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Patient and Program Factors that Bridge the Detoxification-Treatment Gap: A Structured Evidence Review

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ABSTRACT

Although completion of detoxification (detox) and a successful transition from detox to substance use disorder (SUD) treatment and/or mutual-help groups are associated with better SUD outcomes, many patients do not complete detox or do not receive SUD care following detox. The purpose of this structured evidence review, summarizing data extraction on a yield of 26 articles, is to identify patient, program, and system factors associated with the outcomes of completion of alcohol detox and successful transitions from alcohol detox to SUD treatment and mutual-help group participation. The review found wide variability among studies in the rates at which patients complete a detox episode (45 to 95%) and enter SUD treatment or mutual-help groups after detox (14 to 92%). Within program factors, behavioral practices that contribute to both detox completion and transitioning to SUD care after detox entail involving the patient's family and utilizing motivational-based approaches. Such practices should be targeted at younger patients, who are less likely to complete detox. Although more studies using a randomized controlled trial design are needed, the evidence suggests that barriers to detox completion and transition to SUD care can be overcome to improve patient outcomes.

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1. Introduction

An estimated 19.3 million Americans need treatment for an alcohol problem in a given year (Substance Abuse & Mental Health Services Administration [SAMHSA], 2009a). Of annual admissions to substance use disorder (SUD) services, approximately 400,000, or 22%, are for detoxification (detox) in inpatient, freestanding residential, or outpatient programs (SAMHSA, 2009b). Inpatient detox accounts for 24% of annual admissions to publicly-funded SUD health care facilities and is a frequent request of patients in emergency departments (SAMHSA, 2009c). Of annual detox admissions, about 220,000, or 53%, are for alcohol as the primary substance (SAMHSA, 2009b).

Detoxification is not considered SUD treatment. Rather, it is the medical management of substance withdrawal to prevent complications, such as seizures or delirium tremens, which may be fatal. Completion of detox and a successful transition from detox to SUD treatment and/or mutual-help groups are associated with better SUD outcomes (Lee et al., 2014). Although detox services are unlikely to be effective if they are not completed and not followed by SUD care, many patients do not complete detox or do not receive SUD care following detox (Lee et al., 2014).

1.1. Detox completion and post-detox SUD care

Of 326,365 detoxification discharges in 2009 captured by SAMHSA's Treatment Episode Data Set (TEDS), 66% of detox episodes, with a median duration of 4 days, were completed (SAMHSA, 2012). Of these same detox discharges, only 11% were followed by transfer to SUD treatment (SAMHSA, 2012). However, rates of SUD treatment post-detox vary widely depending on the sample (Garnick, Lee, Horgan, & Acevedo, 2009). In Fiscal Year 2006, 18.5% of Delaware's public patients who completed detox were admitted to SUD treatment within 30 days (Haley, Dugosh, & Lynch, 2011). Among individuals with private health insurance, 48.7% of detox episodes were subsequently followed by substance abuse or mental health treatment within 30 days of detox, compared to only 32.3% among people with Medicaid coverage and/or treated by public agencies (Mark, Dilonardo, Chalk, & Coffey, 2002). Mark et al. (2002) noted that their results overestimate the true linkage between detox and SUD treatment because they used a broad definition of receiving treatment. Although detox is a clear opportunity to link patients

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to SUD treatment, as well as peer-based 12-step mutual-help groups (e.g., Alcoholics Anonymous), to improve long-term outcomes such as lower rates of substance use, the majority of patients discharged from detox do not enter SUD treatment.

1.2. Associations of detox completion and post-detox SUD treatment with outcomes

It has been firmly established that a longer duration of treatment and treatment completion at each phase of SUD care (detox, intensive SUD treatment, continuing SUD treatment) is one of the best predictors of better SUD outcomes (Castaneda, Lifshutz, Galanter, Medalia, & Franco, 1992; Ford & Zarate, 2010; McKay & Weiss, 2001; Moos, 2003; Simpson, Joe, & Rowan-Szal, 1997). In addition, following detox with SUD treatment and mutual-help group participation is associated with lower rates of relapse to substance use. Patients who sustain abstinence after detoxification are distinguished by greater time spent in addiction treatment and mutual-help groups post-detox (Carroll, Triplett, & Mondimore, 2009; Ford & Zarate, 2010; Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997). For example, abstinence rates were higher at 1-year post-detox among patients who had obtained residential treatment (49% abstinent) than those who had not obtained any treatment (28% abstinent) (McCusker, Bigelow, Luippold, Zorn, & Lewis, 1995). Alcohol detoxification patients had better drinking outcomes up to 1 year post-detox when they obtained ongoing social support through Alcoholics Anonymous (AA; Klijnsma, Cameron, Burns, & McGuigan, 1995; Noone, Dua, & Markham, 1999). Patients who received treatment within 1 month of detox discharge were also significantly less likely to be readmitted for detox and had a significantly longer time until a detox readmission (Mark, Vandivort-Warren, & Montejano, 2006). Detox represents an opportunity to help patients transition to treatment and achieve improvements in longer term drinking outcomes.

1.3. Present study

The purpose of the present study is to identify patient, program, and system factors associated with the outcomes of completion of alcohol detox and successful transitions from alcohol detox to SUD treatment and mutual-help group participation. We focused on alcohol detox to the exclusion of drug (opioids, benzodiazepines) detox because medical management is recommended for alcohol withdrawal syndrome (Carlson et al., 2012), whereas for opiates, agonist maintenance therapy is the recommended treatment due to its superior outcomes relative to detox (Stotts, Dodrill, & Kosten, 2009). In addition, detox is necessary from alcohol dependence because withdrawal from alcohol that is not medically managed can lead to autonomic instability, seizures, delirium, or death. In contrast, opioid withdrawal syndrome itself poses virtually no risk of mortality, although it can be protracted with intense symptoms (Department of Veterans Affairs & Department of Defense,, 2009; Maldonado, 2010). Finally, detox practice guidelines differ for alcohol, opioids, and benzodiazepines in terms of risk factors for the development of withdrawal, signs and symptoms of withdrawal, validated clinical tools to assess patients with withdrawal syndromes, appropriate pharmacology options, and integration of detox into clinical practice (Alvanzo, Chaudhry, Phillips, Poland, & Rastegar, 2013).

Research related to completion of detox and transition to SUD treatment has generally focused on patient characteristics, to the relative neglect of program factors such as behavioral strategies and practices associated with increasing rates of these clinical processes (Haley et al., 2011). We conducted a structured evidence review focused on identifying program and system factors in addition to patient characteristics, given that the former are modifiable and can be targeted for change to achieve better outcomes related to detox completion and transition to SUD care. Patient factors included demographic and clinical characteristics (e.g., mental health problems, treatment history). Program factors covered both structural aspects of programs (e.g., inpatient or outpatient setting, size), and behavioral treatment approaches (e.g., motivational- or family-based) utilized by the program. System factors were those determined by the health care facility in which the program was located (e.g., provision of housing during detox, or transportation to SUD treatment). This review is intended to fill a critical gap in the literature in that identification of factors that promote higher rates of detox completion and subsequent addiction treatment, particularly factors that also efficiently utilize resources (Dennis, Scott, & Laudet, 2014; Laudet & Humphreys, 2013), will be useful to clinical providers and managers of detoxification and SUD services seeking to achieve better outcomes among their patients.

2. Materials and methods

We searched PubMed using the term "alcohol detoxification." A separate search was not conducted regarding drug detox to ensure that our methods regarding search terms were consistent with those of other studies reporting meta-analyses and reviews on alcohol (Del Re, Maisel, Blodgett, Wilbourne, & Finney, 2013). The search (conducted on April 18, 2014) was limited to studies of humans reported in English language journal articles. Excluded were case studies, abstracts, reviews, and commentaries. A total of 1718 unique citations were screened for inclusion. Each citation was reviewed twice by study authors, taking a conservative approach of a full article review if at all indicated. Studies eliminated at this stage mainly focused on (a) efficacy and safety of a specific medication for detox; and (b) biochemical, pharmacokinetic, metabolic, or neuropsychological mechanisms and effects of alcohol use in specific groups (e.g., patients with acute liver injury; elderly cardiac patients). With this approach, 101 articles were retained for full text review because they possibly addressed patient, program, or system characteristics for facilitating completion of alcohol detox and/or access to SUD treatment or mutual-help group participation post-detoxification (Fig. 1). Three authors conducted data extraction on the final 26 articles. Data collected from each study examining patient characteristics included study design, total number of participants (and by gender), setting (inpatient or outpatient detox, country), detox completion rate (or transition rate), and patients' demographic and clinical factors associated with detox completion (Table 1) or transitions to SUD treatment (Table 3). Data collected from each study examining program and system factors were study design, numbers of participants, setting, detox completion rate, and program or system factors associated with detox completion (Table 2) or successful transitions to SUD treatment (Table 4).

Regarding study design, the US Preventive Services Task Force's quality rating criteria for individual studies (Harris et al., 2001) rates randomized controlled trials higher than cohort or case-control studies, which are rated higher than quasi-experimental studies. More fine-grained criteria rate prospective cohort higher than retrospective cohort studies, and rate cohort studies higher than case-control studies (Petticrew & Roberts, 2003). Based on these guidelines, we use the following hierarchy when discussing findings of the review in terms of study quality: RCT > prospective cohort > retrospective cohort > case-control > quasi-experimental.

3. Results

3.1. Completion of detox

3.1.1. Patient predictors

A total of 12 studies examined patient characteristics associated with a higher likelihood of completing a detoxification episode or a longer length of stay in detox (Table 1). Of these, five studies used a prospective cohort design and four used a retrospective cohort design. Studies took place mainly in inpatient ($n = 10$) rather than outpatient ($n = 2$) detox settings, in Canada ($n = 3$), Germany ($n = 3$), the USA ($n = 3$), Australia ($n = 2$), and the UK ($n = 1$). Detox completion