

## **Appendix**

### **Study aims**

We have been impressed with the continued difficulty within the field of implementing and studying interventions that successfully reduce readmissions among a significant group of patients with severe mental illness (5). This phenomenon remains poorly understood despite the magnitude of suffering and expense associated with repeated hospitalizations. A multi-factoral event with many causal antecedents, readmission has been variously understood as a function of symptoms, the person, the social system, and the care giver system itself (6). In this study, we conceptualize the problem as one of engagement between care giver and patient and attempt to determine if employing peer providers is effective in reducing the readmissions and promoting the recovery within this subgroup (7-8).

Our primary objective has been to examine the prospect that those who had had personal experience with severe mental illness and who were recovered enough to take on a care taking role for their peers could be effective “recovery mentors” for others who have an active, recent history of multiple psychiatric hospitalizations. The peers or recovery mentors would not be specifically oriented towards modifying the readmission of their mentees would be there to support, engage and help their mentees as the mentees described what they wanted/needed.

### **Background and review of literature on peer support**

The provision of mental health services by people with personal histories of mental illness can be traced back much further than the previous five years, during which this form of service delivery has mushroomed. As far back as Jean Baptiste Pussin’s management of the Bicetre in the 1790’s (when Pinel served as chief physician), and again under Harry Stack Sullivan’s leadership at Shepard and Enoch Pratt Hospital in Baltimore in the 1920’s, people in recovery from serious mental illnesses have been hired to staff mental hospitals. After firing many of the staff of the Bicetre because of their refusal to adopt non-violent means of management, Pussin based what Pinel came to refer to as “*traitement moral*” on the hiring of convalescing patients. “As much as possible,” wrote Pussin: “all servants are chosen from the category of mental patients. They are at any rate better suited to this demanding work because they are usually more gentle, honest, and humane” (cited in (9)). Similar reasons were given by Sullivan to justify his preference for hiring his own patients, believing that people who had been through, and recovered from, their own experience of psychosis would be more sensitive to the challenging experiences faced by others in that situation (10).

Mutual support groups, in which people with mental illnesses offer support to each other in a reciprocal fashion, emerged on a broader scale in the 1970’s as part of the consumer/survivor movement. While research was conducted on this form of peer support as well as on such mutual support organizations as Recovery, Inc. and GROW, much of this work was naturalistic and observational in nature (11-14). Retrospective studies, for example, suggested that attendance at mutual support groups was associated with lower rates of hospitalization (11-14), but these studies lacked meaningful comparison groups. The only prospective study that used a matched comparison sample found that although rates of hospitalization did not differ between the groups, length of stay was significantly lower for people who joined GROW groups (12, 14).

The formal introduction of peer support provided outside the context of mutual support groups can be traced to efforts in the early 1990's to train and hire people in recovery from serious mental illnesses to perform various functions as mental health staff (15-16). These positions initially were conceptualized as adjunctive to existing care, with peer staff serving as case management aides, residential assistants, and the like. With early studies demonstrating the feasibility of this approach (17-18), there has been exponential growth in the variety of roles played by peer staff and the number of people occupying these roles (2). More rigorous methods have been introduced, with three of the four controlled studies that have examined the effectiveness of peers delivering conventional services, such as case management, finding them to be comparable to non-peers in similar roles (19-21), and the fourth finding that people receiving peer-delivered services had fewer hospitalizations than those who did not (22).

Recent studies have focused on peers engaging, coaching, or mentoring people who have refused or not benefited from conventional care (23-26). Thus far, these studies have suggested that peer staff might be able to develop trusting relationships with this so-called "difficult-to-engage" population more quickly than non-peers, but that these gains may dissipate over time (24-25). Among individuals with co-occurring disorders, peer-delivered services also appear to contribute to decreased alcohol use (23, 26). Our study represents a further step in this line of research, examining the effectiveness of peer mentoring specifically in reducing readmissions among persons with serious mental illnesses who have histories of multiple hospitalizations.

## Sample

Table 1a gives the CONSORT flow of patients through the study.

Category	Subjects, Potential and Actual		
	Recovery Mentor Grp	Total Number	Treatment as Usual Grp
	Admissions during time of study*		6360
Individuals admitted **		4371	
Apparently Eligible ***		307	
Approached for Consent (those available)		130	
Refused****		33	
Not eligible at review****		4	
Unable to give informed consent****		4	
Randomized	46	89	43
Withdrew consent	8	15	7
Intention to Treat Sample	38	74	36
*Dec, 2006 through Dec, 2008			
** Based on number of known admissions from administrative database			
*** Based on administrative data review			
****Based on interview			

**Intervention**

Recovery mentors were recruited via formal job postings. The training sessions were conducted by PRCH faculty and focused on the core functions of the “recovery guide” model developed by Davidson and colleagues (4) and included the fundamentals of recovery philosophy and recovery promotion practices, the local resources available, boundary considerations, safety, cultural competence, gender factors, trauma-informed care, motivation interviewing (MI) techniques - all with an emphasis on identifying assets and strengths of their mentees and on providing *in vivo* support in an individualized manner that encouraged participants to pursue their personal goals and interests. Training consisted of 16 days over a four week period, with homework exercises interposed between sessions.

The recovery mentors had ongoing supervision, the core of which was a 90-minute team meeting each week. Conducted by one or both of the study supervisors (MW and ML), the sessions were designed to provide a venue to solve problems and identify strategies to develop and enhance relationships with participant partners, to exchange information about resources, to discuss concerns, and to share successes and failures in a supportive atmosphere. Meetings were also used to conduct ongoing training (e.g., review and monitor MI skills, etc) and complete administrative tasks (e.g. complete the progress note forms). Efforts to document the effectiveness of the MI training and the possible use of MI in their meetings with their mentees included regular role play sessions and examination of “process” notes in which the mentors were asked to record, after the fact, the details of their contact with their mentees. However, these efforts showed no evidence that the MI techniques were used by the mentors. Individual supervision meetings were held if requested by a mentor or if a sensitive issue needed to be addressed. Supervisors were available by phone or walk-in as-needed.

Mentors were matched by project staff with a participant partner randomized to the mentor condition based on the participants’ expressed preferences (e.g. to be paired with someone of the same gender or similar history) and on common interests and were introduced to their participant partners within a week of study entry. Consistent with the partnership nature of the relationship, contact was determined by the participant in collaboration with their mentor. While there was no predetermined frequency of contact or contact setting, the goal was for a minimum of weekly meetings or telephone contact.

As noted, the recovery mentors worked independently of the mental health system in that they did not report to nor did they take direction from the clinical staff. They were under the supervision of staff at PRCH, a policy and research structure of the Connecticut Department of Mental Health and Addiction Services (DMHAS). Involvement with treatment providers was initiated only if assistance or advocacy was requested by the mentor’s participant partner.

**Main findings**

The demographic characteristics of the two groups are presented in table 2a. Data on hospitalizations and hospital days between the two groups are presented in Table 3a and show a statistically significant difference between the two groups on days and episodes of hospital care in the 9 month follow up time.

Characteristic	Experimental (n=38)	Control (n=36)	P (two-tailed)
	% or Mean +/- SD	% or Mean +/- SD	
Age, years	42.4 +/- 11.5	38.7 +/- 8.4	.12
Male gender	17, 45%	21, 58%	.24
Years of education	11.8 +/- 3.32	11.25 +/- 2.17	.46
Currently married (yes)	8, 21%	1, 3%	.02
Number living with someone *	17 of 33, 52%	18 of 28, 64%	.27
Number with children *	17 of 33, 52%	11 of 28, 39%	.34
Mean number of hospitalizations in prior 18 months	3.76 +/- 1.08	3.94 +/- 1.31	.52
Mean number of hospitalization days in prior 18 months	40.0 +/- 20.7	42.3 +/- 19.69	.63
Diagnosis			.92
Number of mood disorder	12, 32%	11, 31%	
Number of psychotic disorder	26, 68%	25, 69%	

\*Data collected a follow up and therefore missing for some patients

Hospitalizations		
Condition	Mentor	Treatment as Usual
Subjects	38	36
Mean	.89 +/- 1.35	1.53 +/- 1.54
Statistic	F=3.07 df=1,71 p=.042 (one tailed) partial eta squared= .04	
Hospital Days		
Condition	Mentor	Treatment as Usual
Subjects	38	36
Mean	10.08 +/- 17.31	19.08 +/- 21.63
Statistic	F=3.63, df=1,71 p=.03 (one tailed) partial eta squared = .05	

### Additional findings

In addition to the findings related to hospitalization experience, we investigated whether or not there was a differential effect based on diagnostic group. We compared those with a psychotic diagnosis vs. those with a non-psychotic diagnosis in an effort to determine if there was a difference in hospitalization experience through an interaction between diagnosis and the treatment condition. As noted in the analysis of variance of table 4a, there is no statistically significant effect of diagnosis or an interaction of diagnosis and condition on hospitalization events but there is a trend for an effect of diagnosis on hospital days and hospital events with non-psychosis patients having fewer hospital days and episodes when compared to patients with a psychotic condition (see table 4a), however the interaction of condition and diagnosis does not reach trend levels of probability for either outcomes of days or events. Clearly the issue of whether or not there is a differential effect of the intervention by diagnosis remains an open question requiring further research.

<b>Table 4a. Hospital Admissions and Days of Comparison Groups by Diagnosis</b>					
<b>Hospitalizations (average)</b>					
Diagnosis	Condition Mentor/Experimental	N	Condition Treatment as Usual	N	Total N
Psychosis	.92 +/- 1.41	26	1.8 +/- 1.68	25	51
Non-psychosis	.83 +/- 1.27	12	.91 +/- .94	11	23
Total		38		36	74
Statistics	F	p (one-tailed)	Partial Eta Squared		
Condition	1.84	.09	.03		
Diagnosis	.89	.18	.01		
Condition *Diagnosis	.5	.24	.007		
<b>Hospital Days (average)</b>					
Diagnosis	Condition Mentor/Experimental	N	Condition Treatment as Usual	N	N
Psychosis	11.38 (18.40)	26	22.6 (23.6)	25	51
Non-psychosis	7.88 (18.10)	12	11.09 (14.14)	11	23
Total		33		28	74
Statistics	F	p (1-tailed)	Partial Eta Sq		
Condition	2.41	.07	.03		
Diagnosis	2.08	.08	.03		
Condition *Diagnosis	.31	.29	.004		

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