

Special article

Continuing care research: What we have learned and where we are going

James R. McKay, (Ph.D.)*

University of Pennsylvania, Treatment Research Institute, Philadelphia VAMC, Philadelphia, PA 19104, USA

Received 16 April 2008; received in revised form 8 September 2008; accepted 6 October 2008

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 based on 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. © 2009 Elsevier Inc. All rights reserved.

Keywords: Continuing care; Substance use disorders; Adaptive treatment; Review; Retention

1. Introduction

In the addictions field, there is growing interest in the development and implementation of treatment protocols and systems that address the full continuum (FC) of care, from detoxification to extended recovery monitoring (American Society of Addiction Medicine, 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 (Institute of Medicine, 2006; Wagner et al., 2001). This would represent a major shift, given that virtually all addiction treatment is currently provided in time-limited specialty programs that use 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, 2002; Substance Abuse and Mental Health Services Administration, 2002).

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 stakeholders 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 of various interventions and management practices, ranging from more traditional 12-step focused group counseling approaches to flexible extended care models.

This article 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.

A version of this article was presented at the 2nd Annual Conference of the Betty Ford Institute, October 3–4.

James R. McKay is supported by grants from NIDA (K02-DA00361, R01 DA020623) and NIAAA (R01 AA14850).

* Treatment Research Institute, University of Pennsylvania, Philadelphia VAMC, Philadelphia, PA 19104, USA. Tel.: +1 215 746 7704; fax: +1 215 746 7733.

E-mail address: mckay-j@mail.trc.upenn.edu.

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 checkups, and self-help meetings.

2. 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, 2006](#)). Most of the studies presented here used 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, Foltz, 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 6 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 FC, in which clients receive approximately 3 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 were 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 5 studies (25%). In the remaining 3 studies (15%), most participants were graduates of inpatient/residential treatment with a minority from outpatient programs. It should be noted that at this point, most 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 the 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 3 studies, assignment to treatment condition was done based on sequential cohorts and availability of the experimental condition. Follow-up periods were generally long, with 75% of the studies following patients for 8 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 did not 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 to be statistically significant (Cohen, 1988). More modest effects, although 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., cognitive behavioral therapy [CBT], skills training, relapse prevention [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 1 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 5 studies.

The studies in Table 1 were classified according to whether 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 measures, 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 (7/11 or

64%), compared to those with active continuing care comparison control conditions (3/9 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 (ORs) such analyses generate. A recent study published by Miller and Manual (2008) surveyed clinicians who were participating in the National Institute on Drug Abuse’s Clinical Trials Network to determine how large a treatment effect had to be for it to be considered clinically meaningful. These clinicians reported that differences between treatment conditions of 10 to 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 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 6 months in the intervention components, and they could continue for up to 1 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 United States 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 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 United States and Hong Kong samples.

Foote and Erfurt (1991) compared an extended follow-up procedure that provided up to 30 contacts over a 1-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

Table 1
Controlled studies of continuing care

Citation	Characteristics of subjects	<i>n</i>	Prior treatment	Method assign	Type of continuing care ^a	Follow-up duration ^b	Main effects
Studies with negative results							
Gilbert (1988)	Male veterans, alcohol only	96	Inpatient	R	All subjects received standard aftercare (weekly for 3 months, biweekly for 9 months) and 1 of 3 compliance enhancement conditions in first 6 months: none, telephone prompts prior to session, sessions delivered via home visits	12 months	CC attendance highest with home visits, and better attendance predicted better substance use outcomes. However, no group differences on 5 drinking outcome measures
Ito, Donovan, and Hall (1988)	All male, alcohol only	39	Inpatient	R	8 weeks of 1×/wk groups: RP vs. interpersonal	6 months	No group differences on 6 drinking outcome measures, continuing care, attendance, or change process measures
McLatchie and Lomp (1988)	Alcohol only	155	Inpatient	SC	4 sessions over 3 months, presented as: mandatory, voluntary, or delayed	3 months	No group differences on relapse rate, AA attendance, or other outcomes
						12 months	Low follow-up rate, and data obtained from counselors, not research staff
Hawkins et al. (1989)	82% male primary drug abusers	130	TC	R	Skills training and networking activities (2×/wk for 26 weeks) plus TC vs. TC only	12 months	Skill level at 12 months higher in experimental condition. Marginal effect favoring experimental condition on 1 of 6 substance use outcome measures
Cooney, Kadden, Litt, and Getter (1991)	33% women, alcohol only	96	Inpatient	R	26 weeks of 1×/wk groups: coping skills vs. interactional therapy	24 months	No group differences on heavy drinking days, psychiatric severity, employment, or social behavior
Connors, Tarbox, and Faillace (1992)	68% male, “problem drinkers”	63	Outpatient	R	Group counseling vs. telephone calls (8 sessions/calls over 6 months) vs. no aftercare	18 months	No differences between the 3 conditions on 4 drinking outcome measures
Graham, Annis, Brett, and Venensoen (1996)	73% male, alcohol and drugs	91	Inpatient	R	12 weekly RP sessions: group vs. individual format	12 months	No group differences on 6 alcohol or drug use measures. Group RP better on social support
Schmitz et al. (1997)	50% female, cocaine dependent	101	Evening OP	R	RP 2×/wk for 4 weeks vs. 1×/wk for 4 weeks and group vs. individual format	8 months	No group differences on cocaine urines or time to relapse. Some self-report variables favored group format
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 months	No group differences on 2 primary drinking outcome variables
McKay et al. (1999)	Male veterans, cocaine dependent	132	IOP	R	2 sessions/wk for 20 weeks: 12-step focused group counseling vs. group plus individual RP	24 months	No group differences on frequency of cocaine or heavy drinking days or on 5 of 6 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	RTSH (3 h/wk for 26 weeks) vs. community referrals and/or individual counseling	12 months	Probability and extent of relapses and level of crime lower in RTSH than control; also employment rate higher in RTSH
Foote and Erfurt (1992)	Predominantly male, alcohol and drugs	325	Inpatient (60%) or outpatient	R	Follow-up contacts (15–20 over 12 months) plus standard continuing care vs. standard continuing care only	12 months	Better outcomes on 3 substance-use-related treatment and cost measures; in experimental condition; no differences on 3 other measures
Patterson et al. (1997)	Males, first admissions alcohol only	127	Inpatient	NR	Nurse visits over 12 months vs review visits every 6 weeks	60 months	Higher abstinence rates, less blackouts, less gambling in nurse visit group

(continued on next page)

Table 1 (continued)

Citation	Characteristics of subjects	n	Prior treatment	Method assign	Type of continuing care ^a	Follow-up duration ^b	Main effects
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 months	More abstinence days to 18 months and better marital outcomes to 30 months in BMT/RP
Goodley et al. (2006)	Adolescents, 71% male, marijuana and alcohol	183	Residential	R	Standard care in the community with mixed number of sessions vs. ACC, which included home visits, case management, transportation to employment, and standard care (provided over 3 months)	9 months	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 sessions/6 mo) vs. unstructured aftercare which provided sessions as requested	12 months	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) NR (45)	6 months of aftercare plus case management and crisis intervention vs. no further care	6 months	Aftercare associated with higher rates of abstinence from all drugs, less opiate use, and lower rates of weekly drug use
Hong and Chueh (2004)	92% male, Taiwan, alcohol only	68	Inpatient	NR	5 30- to 60-minute telephone calls over 3 months vs. no further treatment	3 months	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 months	TEL produced higher abstinence rates than STND and higher rates of cocaine-free urines than RP. Liver function measures also favored TEL over STND and RP
Bennett et al. (2005)	63% male, abstinent at end of treatment, but with history of relapse, alcohol only	124	Day treatment	R	Standard care (3 groups/week, social club) vs. SC + Gorski approach to RP (15 sessions)	12 months	Lower rates of heavy drinking, fewer drinking days, trend toward higher total abstinence rate in Gorski RP condition, compared to standard care

Abbreviations. CC = continuing care; R = randomized; SC = sequential cohort assignment; NR = nonrandomized; TC = therapeutic community; RTSH = recovery training and self-help groups; DH = day hospital; MET = Motivational Enhancement Therapy; TSF = Twelve-Step Facilitation.

^a Indicated length of continuing care treatments refers to planned duration rather than actual number of sessions attended.

^b 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.

workplace, and participants in the experimental condition received an average of 15 contacts over a year period, including seven visits and three 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 1 month, monthly for the next 5 months, and bimonthly 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 (0.69 vs. 0.81, $p < .10$), 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 1-year period. The participants were alcohol-dependent men, who had completed a 6-week IP in a rural area. All were first admissions for alcohol dependence. The home visit continuing care protocol consisted of weekly 1- to 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 5 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 (BMT) RP sessions to couples who had completed an initial course of BMT. The continuing care condition, which consisted of 15 sessions provided over 12 months, was compared to a no-further-treatment control condition. Fifty-nine 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.

Goodley, 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, 5 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, adapted for adolescents (Goodley, Godley, Karvinen, & Slown, 2001). This comprehensive intervention includes a functional analysis of substance use behaviors and skills training in a variety of areas including prorecovery activities, RP, 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%, $d = 0.32$, $p < .05$). Outcomes on other substance use measures such as 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 (nine 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 (OR = 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 = 1–12) versus 0 in the control condition (range = 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 (OR = 0.3). 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 Gorsky (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 RP 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%, OR = 0.43, $p = .04$). The authors report an additional statistic, number needed to treat to prevent one relapse during a year period, which was 5. The EWSRPT intervention also produced

fewer percent days drinking ($p = .05$, Cohen's $d = 0.34$) and fewer percent days of heavy drinking ($p = .04$, $d = 0.31$). 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 [Hornig 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- to 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 6-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 workplace 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 ORs from logistic regression equations. Compared to those in the control condition, participants assigned to receive continuing care had less opiate use (OR = 0.26, $p < .01$), cocaine use (OR = 0.36, $p < .05$), any drug use (OR = 0.37, $p < .01$), and weekly drug use (OR = 0.20, $p < .01$).

[McKay, Lynch, et al. \(2004\)](#) and [McKay, Lynch, Shepard, and Pettinati \(2005\)](#) compared two clinic-based continuing care treatments, standard 12-step oriented group therapy (STND) and CBT 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, whereas 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 4 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 3-month segment of the follow-up averaged around 55% in the TEL condition versus around 45% in the STND condition. Similarly, rates of cocaine-positive urine samples during the follow-up averaged around 25% in TEL versus 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 3 months ([Mensingher, 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 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 et al. (2006) found that providing continuing care counselors with a \$100 bonus for each of their patients who attended at least five sessions of continuing care raised the percentage of patients who achieved that milestone from 33% to 59%.

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, Katz, and 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, Burden, and Fearer (2007) have been conducting a systematic program of research aimed at increasing attendance in continuing care. 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 IP 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 = 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, $p < .02$, $d = 0.80$) 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, Petersen, O'Connor, and Lehmann (2001) 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, $d = .56$). 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 2 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 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 1 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 et al. 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. 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 suggest that in most 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 significance, according to conventions established by Cohen (1988) and the findings in the survey of clinicians published by Miller and Manual (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-dependent 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, four of nine studies (44%) yielded significant findings. Finally, of the studies in which 3 or fewer months of continuing care were provided, three of eight (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% and 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 study by Goodley et al. (2006) attended an

average of 12 sessions out of about 12 to 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 EWSRPT (Bennett et al., 2005), the structured continuing care model developed by Sannibale et al. (2003), the Brown et al. (2004) intervention for criminal justice clients, and the Assertive Aftercare model for adolescents developed by Goodley et al. (2006). On the other hand, several studies either found no effects in comparisons of more- versus less-intensive continuing care (Hawkins, Catalano, Gillmore, & Wells, 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 recovery management checkups (RMC; Dennis et al., 2003), assertive aftercare (Goodley et al., 2006), and telephone-based continuing care (Hornig & Chueh, 2004; McKay et al., 2005; McKay, Lynch, Van Horn, Ward, & Oslin, 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 works of Lash et al. (2007), Chutuape et al. (2001), and Shepard et al. (2006) suggest 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 search for evidence-based continuing care treatments.

4. 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, & Ten Have, 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 and 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 the like. 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 colocated in the practices. Several studies have tested such models of care.

Lieber et al. (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 5

years, with half of the sample participating for at least 2 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 3 months and monthly visits with a nurse that included a test of GGT levels (Kristenson, Ohlin, Hulten-Nosslin, Trelle, & Hood, 1983). The intervention lasted for up to 4 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 6-year follow-up as compared to participants in the control condition, which consisted of an initial screening and feedback of GGT test results via letter and invitations every 2 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 because 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, then 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; McKay, in press; 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 RMC approach (Dennis & Scott, 2007; Dennis et al., 2003; Scott & Dennis, in press), stepped-care algorithms for methadone maintenance (Brooner & Kidorf, 2002; Kakko et al., 2007), and extended telephone monitoring with stepped-care algorithms (McKay et al., 2008). These protocols all involve assessing patient progress at regular intervals and adjusting treatment based on 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 et al. (2005) 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). These and other adaptive treatment studies in the addictions are reviewed in detail in a forthcoming publication (McKay, in press).

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

Table 2
Issues and problems in adaptive treatment requiring additional research

- Identification of more effective treatment alternatives for initial nonresponders
- 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 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 nonresponders are randomized 2 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

continuing care, a number of important problems will require additional research over the next decade. These are outlined in Table 2.

5. 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, 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 reanalysis of this trial indicated that naltrexone doubled the odds of being categorized in an “abstainer” trajectory versus 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.

References

- American Society of Addiction Medicine (2001). *ASAM PPC-2R- ASAM patient placement criteria for the treatment of substance-related disorders*, 2nd ed. Revision Chevy Chase, MD: Author.
- Bennett, G. A., Withers, J., Thomas, P. W., Higgins, D. S., Bailey, J., Parry, L., et al. (2005). A randomized trial of early warning signs relapse prevention training in the treatment of alcohol dependence. *Addictive Behaviors*, *30*, 1111–1124.
- Bronner, R. K., & Kidorf, M. (2002). Using behavioral reinforcement to improve methadone treatment participation. *Science and Practice Perspective*, *1*, 38–46.
- Brown, B. S., O'Grady, K., Battjes, R. J., & Farrell, E. V. (2004). Factors associated with treatment outcomes in an aftercare population. *The American Journal on Addiction*, *13*, 447–460.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Collins, L. M., Murphy, S. A., & Bierman, K. L. (2004). A conceptual framework for adaptive preventive interventions. *Prevention Science*, *5*, 185–196.
- Connors, G. J., Tarbox, A. R., & Faillace, L. A. (1992). Achieving and maintaining gains among problem drinkers: Process and outcome results. *Behavior Therapy*, *23*, 449–474.
- Cooney, N. L., Kadden, R. M., Litt, M. D., & Getter, H. (1991). Matching alcoholics to coping skills or interactional therapies: Two-year follow-up results. *Journal of Consulting and Clinical Psychology*, *59*, 598–601.
- Dennis, M. L., & Scott, C. K. (2007). Managing addiction as a chronic condition. *Addiction Science and Clinical Practice*, *4*, 45–55.
- Dennis, M. L., Scott, C. K., & Funk, R. (2003). An experimental evaluation of recovery management checkups (RMC) for people with chronic substance use disorders. *Evaluation and Program Planning*, *26*, 339–352.
- Foote, A., & Erfurt, J. C. (1991). Effects of EAP follow-up on prevention of relapse among substance abuse clients. *Journal of Studies on Alcohol*, *52*, 241–248.
- Gilbert, F. S. (1988). The effect of type of aftercare follow-up on treatment outcome among alcoholics. *Journal of Studies on Alcohol*, *49*, 149–159.
- Goodley, M. D., Godley, S. H., Dennis, M. L., Funk, R. R., & Passetti, L. L. (2006). The effect of assertive continuing care on continuing care linkage, adherence, and abstinence following residential treatment for adolescents with substance use disorders. *Addiction*, *102*, 81–93.
- Goodley, S. H., Godley, M. D., Karvinen, T., & Slown, L. L. (2001). The assertive aftercare protocol: *A case manager's manual for working with adolescents after residential treatment of alcohol and other substance use disorders*. Bloomington, IL: Lighthouse Institute.
- Gorsky, T. (1995). *Relapse prevention therapy workbook: Managing core personality and lifestyle issues*. Independence, MO: Herald House.
- Graham, K., Annis, H. M., Brett, P. J., & Y Venesoen, P. (1996). A controlled field trial of group versus individual cognitive-behavioral training for relapse prevention. *Addiction*, *91*, 1127–1139.
- Gueorguieva, R., Wu, R., Pittman, B., Cramer, J., Rosenheck, R. A., O'Malley, S. S., et al. (2007). New insights into the efficacy of naltrexone based on trajectory-based reanalyses of two negative clinical trials. *Biological Psychiatry*, *61*, 1290–1295.
- Hawkins, J. D., Catalano, R. F., Gillmore, M. R., & Wells, E. A. (1989). Skills training for drug abusers: Generalization, maintenance, and effects of drug use. *Journal of Consulting and Clinical Psychology*, *57*, 559–563.
- Hitchcock, H. C., Stainback, R. D., & Roque, G. M. (1995). Effects of halfway house placement on retention of patients in substance abuse aftercare. *American Journal of Drug and Alcohol Abuse*, *21*, 379–390.
- Hong, F., & Chueh, K. (2004). Effectiveness of telephone follow-up and counseling in aftercare for alcoholism. *Journal of Nursing Research*, *12*, 11–19.
- Humphreys, K. (2004). *Circles of recovery: Self-help organizations for addictions*. Cambridge University Press.
- Humphreys, K., & Tucker, J. A. (2002). Toward more responsive and effective intervention systems for alcohol-related problems. *Addiction*, *97*, 126–132.
- Institute of Medicine (2006). *Improving the quality of health care for mental and substance-use conditions: Quality chasm series*. National Academies Press.
- Ito, J. R., Donovan, D. M., & Hall, J. J. (1988). Relapse prevention in alcohol aftercare: Effects on drinking outcomes, change process, and aftercare attendance. *British Journal of Addiction*, *83*, 171–181.
- Kakko, J., Gronbladh, L., Svanborg, K. D., von Wachenfeldt, J., Ruck, C., Rawlings, B., et al. (2007). A stepped care strategy using buprenorphine and methadone versus conventional methadone maintenance in heroin dependence: A randomized controlled trial. *American Journal of Psychiatry*, *164*, 797–803.
- Kristenson, H., Ohlin, H., Hulten-Nosslin, M. B., Trelle, E., & Hood, B. (1983). Identification and intervention of heavy drinking in middle-aged men: Results and follow-up of 24–60 months of long-term study with randomized controls. *Alcoholism: Clinical and Experimental Research*, *7*, 203–209.
- Kristenson, H., Osterling, A., Nilsson, J. A., & Lindgarde, F. (2002). Prevention of alcohol-related deaths in middle-aged heavy drinkers. *Alcoholism: Clinical and Experimental Research*, *26*, 478–484.
- Krystal, J. H., Cramer, J. A., Krol, W. F., & Kirk, G. F. (2001). Naltrexone in the treatment of alcohol dependence. *New England Journal of Medicine*, *345*, 1734–1739.
- Landon, B. E., Wilson, B., Gustafson, D., & Cleary, P. (2004). Effects of a quality improvement collaborative on the outcome of care of patients with HIV infection: The EQHIV study. *Ann Intern Med*, *140*, 887–896.
- Lash, S. J. (1998). Increasing participation in substance abuse aftercare treatment. *American Journal of Drug and Alcohol Abuse*, *24*, 31–36.
- Lash, S. J., & Blosser, S. L. (1999). Increasing adherence to substance abuse aftercare group therapy. *Journal of Substance Abuse Treatment*, *16*, 55–60.
- Lash, S. J., Burden, J. L., & Fearer, S. A. (2007). Contracting, prompting, and reinforcing substance abuse treatment aftercare adherence. *Journal of Drug Addiction, Education, and Eradication*, *2*, 455–490.
- Lash, S. J., Burden, J. L., Monteleone, B. R., & Lehmann, L. P. (2004). Social reinforcement of substance abuse treatment aftercare participation: Impact on outcome. *Addictive Behaviors*, *29*, 337–342.
- Lash, S. J., Petersen, G. E., O'Connor, E. A., & Lehmann, L. P. (2001). Social reinforcement of substance abuse aftercare group therapy attendance. *Journal of Substance Abuse Treatment*, *20*, 3–8.
- Lavori, P. W., Dawson, R., & Rush, A. J. (2000). Flexible treatment strategies in chronic disease: Clinical and research implications. *Biological Psychiatry*, *48*, 605–614.
- Lieber, C. S., Weiss, D. G., Groszmann, R., et al. (2003). Veterans affairs cooperative study of polyenylphosphatidylcholine in alcoholic liver disease: Effects on drinking behavior by nurse/physician teams. *Alcoholism: Clinical and Experimental Research*, *27*, 1757–1764.
- McAuliffe, W. E. (1990). A randomized controlled trial of recovery training and self-help for opioid addicts in New England and Hong Kong. *Journal of Psychoactive Drugs*, *22*, 197–209.
- McAuliffe, W. E., & Ch'ien, J. M. N. (1986). Recovery training and self-help: A relapse prevention program for treated opiate addicts. *Journal of Substance Abuse Treatment*, *3*, 9–20.
- McCarty, D., DiLonardo, J., & Argeriou, M. (2003). State substance abuse and mental health managed care evaluation program. *Journal of Behavioral Health Services and Research*, *30*, 7–17.

- McKay, J. R. (2001a). The role of continuing care in outpatient alcohol treatment programs. In M. Galanter (Ed.), *Recent developments in alcoholism, vol XV: Services research in the era of managed care* (pp. 357–372). New York: Kluwer.
- McKay, J. R. (2001b). Effectiveness of continuing care interventions for substance abusers: Implications for the study of long-term treatment effects. *Evaluation Review*, 25, 211–232.
- McKay, J. R. (2005). Is there a case for extended interventions for alcohol and drug use disorders? *Addiction*, 100, 1594–1610.
- McKay, J. R. (2006). Continuing care in the treatment of addictive disorders. *Current Psychiatry Reports*, 8, 355–362.
- McKay, J. R. (in press). *Adaptive continuing care and the management of substance use disorders*. American Psychological Association Press.
- McKay, J. R., Alterman, A. I., Cacciola, J. S., O'Brien, C. P., Koppenhaver, J. M., & Shepard, D. S. (1999). Continuing care for cocaine dependence: Comprehensive 2-year outcomes. *Journal of Consulting and Clinical Psychology*, 67, 420–427.
- McKay, J. R., Donovan, D. M., McLellan, A. T., Krupski, A., Hansten, M., Stark, K. D., et al. (2002). Evaluation of full vs. partial continuum of care in the treatment of publicly-funded substance abusers in Washington State. *The American Journal of Drug and Alcohol Dependence*, 28, 307–338.
- McKay, J. R., Foltz, C., Leahy, P., Stephens, R., Orwin, R., & Crowley, E. (2004). Step down continuing care in the treatment of substance abuse: Correlates of participation and outcome effects. *Evaluation and Program Planning*, 27, 321–331.
- McKay, J. R., Lynch, K. G., Shepard, D. S., & Pettinati, H. M. (2005). The effectiveness of telephone based continuing care for alcohol and cocaine dependence: 24 month outcomes. *Archives of General Psychiatry*, 62, 199–207.
- McKay, J. R., Lynch, K. G., Shepard, D. S., Ratichek, S., Morrison, R., Koppenhaver, J., et al. (2004). The effectiveness of telephone-based continuing care in the clinical management of alcohol and cocaine use disorders: 12 month outcomes. *Journal of Consulting and Clinical Psychology*, 72, 967–979.
- McKay, J. R., Lynch, K. G., Van Horn, D., Ward, K., & Oslin, D. (2008). Effectiveness of extended telephone continuing care. Presented at the annual Research Society on Alcoholism meeting, July 2008, Washington DC.
- McLatchie, B. H., & Lomp, K. G. E. (1988). An experimental investigation of the influence of aftercare on alcoholic relapse. *British Journal of Addiction*, 83, 1045–1054.
- McLellan, A. T., Carise, D., & Kleber, H. D. (2003). The national addiction treatment infrastructure: Can it support the public's demand for quality care? *Journal of Substance Abuse Treatment*, 25, 117–121.
- McLellan, A. T., Lewis, D. C., O'Brien, C. P., & Kleber, H. D. (2000). Drug dependence, a chronic medical illness: Implications for treatment, insurance, and outcomes evaluation. *Journal of the American Medical Association*, 284, 1689–1695.
- Mensing, J. L., Lynch, K. G., TenHave, T. R., & McKay, J. R. (2007). Mediators of telephone-based continuing care for alcohol and cocaine dependence. *Journal of Consulting and Clinical Psychology*, 75, 775–784.
- Miller, W. R., & Manual, J. K. (2008). How large must a treatment effect be before it matters to practitioners? An estimation method and demonstration. *Drug and Alcohol Review*, 1–5.
- Monti, P. M., Abrams, D. B., Kadden, R. M., & Cooney, N. L. (1989). *Treating alcohol dependence: A coping skills training guide*. New York: Guilford Press.
- Morgenstern, J., & McKay, J. R. (2007). Rethinking the paradigms that inform behavioral treatment research for substance use disorders. *Addiction*, 102, 1377–1389.
- Murphy, S. A., Lynch, K. G., McKay, J. R., Oslin, D. W., & Ten Have, T. R. (2007). Developing adaptive treatment strategies in substance abuse research. *Drug and Alcohol Dependence*, 88, S24–S30.
- Murphy, S. A., & McKay, J. R. (2004). Adaptive treatment strategies: An emerging approach for improving treatment effectiveness. *Clinical Science Newsletter of an American Psychological Association Division 12, Section III: The Society for the Science of Clinical Psychology*.
- O'Farrell, T. J., Choquette, K. A., & Cutter, H. S. G. (1998). Couples relapse prevention sessions after behavioral marital therapy for male alcoholics: Outcomes during the three years after starting treatment. *Journal of Studies on Alcohol*, 59, 357–370.
- O'Malley, S. S., Rounsaville, B. J., Farren, C., et al. (2003). Initial and maintenance naltrexone treatment for alcohol dependence using primary care vs. specialty care: A nested sequence of 3 randomized trials. *Arch Intern Med*, 163, 1695–1704.
- Patterson, D. G., MacPherson, J., & Brady, N. M. (1997). Community psychiatric nurse aftercare for alcoholics: A five-year follow-up study. *Addiction*, 92, 459–468.
- Pettinati, H. M., Weiss, R. D., Miller, W. R., Donovan, D., Ernst, D. B., & Rounsaville, B. J. (2004). COMBINE monograph series, Volume 2. Medical management treatment manual: A clinical research guide for medically trained clinicians providing pharmacotherapy as part of the treatment for alcohol dependence. DHHS Publication No. (NIH) 04-5289. Bethesda, MD: NIAAA.
- Project Match Research Group. (1997). Matching alcoholism treatments to client heterogeneity: Project MATCH posttreatment drinking outcomes. *Journal of Studies of Alcoholism*, 58, 7–29.
- Roman, P. M., & Johnson, J. A. (2002). Adoption and implementation of new technologies in substance abuse treatment. *Journal of Substance Abuse Treatment*, 22, 211–218.
- Rush, A. J., Fava, M., Wisniewski, S. R., Lavori, P. W., Trivedi, M. H., Sackeim, H. A., et al. (2004). Sequenced treatment alternatives to relieve depression (STAR*D): Rational and design. *Controlled Clinical Trials*, 25, 119–142.
- Samet, J. H., Friedmann, P., & Saitz, R. (2001). Benefits of linking primary medical care and substance abuse services: Patient, provider, and societal perspectives. *Archives of Internal Medicine*, 161, 85–91.
- Sannibale, C., Hurkett, P., Van Den Bossche, E., O'Connor, D., Zador, D., Capus, C., et al. (2003). Aftercare attendance and post-treatment functioning of severely substance dependent residential treatment clients. *Drug and Alcohol Review*, 22, 181–190.
- Schaefer, J. A., Ingudomkukul, E., Harris, A. H. S., & Cronkite, R. C. (2005). Continuity of care practices and substance use disorder patients' engagement in continuing care. *Medical Care*, 43, 1234–1241.
- Schmitt, S. K., Phibbs, C. S., & Piette, J. D. (2003). The influence of distance on utilization of outpatient mental health aftercare following inpatient substance abuse treatment. *Addictive Behaviors*, 28, 1183–1192.
- Schmitz, J. M., Oswald, L. M., Jacks, S. D., Rustin, T., Rhoades, H. M., & Grabowski, J. (1997). Relapse prevention treatment for cocaine dependence: Group vs. individual format. *Addictive Behaviors*, 22, 405–418.
- Scott, C.K., & Dennis, M.L., (in press). Results from two randomized clinical trials evaluating the impact of quarterly recovery management checkups with adult chronic substance users.
- Shepard, D. S., Calabro, J. A. B., Love, C. T., McKay, J. R., Tetreault, J., & Yeom, H. S. (2006). Counselor incentives to improve client retention in an outpatient substance abuse aftercare program. *Administration and Policy in Mental Health*, 33, 629–635.
- Siegal, H. A., Li, L., & Rapp, R. C. (2002). Case management as a therapeutic enhancement: Impact on post-treatment criminality. *Journal of Addictive Diseases*, 21, 37–46.
- Simpson, D. D. (2004). A conceptual framework for drug treatment process and outcomes. *Journal of Substance Abuse Treatment*, 27, 99–121.
- Substance Abuse and Mental Health Services Administration (2002). *National Survey of Substance Abuse Treatment (NSSAT): Data for 2000 and 2001* (DHHS Publication No. SMA 98-3176). Washington, D.C.: U.S. Government Printing Office.

- Wagner, E. H., Austin, R. T., Davis, C., et al. (2001). Improving chronic illness care: Translating evidence into action. *Health Affairs*, 20, 64–78.
- Weisner, C., Mertens, J., Parthasarathy, S., et al. (2001). Integrating primary medical care with addictions treatment: A randomized controlled trial. *Journal of the American Medical Association*, 286, 1715–1723.
- Willenbring, M. L., & Olson, D. H. (1999). A randomized trial of integrated outpatient treatment for medically ill alcoholic men. *Archives of Internal Medicine*, 159, 1946–1952.
- Witbrodt, J., Bond, J., Kaskutas, L. A., Weisner, C., Jaeger, G., Pating, D., et al. (2007). Day hospital and residential addiction treatment: Randomized and nonrandomized managed care clients. *Journal of Consulting and Clinical Psychology*, 75, 947–959.