedure to allocate patients to treatments. As a first step, a pretreatment assessment was conducted using the European version of the Fifth Edition of the Addiction Severity Index (EuropASI; Kokkevi & Hartgers, 1995). The EuropASI is a semistructured interview that obtains information about the person's substance use and substance-use related problems in the following domains: medical, employment/education, alcohol, drugs, legal, family/social support, psychiatric, and gambling. Items in each area are used to generate interviewer severity ratings (ISRs), which provide an assessment of the person's overall problem severity in each domain.

As a second step, the allocation guidelines were applied. They instructed the intake interviewers to rate each patient on four treatment allocation indicators: (a) number of previous treatment episodes, (b) addiction severity, (c) psychiatric impairment, and (d) level of social stability. The number of previous addiction treatments was categorized as 0–1, 2, 3–5, or more than 5. EuropASI ISRs were then used for the three other treatment allocation indicators. The algorithm was outlined in an easy-to-score decision tree (see Fig. 2), which was readily accessible to all intake counselors. Application of the allocation algorithm, which combines the scores on the treatment allocation indicators, results in a recommended LOC ranging from LOC-1 to LOC-4 (see Merkx et al., 2007). If the intake counselor disagreed with the LOC that the algorithm suggested, he or she could refer the patient to the LOC that was considered more appropriate.

2.2.1. LOC guideline recommendations

The current study included three LOCs to which patients could be assigned: Brief outpatient treatment (LOC-1), standard outpatient treatment (LOC-2), and intensive outpatient/inpatient treatment (LOC-3). These LOCs focus on abstinence or a significant reduction in the substance use. LOC-4 was not used in this study, because its primarily goal is harm reduction and neither the number of sessions nor the time frame of the treatment was specified ex ante. Each patient could be treated in either an outpatient or an inpatient setting.

2.2.2. LOCs: core interventions

The core interventions used in all three of the LOCs comprised manual-guided cognitive–behavioral therapy. The treatment manuals prescribed the content of each therapy session and the techniques that were to be used. The interventions included modules with demonstrated effectiveness, including motivational enhancement strategies (Miller & Rollnick, 2002; Miller, Zweben, DiClemente, & Rychtarik, 1992), self-control training (Kadden et al., 1992), and relapse-prevention techniques (Marlatt & Gordon, 1985). To assist patients in changing their addictive behavior, self-help booklets that included take-home exercises for practicing the skills that were taught were included in all of the treatments.

Brief outpatient treatment (LOC-1), which comprised 4-to-6 sessions, was conducted either individually or in a group over a period of approximately three months. It focused mainly on enhancing patients' motivation for changing alcohol use. In addition, however, alcohol-refusal skills and alternative behaviors for coping with craving were taught. Standard outpatient treatment (LOC-2), which comprised 10-to-12 sessions, was conducted either individually or in a group over a period of approximately six months. Depending on each patient's needs, additional