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Continuing Care Research: What We've Learned and Where We're Going

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Abstract

In the field of addiction treatment, the term “continuing care” has been used to indicate the stage of treatment that follows an initial episode of more intensive care. This article reviews controlled studies of continuing care conducted over the prior 20 years. The results indicate that continuing care interventions were more likely to produce positive treatment effects when they had a longer planned duration, made more active efforts to deliver treatment to patients, and were studied more recently. However, there was considerable variability in patient response and room for improvements in participation rates and effectiveness. It is possible that the effectiveness of continuing care interventions could be further improved by the use of adaptive algorithms, which adjust treatment over time on the basis of changes in patients' symptoms and status. The use of alternative service delivery methods and care settings may also lead to greater engagement and retention in continuing care, particularly among the large numbers of individuals who do not want traditional, clinic-based specialty care.

Keywords

continuing care; substance use disorders; adaptive treatment; review; retention

1.0 Introduction

In the addictions field, there is growing interest in the development and implementation of treatment protocols and systems that address the full continuum of care, from detoxification to extended recovery monitoring (ASAM, 2001; Dennis, Scott, & Funk, 2003; Humphreys & Tucker, 2002; McKay, 2005; McLellan, Lewis, O'Brien, & Kleber, 2000; Simpson, 2004). These new models have the potential to bring addiction treatment into a new era, in which care will be provided in contemporary patient-centered models designed to effectively manage chronic disorders (IOM, 2006; Wagner et al., 2001). This would represents a major shift, given that virtually all addiction treatment is currently provided in time-limited specialty programs that employ a single modality of therapy, usually without access to approved medications, alternative treatment approaches, or options for other support services (Landon, Wilson, Gustafson, & Cleary, 2004; McCarty, DiLonardo, & Argeriou, 2003; McLellan, Carise, & Kleber, 2003; Roman & Johnson, 2004; SAMHSA, 2002).

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These changes are being driven by a number of factors, including progressive leadership at the state and local level, greater open-mindedness and pragmatism among treatment providers, increasing insistence from all stake holders for better outcomes, and a series of influential publications that have pointed out the similarities between addiction and other chronic disorders and the limitations of the addiction treatment system as currently constituted (McLellan et al., 2000; McLellan et al., 2003). In addition, there is a growing research literature on continuing care that has provided important information on the effectiveness on various interventions and management practices, ranging from more traditional 12-step focused group counseling approaches to flexible extended care models.

This paper has two primary goals. The first goal is to review findings from continuing care studies done over the past 20 years and summarize what these studies have found regarding the effectiveness of continuing care interventions. The second goal is to discuss new directions in the field, with particular emphasis on potential collaborations between specialty care and other service delivery systems and the development of adaptive treatment strategies. Although there is now considerable evidence that self-help participation can be an important component of ongoing care, a review of that literature is beyond the scope of this article. A comprehensive review of self-help programs for addictions and their effects can be found in Humphreys (2004).

In this article, the term “Continuing Care” has been used to indicate the stage of treatment that follows an initial episode of more intensive care, usually inpatient/residential or intensive outpatient. At one point this phase of care was referred to as “aftercare” but the more common term is now “continuing care,” which better conveys the idea that active treatment continues in this phase (McKay, 2005). Continuing care is provided in a variety of formats and modalities, including group counseling, individual therapy, telephone counseling, brief check-ups, and self-help meetings.

2.0 Findings from Studies of Continuing Care

This section presents a summary of results from studies of continuing care that have been conducted between the late 1980s and 2005. Further information on many of these studies can be found in four earlier reviews (McKay, 2001a, 2001b, 2005, and 2006). Most of the studies presented here employed experimental designs, which provide the strongest evidence of effectiveness. However, several quasi-experimental studies are also reviewed.

2.1 Quasi-Experimental Studies of Continuing Care Treatment Interventions

In a quasi-experimental study, participants are not randomly assigned to study conditions, or assigned in another manner that involves at least some element of chance (e.g., sequential cohort assignment, or assigning to second condition when first condition fills up). Rather, participants self-select into different conditions, or are placed in different conditions due to some factor such as severity of drug use.

One quasi-experimental study examined the predictors of participation in step down continuing care in publicly funded substance abuse treatment programs, and the relation between participation in step down care and alcohol and crack cocaine use outcomes over a 36 month follow-up (McKay et al., 2004). The sample included patients who started treatment in residential/inpatient programs (IP; N=134) and intensive outpatient programs (IOP; N=370). About one-third of the IP sample received step down continuing care, and less than a quarter of the IOP sample received step down OP care. Patients who received step down care following IP had greater social support at intake and were more likely to be female and White. Patients who received continuing care following IOP were more likely to be female and employed, and were older, had higher self-efficacy, and shorter lengths of stay in IOP.

Outcome analyses that compared patients who did versus those who did not receive continuing care were performed, controlling for the baseline value of the outcome and other variables upon which the groups differed at intake. In the IP sample, receiving step down continuing care was not associated with better alcohol or crack cocaine use outcomes over the 36 month follow-up. In the IOP sample, patients who received continuing care did have less crack cocaine use in the first six months of the follow-up, but not after that point. These findings suggest that approaches to continuing care are needed that are more acceptable to patients and produce better outcomes.

A second quasi-experimental study by our group (McKay et al., 2002) evaluated the relative effectiveness of two forms of publicly funded substance abuse treatment provided in Washington State: The full continuum (FC), in which clients receive approximately three weeks of inpatient treatment prior to outpatient care, and the partial continuum (PC), in which clients are admitted directly to outpatient treatment. Results indicated that clients in the FC had greater alcohol-, drug-, and legal-problem severity at intake than those in the PC, whereas medical- and employment-problem severity was greater in the PC. Outcome analyses at 3 and 9 months indicated that clients in the FC had greater improvements in alcohol, drug, and psychiatric severity than those in the PC. Matching analyses indicated that clients with greater substance use severity at baseline improved to a greater degree in the FC as compared to the PC.

2.2 Controlled Studies of Continuing Care Treatment Interventions

Literature searches identified 20 controlled studies on the effectiveness of continuing care provided via various behavioral therapies or counseling interventions published since the late 1980s. Many of these studies have been summarized in earlier reports (McKay, 2001a, 2001b, 2005, 2006). These 20 studies are described in Table 1. Ten studies included patients with a primary alcohol use disorder diagnosis, whereas the other 10 included patients with drug dependence or a combination of drug and alcohol problems. Participants were graduates of inpatient or residential treatment programs in 12 studies (60%), and graduates of outpatient treatment programs in five studies (25%). In the remaining three studies (15%), most participants were graduates of inpatient/residential treatment with a minority from outpatient programs. It should be noted that at this point, the vast majority of individuals receiving treatment for substance use disorders in specialty care attend outpatient rather than inpatient or residential programs, which may limit the generalizability of the findings of this review.

A systematic review of the methodological rigor of the studies included in review is beyond the scope of the article. However, several comments are in order concerning the study designs. Most of the studies had some strong methodological features. For example, 17 of 20 studies featured random assignment of patients to two or more conditions. In the other three studies, assignment to treatment condition was done on the basis of sequential cohorts and availability of the experimental condition. Follow-up periods were generally long, with 75% of the studies following patients for eight months or more, and follow-up rates were relatively good. Most studies included widely used measures of alcohol or drug use, which were often confirmed with urines samples or collateral reports. Many studies also went to some length to document adherence to treatment manuals, and controlled properly for therapist effects. Although data analytic approaches varied across studies, most included relevant baseline covariates in the analyses and some adjusted alpha levels for the number of outcomes examined.

The primary limitation of the studies, from a methodological standpoint, was low power to find group differences, particularly in the studies that did not yield positive findings. The average sample size in studies that failed to yield positive findings was 171, but only 104 with the very large Project MATCH (N=774) taken out of the calculation. Conversely, the average sample size was 164 in studies that did produce positive effects. With a sample size of 104, a

treatment effect would need to be relatively large in order to be statistically significant (Cohen, 1988). More modest effects, though potentially clinically meaningful, would not likely reach statistical significance with sample sizes of 100 or less.

Of the treatments provided in these 20 studies, the most common was some form of cognitive behavioral treatment (e.g., CBT, skills training, RP, etc.), which was provided in 10 studies. The next most common was standard addictions group counseling with a 12-step focus (5 studies), which was often “treatment as usual.” Other treatments provided in more than one study were home visits, interpersonal therapy, and comprehensive interventions. However, most of the interventions in these studies had at least some elements of cognitive-behavioral therapy, even if full CBT was not delivered. Most interventions were delivered at a treatment setting, although telephone counseling was used in five studies.

The studies in Table 1 were classified according to whether or not a statistically significant treatment effect was obtained. Studies with positive results were those in which a significant treatment group difference was obtained on at least one of the primary substance use outcome measure(s), with no primary outcomes favoring the comparison or control condition(s). Studies with negative results were those in which no treatment group main effects were obtained on the primary substance use outcome measure(s), or mixed results were obtained, such as outcomes on one measure favored one group, whereas the opposite effect was obtained on the other specified primary substance use outcome measures. According to this classification system, 10 of the 20 studies yielded positive results. Not surprisingly, studies with minimal or no continuing care control conditions were somewhat more likely to yield a positive result (7 of 11, or 64%), compared to those with active continuing care comparison control conditions (3 of 9, or 33%).

Each of the 10 studies that yielded statistically significant positive results is described in more detail below. However, the fact that a finding is statistically significant does not always indicate that the effect is large enough to be clinically meaningful. Clinical relevance can be judged by the difference in proportions of dichotomous outcomes, such as abstinence rates or attendance at any continuing care sessions, and the odds ratios such analyses generate. A recent study published by Miller and Manuel (2008) surveyed clinicians who were participating in the National Institute on Drug Abuse's Clinical Trials Network (CTN) to determine how large a treatment effect had to be in order for it to be considered clinically meaningful. These clinicians reported that differences between treatment conditions of 10-12 percentage points on dichotomous measures such as total abstinence or a biological indicator of alcohol or drug use were clinically significant. The 10 studies that yielded significant treatment effects were as follows.

McAuliffe and colleagues (McAuliffe & Ch'ien, 1986) developed a continuing care treatment based on helping addicts learn self-sustaining alternative responses to stimuli previously associated with drug use, primarily through exposure to a community of recovery persons. Their program, which they called “Recovery Training and Self-Help,” consisted of professionally-led recovery training sessions, peer-led self-help styled meetings, and weekend recreational activity. Participants were asked to commit to participating for at least six months in the intervention components, and they could continue for up to one year. This intervention was compared in a randomized study (McAuliffe, 1990) to a control condition that consisted of referrals to available continuing care services in the community and crisis intervention counseling from the study staff. Participants were opiate dependent patients who were completing a primary treatment episode, including residential care, detoxification from methadone maintenance, drug-free outpatient counseling, or half-way houses. One of the interesting features of this study was that it was implemented in the USA and in Hong Kong.

The primary outcome measure in this study was “favorable outcomes,” which the authors defined as total abstinence or use on less than a monthly basis, coupled with staying out of jail and providing follow-up data. The rates of favorable outcomes in the continuing care condition were 51% and 39% in the first and second 6-month segments, respectively, versus 39% and 25% in each time period in the control condition. The intervention also produced better employment outcomes and self-reported criminal activity outcomes than the control condition. Similar outcomes were generally obtained in the US and Hong Kong samples.

Foote and Erfurt (1991) compared an extended follow-up procedure that provided up to 30 contacts over a one year period to standard follow-up procedures in EAP participants who had completed an episode of substance abuse treatment and returned to work. The EAP counselor was located at the workplace, and participants in the experimental condition received an average of 15 contacts over a year period, including 7 visits and 3 telephone calls, compared to an average of 3 contacts for those in the control condition. These contacts were designed to reinforce motivation, address difficulties that had emerged, and arrange for additional care if warranted. Although the planned schedule of contacts was weekly for one month, monthly for the next five months, and bi-monthly after that, the contact schedule reverted to once per week in the case of relapse or threat of relapse. The experimental condition produced better outcomes than the standard follow-up procedure on substance abuse treatment costs ($3,623 vs. $4,731, $p < .05$), number of substance abuse related hospitalizations (.69 vs. .81, $p < .10$), and substance abuse disability costs ($385 vs. $561, $p < .10$), when other relevant variables were controlled. However, these positive effects were relatively small, and substance use outcomes were not assessed in this study.

Patterson, MacPherson, and Brady (1997) conducted a study that tested the effect of a continuing care protocol that consisted of home visits provided by a psychiatric nurse over a one-year period. The participants were alcohol dependent men, who had completed a six-week inpatient program in a rural area. All were first admissions for alcohol dependence. The home visit continuing care protocol consisted of weekly 1-2 hour visits for the first 6 weeks, and monthly meetings thereafter. When possible, the spouse or other family members were included. Telephone contact was also available for emergencies and advice between visits. The frequency of home visits could be increased following a relapse or other serious problems. The control condition was standard care at the facility, which consisted of review appointments at the hospital every 6 weeks.

Patients in the study were followed for five years. Results indicated that those in the home visit continuing care condition had substantially higher rates of continuous abstinence (36% vs. 6%, $p < .001$), were more likely to attend hospital meetings (24% vs. 9%, $p < .05$), and were less likely to report blackouts (36% vs. 55%, $p < .05$) or gambling (26% vs. 45%, $p < .05$). A limitation of this study was that all continuing care was provided by the same nurse, which means that treatment and provider effects were confounded. In addition, assignment to condition was not by randomization; instead, the control condition was provided when the continuing care nurse could not take on new cases (e.g., sick leave, annual leave).

O'Farrell, Choquette, and Cutter (1998) studied the effect of providing couples behavioral marital therapy relapse prevention sessions to couples who had completed an initial course of behavioral marital therapy (BMT). The continuing care condition, which consisted of 15 sessions provided over 12 months, was compared to a no further treatment control condition. A total of 59 couples with an alcoholic husband were randomly assigned to the two conditions, and regular follow-ups were conducted out to 30 months post completion of the initial course of BMT.

Results indicated that the continuing care condition produced better drinking outcomes out to 18 months and better marital adjustment out to 30 months, as compared to a no continuing care control condition. For example, those receiving RP averaged about 94% days abstinent between months 4 and 18 of the follow-up, compared to 82% days abstinent in the control condition, which indicated a 15% increase in days abstinent. In addition, for those alcoholics with more severe drinking and marital problems, the continuing care condition produced better drinking outcomes over the entire 30 month follow-up (O'Farrell et al., 1998). It should be noted that five couples who dropped out of the RP intervention very early in treatment were replaced in subsequent random assignments. This may have biased results to some extent in favor of the RP intervention in the intent-to-treat analyses.

Godley, Godley, Dennis, Funk, and Passetti (2006) randomly assigned 183 adolescents who had completed at least 7 days of residential treatment for chemical dependency to two types of continuing care. The first condition was “usual care,” which consisted of referral to traditional intensive outpatient and standard outpatient treatment programs in the area. These programs varied considerably in the frequency and intensity of their adolescent services, ranging from 1 therapy session per week to several hours per day, five days per week. The experimental condition was referred to as “Assertive Continuing Care”, or ACC. ACC combined case management with home visits and a version of the Community Reinforcement Approach (CRA), adapted for adolescents (Godley, Godley, Karvinen, & Slown, 2001). This comprehensive intervention includes a functional analysis of substance use behaviors, and skills training in a variety of areas including pro-recovery activities, relapse prevention, problem solving, communication, and so forth.

Results indicated that adolescents in the ACC condition were more likely to be successfully linked to continuing care services than those in the control condition, and received considerably more treatment, case management, and family services. For example, 94% of those receiving ACC were linked to continuing care, versus 54% of those in the control condition, which qualifies as a very large effect (Cohen's d= 1. 07, p< .001). Patients who received ACC were also significantly more likely to remain abstinent from marijuana over the 9 month follow-up than those in the control condition (41% vs. 26%, d= .32, p< .05). Outcomes on other substance use measures such use of alcohol and use of any substances also favored ACC over the control condition, but the results were not significant. One of the unique features of this study is that it is the only published experimental test of an adolescent continuing care intervention.

Sannibale et al. (2003) evaluated the effectiveness of a structured continuing care program for patients with severe alcohol and/or heroin dependence who had completed residential treatment. The continuing care intervention (9 sessions over 6 months) was based on a coping skills approach as described by Monti, Abrams, Kadden, and Cooney (1989). The control condition was an unstructured approach that provided continuing care counseling sessions when they were requested by the patients. Patients in the control condition who wanted more than one continuing care session had to keep putting in requests for additional sessions.

The structured continuing care intervention produced a fourfold increase in attendance compared to the control condition (odds ratio= 4.3). However, rates of attendance were quite low in both conditions; the median number of sessions attended was 2 in the structured continuing care condition (range of 1-12) vs. 0 in the control condition (range of 0-4). The continuing care condition also produced one-third the rate of uncontrolled use of the principal substance of abuse, compared to that in the control condition (odds ratio = .3). The figures describing actual rates of uncontrolled use in each condition were not provided in this report. The conditions did not differ on time to first lapse or first relapse.

Bennett et al. (2005) conducted a randomized study in the United Kingdom that compared standard group-based continuing care to an intervention referred to as "Early Warning Signs of Relapse Prevention Training" (EWSRPT), developed by Gorski (1995). The participants were alcohol dependent patients with a history of at least two relapses who had completed a 6-week day treatment program. The EWSRPT protocol is similar to cognitive-behavioral relapse prevention in several respects, but places more emphasis on identifying and addressing early signs of vulnerability to relapse, which under the Gorski model is a process that often unfolds over several weeks. EWSRPT was delivered via up to 15 individual sessions by counselors who had been trained and certified in this approach.

Patients in the EWSRPT condition had a lower probability of drinking heavily over the 12 month follow-up than those in the standard condition (45% vs. 26%, odds ratio= .43, p= .04). The authors report an additional statistic, number needed to treat (NNT) to prevent one relapse during a year period, which was 5. The EWSRPT intervention also produced fewer percent days drinking (p= .05, Cohen's d=.34) and fewer percent days of heavy drinking (p= .04, d= .31). Although the intervention also generated higher rates of abstinence from all drinking during the follow-up than the control condition (31% vs. 17%), this difference did not reach statistical significance (p= .08).

In a small study done in Taiwan by Horng and Chueh (2004), graduates of a short-term inpatient stay at a psychiatric center were recruited and assigned to either telephone continuing care or a no treatment control condition. The authors refer to the study as having a "quasi-experimental" design, but do not specify how participants were assigned to condition. The 30-60 minute calls were made in the 1st, 3rd, 5th, 9th, and 13th weeks. The therapists provided social support, health care guidance, medical information, and counseling on psychological problems. Results indicated that the telephone continuing care condition produced higher abstinence rates (50% vs. 24%, p= .02), better adjustment outcomes (p< .05), lower overall problem severity (as assessed by the Addiction Severity Index, p < .001), and lower readmission rates (9% vs. 38%, p< .005) over a 3 month follow-up than a no continuing care control group.

Brown, O'Grady, Battjes, and Farrell (2004) investigated the effectiveness of a continuing care intervention for criminal justice clients who had completed outpatient treatment. The six-month treatment was provided at a facility close to the client's home, and was focused on developing and strengthening supports for drug free living in the client's community. To that end, the program made use of community organizations and agencies, involved family members, and addressed work-place issues. Services provided included case management, crisis intervention, support for drug-free functioning, skill building, assistance with problem solving, and a peer support group.

Compared to a no further treatment control condition, the continuing care intervention produced better outcomes on several key outcomes. These results were presented with odds ratios from logistic regression equations. Compared to those in the control condition, participants assigned to receive continuing care had less opiate use (OR= .26, p< .01), cocaine use (OR= .36, p< .05), any drug use (OR= .37, p< .01), and weekly drug use (OR= .20, p< .01).

McKay and colleagues (McKay et al., 2004; McKay, Lynch, Shepard, & Pettinati 2005) compared two clinic-based continuing care treatments, standard 12-step oriented group therapy (STND) and CBT relapse prevention (RP), with a telephone-based continuing care intervention (TEL). The TEL condition included CBT elements to reduce relapse risk, along with encouragement for and monitoring of the participant's efforts to make use of external supports like self-help programs. Participants in STND were scheduled to receive two group sessions per week, while those in RP were scheduled for one individual CBT/RP session and one group

session. Participants in TEL were scheduled for one telephone call per week, which was supplemented with a group session in the first four weeks. The participants were all graduates of 4-week IOPs; half were dependent on cocaine and alcohol, 25% on alcohol only, and 25% on cocaine only. The continuing care interventions were provided for 12 weeks, and participants were followed up for 2 years from intake into continuing care.

Results indicated that the telephone condition produced better abstinence outcomes than standard group counseling, and better outcomes than CBT on several outcomes (e.g., cocaine urine toxicology, liver function measures indicative of heavy drinking). For example, rates of total abstinence within each three-month segment of the follow-up averaged around 55% in the TEL condition, vs. around 45% in the STND condition. Similarly, rates of cocaine positive urine samples during the follow-up averaged around 25% in TEL vs. 37% in STND.

Additional analyses indicated that the telephone condition worked best for patients who made reasonable progress toward achieving the goals of the IOP during the first 30 days of treatment, including abstaining from alcohol and cocaine, frequent attendance at self-help, making a commitment to total abstinence, and so forth. Patients who made poor progress toward these goals (20% of the sample) did better in standard group counseling than in the telephone condition (McKay et al., 2005). Finally, mediation analyses indicated that the favorable effects of the telephone condition appeared to be at least in part due to the fact that it produced higher rates of self-help attendance during continuing care than group counseling, and higher levels of self-efficacy and commitment to abstinence during the subsequent three months (Mensinger, Lynch, TenHave, & McKay, 2007).

2.3 Continuing Care Retention Studies

A number of studies have focused on identifying methods that can be used to increase engagement with and extended participation in standard continuing care approaches. Schaefer, Ingudomnukul, Harris, and Cronkite (2005) found that greater use of continuity of care practices by counselors and case managers during *outpatient* treatment predicted longer participation in subsequent continuing care. Specifically, greater efforts to coordinate care, connect the patient to resources, and provide continuity (i.e., retain same counselors or case managers in continuing care) predicted longer participation in continuing care, whereas efforts to maintain contact with patients after they left the first phase of treatment did not. Notably, continuity of care practices during *residential* treatment did not predict retention in continuing care.

Hitchcock, Stainback, and Roque (1995) studied the relation of patients' living situations while they were in continuing care to retention in continuing care. Results indicated that patients who were living in halfway or recovery houses had better retention and showed greater progress toward the goals of continuing care than those living in other forms of housing in the community. Schmitt, Phibbs, and Piette (2003) found that patients who lived within 10 miles of a continuing care facility were 2.6 times more likely to seek treatment there following discharge from residential treatment than those who lived at least 50 miles from the facility. Finally, Shepard and colleagues found that providing continuing care counselors with a $100 bonus for each of their patients who attended at least 5 sessions of continuing care raised the percentage of patients who achieved that milestone from 33% to 59% (Shepard et al., 2006).

Other studies have used experimental methods to test treatment enhancements designed to increase rates of entrance to and sustained participation in continuing care. The impact of case management on continuing care participation was examined in drug dependent patients (Siegal, Li, & Rapp, 2002). Patients were randomized to receive standard primary and continuing care treatment, or standard treatment plus case management delivered during both primary and continuing care phases. Patients in the case management condition attended approximately

43% more continuing care sessions than those in standard care, and also had lower legal problem severity at 12 months.

Chutuape and colleagues (Chutuape, Katz, & Stitzer, 2001) wanted to increase the rates of successful transitions from brief inpatient detoxification to outpatient continuing care. These investigators randomly assigned patients completing a 3-day detoxification to one of three conditions: standard referral to continuing care, referral plus an incentive for completing continuing care intake procedures on the day of discharge from the detoxification program ($13), or incentives plus staff escort to the continuing care program. Rates of completed continuing care intakes was 24% in the standard condition, 44% in the condition with incentives, and 76% in the condition with incentives and a staff escort.

Lash and colleagues have been conducting a systematic program of research aimed at increasing attendance in continuing care (Lash, Burden, & Fearer, 2007). The techniques this group has examined include contracts, prompts, and low-cost social reinforcements. In the contracting procedures, patients are provided with information on the success rates of patients who do and do not attend continuing care, and are asked to commit to participate in a specified amount of continuing care. Prompts consist of letters from therapists, appointment cards, automated telephone reminders for continuing care appointments, and letters and personal telephone calls following any missed continuing care sessions. The social reinforcement consists of personal letters from counselors with congratulations for attending sessions, certificates for completion of treatment milestones (e.g., 90 days of treatment), and medallions for attending specified numbers of continuing care sessions. The certificates and medallions were typically presented in front of other patients in the therapy groups.

In a first study (Lash, 1998), patients in an inpatient program were randomly assigned to either receive or not receive a 20 minute aftercare orientation session, which included a contract to attend aftercare. Patients who got the orientation were almost twice as likely to attend aftercare as the control condition (70% vs. 40%) and they attended twice as many aftercare sessions (mean of 3.0 vs. 1.4). In a second study, Lash and Blosser (1999) tested the effect of adding attendance feedback and prompts to the aftercare orientation and contract intervention. Results indicated that patients who received these additional components were more likely to attend aftercare (100% vs. 70%) and attended more aftercare sessions (4.38 vs. 2.35, $p < .02$, $d = .80$) than those who received the orientation and contract only, and they also had fewer hospital readmissions (5 in 21 participants vs. 15 in 20 participants).

Next, Lash and colleagues studied whether providing social reinforcement on top of the other intervention components further improved outcomes. The condition that included social reinforcement produced better attendance at aftercare groups over a 12 week period than the comparison condition (7.2 vs. 5.2 sessions attended, $d = .56$) (Lash, Petersen, O'Connor, & Lehmann, 2001). A second study with the same design indicated that patients who received social reinforcement were twice as likely as those in the comparison condition to attend aftercare for at least two months (80% vs. 40%, $p = .01$), and had better scores on several other measures of aftercare participation. Moreover, the intervention with social reinforcement produced higher rates of abstinence at 6 months, as well as better alcohol use outcomes, than the very active control condition (Lash, Burden, Monteleone, & Lehmann, 2004).

Most recently, Lash and colleagues (Lash et al., 2007) have tested an enhanced version of their intervention, which they refer to as “Contracting, Prompting, and Reinforcing” or CPR. This version is extended out for one year, and targets self-help group attendance as well as aftercare participation. In this study, 150 graduates of a residential program were randomly assigned to the full CPR intervention, or to a usual care control condition (e.g., aftercare referral). It is noteworthy that unlike Lash's prior studies, the experimental condition was compared to a more

minimal control, rather than to the full package minus one or two components. Results indicated that patients in the CPR condition were more likely to complete at least 3 months of aftercare (55% vs. 36%), remained in treatment longer (5.5 vs. 4.4 months), and were more likely to be abstinent at 12 months (57% vs. 37%) than those in standard care. Conversely, the intervention had no effect on attendance at self-help meetings. Further analyses suggested that the positive effect of CPR on abstinence outcomes was partly mediated by attendance in continuing care.

The work of Lash and colleagues is notable in several respects. First, they have conducted a careful and systematic program of research, in which the additive effect of each new component was determined by testing a version of CPR that included that component against a version that included all other components. Therefore, there is empirical evidence for each component of the intervention. Second, the intervention is relatively low cost, and can be added to treatment as usual—of any sort—relatively easily. The primary additional burden to the treatment program appears to be time spent by counselors in writing personalized notes and letters to patients at several points during their participation in continuing care.

3.0 What Can We Conclude from These Results?

As was noted earlier, half of the studies reviewed in this article found significant continuing care effects. Should this be taken as evidence that the glass is half empty, or half full, so to speak? One way to evaluate the meaning of this 50% success rate would be to conduct a meta-analysis, which would yield an estimate of the average magnitude and statistical significance of the differences between experimental and control conditions. However, such an analysis is most appropriate with studies that compare an active intervention to a placebo control or minimal intervention and are similar with regard to other aspects of methods, procedures, and design. In the studies in this review, almost half compared two or more active treatments. Furthermore, the studies had notable differences in design and procedures. Therefore, a meta-analysis is beyond the scope of this article. However, a careful examination of patterns in the results suggests that a few trends are evident.

3.1 Variability of Patient Response

The actual data from the studies reviewed here suggests that in the majority of studies about one-third of patients had very good outcomes (e.g., sustained attendance in continuing care and high abstinence rates during follow-up), another third had mixed outcomes, and the final third did poorly (e.g., little or no continuing care participation, low rates of abstinence). Even in studies that produced significant treatment effects, variability of response is still evident in the effective intervention. For example, rates of abstinence in effective interventions within specific follow-up periods ranged from 75% (McKay et al., 2005) to 36% (Patterson et al., 1997). Rates of favorable outcomes on other measures tended to be higher (e.g., linkage to continuing care services, no readmissions to treatment, and so forth). It is worth noting that in studies that found statistically significant treatment effects, the magnitude of the effects was also of clear clinical significant, according to conventions established by Cohen (1988) and the findings in the survey of clinicians published by Miller and Manuel (2008).

High response heterogeneity could reflect a number of factors, including differences in pretreatment substance use severity, co-occurring problems, motivation, or treatment preferences. In addition, most of these treatments were designed to be delivered in a consistent and fixed fashion, regardless of how patients responded. The potential advantages of flexible, or “adaptive” continuing care treatment protocols that directly address variability in response are discussed below.

3.2 Year of Publication

It appears that continuing care interventions, or some other aspects of study design or methodology, are improving. Results from the studies summarized in Table 1 indicate that none of the continuing care studies focused on alcohol patients published prior to 1997 yielded a significant treatment condition effect, whereas four of five studies published since 1997 did find significant effects. Among the studies that included patients with drug use disorders, two of six studies published prior to 2000 yielded significant treatment condition effects, whereas all four studies published after 2000 found significant effects. Without a more systematic and detailed review of the methodological features of the studies, it is not possible to determine whether this trend is due to better interventions or better designed studies, or to both. However, as was noted earlier, studies that found significant treatment effects had somewhat larger sample sizes than those that did not, when Project MATCH was not included in the sample size calculation.

3.3 Duration of the Intervention

Of the studies in which continuing care was provided for a minimum of 12 months, all three studies (100%) yielded significant effects favoring the extended intervention. Of the studies in which continuing care was provided for more than 3 months but less than 12 months, 4 of 9 studies (44%) yielded significant findings. Finally, of the studies in which 3 or fewer months of continuing care were provided, 3 of 8 (38%) studies yielded positive effects. This suggests that interventions with longer planned durations may have a greater likelihood of producing positive effects, provided that they are also capable of keeping patients engaged. However, randomized studies that directly compare extended versus short versions of the same interventions are needed before any firm conclusions can be drawn regarding the impact of duration. At this point, there are few if any such studies in the literature.

It should also be noted that many patients in the studies in this review did not continue to attend treatment sessions for the full period over which they were offered. For example, in the study by Foote and Erfurt (1991), only 29% of the participants in the extended contact group attended the expected number of therapeutic contacts (e.g., between 11 and 24, depending on relapse status). In most of the other studies, participants attended between 50%-70% of planned continuing care sessions. On the other hand, there were some studies with higher rates of participation; for example, patients in the O'Farrell et al. (1998) study attended an average of 14 of 15 planned RP sessions, and those in the Godley et al. (2006) attended an average of 12 sessions out of about 12-15 sessions that could have been attended.

3.4 Intensity

Among the continuing care studies reviewed, there appears to be a weak effect favoring more intensive interventions. Studies that yielded positive effects for more intensive interventions included the study of Gorski's “Early Warning Signs of Relapse Prevention Training” (Bennett et al., 2005), the structured continuing care model developed by Sannibale and colleagues (2003), the Brown et al. (2004) intervention for criminal justice clients, and the Assertive Aftercare model for adolescents developed by Godley and colleagues (2006). On the other hand, several studies either found no effects in comparisons of more vs. less intensive continuing care (Hawkins et al., 1989; Project MATCH Research Group, 1996), or even effects favoring less intensive continuing care (McKay et al., 2005). It is possible that intensity effects are moderated by other factors, such as length of the treatment and the severity of the patient population.

3.5 Method of Delivering Services

One of the notable similarities between interventions that were 12 months or longer is that none of them relied on patients to simply show up at a treatment clinic week after week. Rather, each approach involved taking the intervention to the patient, either by involving a spouse, visiting the home, or using the telephone to deliver the intervention. Other effective approaches to the management of addiction, such as RMC (Dennis et al., 2003), assertive aftercare (Godley et al., 2006), and telephone-based continuing care (Horng & Chueh, 2004; McKay et al., 2005, 2008) also rely on very active efforts to locate patients or to bring the treatment to the patients.

3.6 Theoretical Approach of Continuing Care

Most of the 10 studies that generated positive findings either tested a variant of CBT, or contained elements of CBT. However, many of the 10 studies that did not yield positive findings also evaluated CBT or "CBT-like" interventions. Therefore, the presence or absence of CBT components did not appear to strongly influence the effectiveness of the continuing care interventions. None of the other approaches was included in enough studies to draw any conclusions about effectiveness.

3.7 Little Things Matter

The work of Lash et al. (2007), Chutuape et al. (2001), and Shepard et al. (2006) suggests that engagement and retention in continuing care can be increased with relatively low cost, low effort approaches, which can be applied to virtually any continuing care protocol. This points to the potential benefit of conducting research to identify evidence based practices that are easily exported, in addition to the continued search for evidence based continuing care treatments.

4.0 New Directions in Continuing Care Research

Two of the more exciting developments in disease management in the addictions are the use of alternative service delivery sites and methods to deliver continuing care, and the introduction of adaptive treatment models. Although detailed presentations of these areas are beyond the scope of this article, they warrant some discussion. More information on these topics can be found in a number of recent publications (Lavori, Dawson, & Rush, 2000; McKay, 2005; Murphy & McKay, 2004; Murphy, Lynch, McKay, Oslin, & TenHave, 2007; Samet, Friedmann, Saitz, 2001; Weisner et al., 2001)

4.1 Managing Addiction via Alternative Service Delivery Sites and Methods

Although some patients do well in traditional, specialty care settings, and are happy to go to such programs to receive continuing care, there are many others who are either unwilling to attend specialty care at all, or want to "finish" as quickly as possible in order to stop coming to the clinic for regular sessions. Some of this reflects stigma that is still associated with "going to rehab." However, there is increasing recognition that many individuals simply do not like some aspects of traditional treatment programs, including the emphasis on total abstinence, pressure to embrace the AA program, reliance on group therapy, and so forth. Conversely, some patients would be willing to attend treatment in specialty care sessions, but are unable to do so because of family responsibilities, transportation problems, and so forth. Therefore, patient preference needs to be taken seriously and not simply seen as indicative of resistance or denial.

Primary care medical practices offer a possible alternative setting in which to provide ongoing continuing care. In this setting, each medical visit is likely to be brief, but treatment can be individualized and addiction-related medications useful for maintenance (e.g. naltrexone,

buprenorphine) easily prescribed and monitored (Pettinati et al., 2004). More complicated patients, or exacerbations in symptoms in patients who are usually well-managed, can be addressed by extra sessions with behavior specialists co-located in the practices. Several studies have tested such models of care.

Lieber and colleagues (2003) conducted a study of extended monitoring and counseling for 789 heavy drinkers with significant alcoholic liver disease. Patients received comprehensive monthly visits with a nurse and brief visits with a physician in a specialty medical clinic for as long as five years, with half of the sample participating for at least two years. The sessions contained the main elements of brief interventions, including feedback, personal responsibility for change, advice, menu of change options, empathy, and self-efficacy boosters. Participants' average alcohol consumption dropped from 16 drinks per day prior to enrollment, to 2.5 drinks per day thereafter. Willenbring and Olson (1999) developed an integrated protocol that provided medical care and addiction treatment for alcoholics with severe medical problems, again within a medical specialty clinic. In a randomized evaluation, the integrated care model produced much higher rates of extended participation in both medical and addiction treatment over the 2-year follow-up than standard care, as well as higher rates of abstinence.

A study conducted in Sweden examined the effect of an extended intervention for middle-aged, heavy drinking men that consisted of brief visits with a physician every three months, and monthly visits with a nurse that included a test of GGT levels (Kristenson, Ohlin, Hulten-Nosslin, Trell, & Hood 1983). The intervention lasted for up to four years, with reductions in the frequency of therapeutic contact once sustained reductions in GGT were achieved. Participants who received the extended intervention had fewer sick days, fewer hospital days, and lower mortality rates over the six year follow-up, compared to participants in the control condition, which consisted of an initial screening for feedback of GGT test results via letter, and invitations every two years to repeat the baseline GGT test. Longer-term mortality rates (e.g., 10-16 years) were also lower in the extended intervention condition (Kristenson, Osterling, Nilsson, & Lindgarde 2002).

The wide-spread availability of newer communication technology opens up the possibility of providing recovery supports anywhere, anytime. For example, a comprehensive internet-based recovery support program has been implemented at Hazelden for the use of graduates of that treatment facility, and another such program is under development at the VA. Other web-based products have been available for a number of years. At this point, there are no studies of the utilization or effectiveness of these programs.

4.2 Adaptive Treatment

As was noted earlier, there is considerable between-patient variability in response to any particular continuing care intervention, and the same is true for response to the initial phase of care provided in outpatient settings (Morgenstern & McKay, 2007). Variability in response is manifested in both duration of retention and amount or frequency of substance use. Moreover, there can also be considerable within-patient variability in response over time, as individuals cycle through periods of abstinence, limited use, and problematic use. One of the major limitations of conventional approaches to continuing care—whether provided via formal treatments such as CBT or self-help programs—is that they typically do not include formal alternative treatment options (i.e., a “Plan B”) for individuals who continue to use or stop attending treatment.

Adaptive treatment algorithms have been developed to directly address the problem of variability of response to treatment. In such an algorithm, patients are first provided with an initial form of treatment that is empirically supported and acceptable to the patient. Progress is closely monitored with regular assessments, and if the patient is not improving as expected,

a change is made to the treatment according to a decision tree that consists of a number of specific "if---then" statements. The change can involve augmenting current treatment, or switching to a different treatment entirely. Adaptive algorithms can also be used to determine when patients are doing well enough in their initial treatment intervention to be stepped down to less burdensome and costly interventions. It should be noted that adaptive treatment differs from "patient treatment matching" in that adjustments to the intervention are made during the course of treatment, rather than just at baseline or intake. The interested reader can find fuller descriptions of adaptive treatment in the addictions and other fields in other publications (Collins, Murphy, & Bierman, 2004; Lavori et al., 2000; McKay, 2005; Murphy et al., 2007; Rush et al., 2004).

There are a number of examples of adaptive disease management approaches in the addictions. These include the Recovery Management Checkups (RMC) approach (Dennis & Scott, 2007; Dennis et al., 2003), stepped-care algorithms for methadone maintenance (Brooner & Kidorf, 2002; Kakko et al., 2007), and extended telephone monitoring with stepped-care algorithms (McKay, Lynch, Van Horn, Ward, & Oslin,, 2008). These protocols all involve assessing patient progress at regular intervals and adjusting treatment on the basis of scores on the measure(s) of progress. The assessment can focus strictly on substance use (Dennis et al., 2003), or can include other indicators of risk. For example, McKay and colleagues at Penn developed a measure of progress during the initial phase of IOP that could be used to select optimal subsequent continuing care approaches. The measure included substance use, but also assessed other initial treatment goals such as attendance at self-help meetings, commitment to abstinence, social support, and confidence in ability to cope with problems without using (McKay et al., 2005, 2008). These and other adaptive treatment studies in the addictions are reviewed in detail in a forthcoming publication (McKay, 2009).

In new research projects, investigators at the University of Pennsylvania are developing adaptive protocols that also take patient choice into account in specifying modifications to treatment. This work is designed to test the possibility that when patients either do not engage in treatment or dropout at some point after initial engagement, providing a menu of possible treatment options may be a way to increase rates of sustained engagement.

Although adaptive treatment models hold out considerable promise for improving participation and outcomes in continuing care, a number of important problems will require additional research over the next decade. These are outlined in Table 2.

5.0 Final Conclusions and Future Directions

At this point, there is convincing evidence that continuing care can be effective in sustaining the positive effects of the initial phase of care. Moreover, there appear to be several important "take home messages" regarding what kinds of continuing care are likely to be most effective —at least for a typical patient. First, interventions with a longer planned duration of therapeutic contact appear to hold an advantage over shorter interventions, although more carefully controlled research in this area is necessary. Second, interventions that feature more active and direct attempts to bring the treatment to the patient, either through aggressive outreach attempts or the use of low burden service delivery systems such as the telephone, seem to have a clear advantage over more traditional approaches.

Perhaps still more important is the recognition that even with effective interventions, wide variation in patient response is still the rule rather than the exception. Moreover, many patients —perhaps the majority—do not engage in standard continuing care when it is available to them (McKay, Foltz et al., 2004). These factors make a strong case for the importance of new continuing care models that can supplement and in some cases replace the traditional clinic-

based approach. The key components of these new models are aggressive attempts to stay in contact with the patient for extended periods of time, systematic monitoring of treatment response, incorporation of adaptive algorithms that guide ongoing modifications to treatment in response to progress or the lack thereof, use of service delivery approaches that are of lower burden and greater convenience for the patient, provision of choice to the patient regarding treatment type and setting, and use of some forms of incentives to patients and counselors that promote sustained participation in continuing care.

Although the use of medications to reduce alcohol and drug use was not addressed in this review, it may become an increasingly important component of continuing care treatments in the future. At this point, there are only three medications approved to treat alcohol dependence (e.g., naltrexone, acamprosate, and disulfiram), and none are approved for the treatment of stimulant dependence. There are only two published studies of the use of these medications within the context of a continuing care model. In one study, extended naltrexone was effective in patients receiving treatment in a primary care model, but not for those receiving CBT (O'Malley et al., 2003). In the second study, a protocol that provided 12 months of naltrexone to patients with chronic, severe alcohol dependence who were also receiving weekly behavioral treatment did not produce better 12 month drinking outcomes than a protocol that provided 3 months of naltrexone followed by 9 months of placebo. Moreover, neither naltrexone condition was more effective than 12 months of placebo (Krystal, Cramer, Krol, & Kirk, 2001). However, a recent re-analysis of this trial indicated that naltrexone doubled the odds of being categorized in an “abstainer” trajectory vs. in a “consistent drinker” trajectory (Gueorguieva et al., 2007). The next 10 years will no doubt see a significant increase in the number of medications available to treat substance use disorders, and most likely greater use of these medications within continuing care models.

There is also relatively little published work on mediators of continuing care effects, including participation in self-help programs and other sources of social support. Such work is needed to better understand the heterogeneity of response to continuing care interventions and strengthen active therapeutic components. The degree to which formal continuing care facilitates participation in self-help is a particularly important issue, given that many patients will spend considerably more time in self-help meetings and related activities than in formal continuing care sessions (Witbrodt et al., 2007).

In conclusion, the primary task in continuing care research over the next decade is further work on the development of more effective interventions that are both accessible and attractive to a wide variety of individuals with addiction problems, utilize a number of service delivery systems and methods, promote sustained participation in ongoing disease management, are responsive to changes in symptoms and functioning over time, are economically feasible, and are able to incorporate medications as well as other therapeutic supports.

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Table 1

Controlled Studies of Continuing Care

Citation	Characteristics Of Subjects	N	Prior Treatment	Method Assign[1]	Type of Continuing Care[2]	Follow-up Duration[3]	Main Effects
Studies with Negative Results							
Gilbert (1988)	Male veterans, alcohol only	96	Inpatient	R	All Ss received standard aftercare (weekly for 3 mo, bi-weekly for 9 mo) and one of three compliance enhancement conditions in first 6 mo: none, telephone prompts prior to session, sessions delivered via home visits.	12 mo	CC attendance highest with home visits, and better attendance predicted better substance use outcomes. However, no group differences on five drinking outcome measures
Ito et al. (1988)	All male, alcohol only	39	Inpatient	R	8 weeks of 1×/week groups: relapse prevention vs. interpersonal	6 mo	No group differences on six drinking outcome measures, continuing care, attendance, or change process measures
McLatchie & Lomp (1988)	Alcohol only	155	Inpatient	SC	4 sessions over 3 months, presented as: Mandatory, voluntary, or delayed 12 weeks.	3 mo	No group differences on relapse rate, AA attendance, or other outcomes
						12 mo	Low follow-up rate, and data obtained from counselors, not research staff

Citation	Characteristics Of Subjects	N	Prior Treatment	Method Assign[1]	Type of Continuing Care[2]	Follow-up Duration[3]	Main Effects
Hawkins et al. (1989)	82% male primary drug abusers	130	Therapeutic community (TC)	R	Skills training and networking activities (2×/ wk for 26 wks) plus TC vs. TC only	12 mo	Skill level at 12 mo. higher in Exp; condition. Marginal effect favoring Exp condition on one of six substance use outcome measures
Coooney et al. (1991)	33% women, alcohol only	96	Inpatient	R	26 weeks of 1×/week groups: coping skills vs. interactional therapy	24 mo	No group differences on heavy heavy drinking days, psych severity, employment, or social behavior
Connors et al. (1992)	68% male, “problem drinkers”	63	Outpatient	R	Group counseling vs. telephone calls (8 sessions/calls over 6 mo) vs. no aftercare.	18 mo	No differences between the three conditions on four drinking outcome measures.
Graham et al. (1996)	73% male, alcohol and drugs	91 101	Inpatient Evening OP	R	12 weekly RP sessions: group vs. individual format.	12 mo	No group differences on six alcohol or drug use measures. Group RP better on social support.
Schmitz et al. (1997)	50% female, Cocaine dependent	32	Inpatient	R	RP 2×/week for 4 wks vs. 1×/ week for 4 weeks and group vs. individual format.	8 mo	No group differences on cocaine urines or time to relapse. Some self-report variables favored group format

Citation	Characteristics Of Subjects	N	Prior Treatment	Method Assign[1]	Type of Continuing Care[2]	Follow-up Duration[3]	Main Effects
Project MATCH (1997)	80% male, alcohol only	774	Inpatient or Intensive DH	R	Individual MET, CBT, or 12-step facilitation (12 weeks duration, with 12 sessions for CBT and TSF, and 4 sessions for MET)	15 mo	No group differences on two primary drinking outcome variables
McKay et al. (1999)	Male veterans, cocaine dependent	132	Intensive outpatient (IOP)	R	2 session/wk for 20 wks: 12-step focused group counseling vs. group plus individual relapse prevention (RP)	24 mo	No group differences on frequency of cocaine or heavy drinking days, or on five of six other outcome measures. Drinking outcomes in Y2 favored RP
Studies with Positive Results							
McAuliffe (1990)	USA: 67% male, Hong Kong: 100% male, 100% Chinese; all opiate addicts	168	Methadone or residential	R	Recovery training and self-help groups (RTSH; 3hrs/wk for 26 wks) vs. community referrals and/or individual counseling	12 mo	Probability and extent of relapses and level of crime lower in RTSH than control; also employment rate higher in RTSH
Foote & Erfurt (1992)	Predominantly male, alcohol and drugs	325	Inpatient (60%) or outpatient	R	Follow-up contacts (15-20 over 12 mo) plus standard continuing care vs. standard continuing care only	12 mo	Better outcomes on 3 substance use related treatment and cost measures; in exp. condition; no differences on 3 other measures

Citation	Characteristics Of Subjects	N	Prior Treatment	Method Assign[1]	Type of Continuing Care[2]	Follow-up Duration[3]	Main Effects
Patterson et al. (1997)	Males, First admissions alcohol only	127	Inpatient	NR	Nurse visits over 12 months vs review visits every 6 weeks	60 mo	Better abstinence rates, less blackouts, less gambling in nurse visit group
O'Farrell et al. (1998)	Married, Male, alcohol only	59	Outpatient couples treatment	R	15 couples BMT/RP sessions offered over 12 months vs. no continuing care	30 mo	More abstinence days to 18 monts and better marital outcomes to 30 months in BMT/RP
Godley et al. (2006)	Adolescents, 71% male, Marijuana and alcohol	183	Residential	R	Standard care in the community with mixed number of sessions vs. Assertive Continuing Care, which included home visits, case management, transportation to employment, and standard care (provided over 3 months)	9 mo	ACC participants received more treatment services and had higher marijuana abstinence rates than standard care
Sannibale et al. (2003)	Severe alcohol and/or heroin Dependence	77	Residential	R	Structured aftercare (9 session/6mo) vs. unstructured aftercare which provided sessions as requested	12 mo	Structured aftercare produced better attendance, and lower rates of uncontrolled substance use, compared to control
Brown et al. (2004)	Parolees and probationers 75% male, Most users of opiates and cocaine	194	Residential	R (149)	6 mo of aftercare plus	6 mo	Aftercare associated

Citation	Characteristics Of Subjects	N	Prior Treatment	Method Assign[1]	Type of Continuing Care[2]	Follow-up Duration[3]	Main Effects
				NR (45)	case management and crisis intervention vs. no further care.		with higher rates of abstinence from all drugs, less opiate use, and lower rates of weekly drug use.
Horng & Chueh (2004)	92% male, Taiwan, alcohol only	68	Inpatient	NR	5 30-60min telephone calls over 3 mo vs. no further treatment	3 mo	Higher abstinence rates, better adjustment, lower addiction severity, lower readmission rates in TEL vs control.
McKay et al. (2004, 2005)	Cocaine and alcohol dependence (50%), alcohol only (25%), cocaine only (25%)	359	IOP	R	Standard group therapy (24 sessions) vs. CBT/RP (24 sessions) vs. telephone counseling (12 TEL sessions, 4 support group sessions)	24 mo	TEL produced higher abstinence rates than STND and higher rates of cocaine-free urines than RP. Liver fx measures also favored TEL over STND and RP
Bennett et. al (2005)	63% male, abstinent at end of treatment, but with hx of relapse, alcohol only	124	Day Treatment	R	Standard care (3 grps/wk, social club) vs. SC + Gorski approach to relapse prevention (15 sessions).	12 mo	Lower rates of heavy drinking, fewer drinking days, trend toward higher total abstinence rate in Gorski RP condition, compared to standard care.

Citation	Characteristics Of Subjects	N	Prior Treatment	Method Assign[1]	Type of Continuing Care[2]	Follow-up Duration[3]	Main Effects

[1] R= Randomized, SC= sequential cohort assignment, NR= nonrandomized

[2] Indicated length of continuing care treatments refers to planned duration, rather than actual number of sessions attended

[3] Follow-up duration refers to time from baseline interviews, which were usually at the end of the first phase of care/beginning of continuing care

Table 2

Issues and Problems in Adaptive Treatment Requiring Additional Research

- Identification of more effective treatment alternatives for initial non-responders
- Development of better tailoring variables to monitor progress in treatment (e.g., composite indices, incorporation of lab tests, etc.)
- Further work on how to incorporate patient choice/preference in adaptive algorithms
- Creative use of incentives to patients and counselors for sustained participation
- Methods to enhance adherence to changes in treatment, particularly when patients are not doing well
- Greater focus on interventions to increase positive behaviors, in order to make recovery more attractive and build on skills, talents, and interests of patients.
- Further investigations of the role of patient-therapist within-session interactions in the degree to which patients comply with stepped care and other adaptive changes.
- Combining behavioral and pharmacological components in adaptive treatment
- Identification of length of time a patient should be doing well (or poorly) within a level of care before treatment can be stepped down (or up)
- Development of protocols to offer extended monitoring to those who do not want traditional, abstinence-oriented specialty care
- Development of methods to conduct sequential randomization studies, in which non-responders are randomized two or more times to different treatment options
- Incorporation of new technology to promote more frequent assessment of tailoring variables and more rapid modifications of treatment