MNCAMH
Clinical Training, Research, and Innovation

Minnesota Center for Chemical and Mental Health

Minnesota Mental Health Quality Improvement Project for ACT

PROJECT EVALUATION REPORT

Prepared for Minnesota Department of Human Services

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Consultant's Report

This document has been reviewed and confirmed to adhere to Accessibility Standards, Section 508 of the Rehabilitation Act, 29 U.S.C § 79d.

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The Quality Improvement Project was conducted under a contract with the Adult Mental Health Division of the Minnesota Department of Human Services.

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MNCAMH Overview

The Minnesota Center for Chemical and Mental Health (MNCAMH) bridges science to practice to promote lifelong learning and the advancement of clinical skills within the diverse behavioral health workforce. The Center is committed to fostering wellness and recovery for all individuals impacted by substance use and mental health disorders. MNCAMH provides training, research, and resources for service providers to build and sustain excellence in the delivery of broad-based mental and chemical health services. MNCAMH is located within the School of Social Work, College of Education and Human Development, at the University of Minnesota, Saint Paul Campus.

This ACT Quality Improvement Project is funded by a CMS grant to the Minnesota Department of Human Services. This comprehensive report is intended to provide an overall project evaluation. Project strengths, limitations, and recommendations will be discussed.

Executive Summary

Purpose

As part of the Minnesota Mental Health Quality Improvement Project, the Assertive Community Treatment (ACT) Project involved the training of ten Minnesota ACT Teams in Integrated Illness Management and Recovery (I-IMR). The aim of this project was to pilot I-IMR, an illness self-management intervention that utilizes an integrated treatment model aimed at improving the outcomes for both mental and physical health outcomes for consumers served by ACT teams. This pilot project supported the Minnesota 10 x 10 initiative to reduce morbidity and mortality in those living with serious mental illness (SMI). This report evaluates the ACT quality improvement project by examining the primary outcomes associated with the pilot project, discussing strengths, limitations, and lessons learned during the course of the study. This report will also provide recommendations and next steps for future evaluation and implementation projects.

Background

The Minnesota Mental Health Quality Improvement Project was in support of the Minnesota 10 X 10 project that focused on improving the monitoring of health issues for consumers on ACT teams. ACT is a service delivery model that uses a team-based multidisciplinary approach providing intensive treatment to persons with severe mental illness. ACT uses intensive outreach to provide comprehensive, client-centered, integrated, and community-based psychiatric treatment. These services are available to consumers 24 hours per day, 365 days a year. The philosophy behind the ACT model is to provide the assistance necessary to help consumers to continue to live in the community and work towards recovery and a better quality of life. The consumer-to-staff ratio cannot exceed 10:1 on an ACT team, which is lower than other mental health service models, allowing consumers to receive more comprehensive and focused care. ACT teams were selected as

the target for the I-IMR intervention given the inter-professional make-up of teams, which includes nurses and various mental health professionals and because consumers served by ACT teams include people with more complex and severe mental illnesses who are at a higher risk for relapse. This report will provide results from the training and evaluation of consumers participating in I-IMR and practitioners trained in I-IMR with 10 ACT Teams across Minnesota.

Project Interventions

Adapted Integrated Illness Management and Recovery (I-IMR)

Integrated Illness Management and Recovery (I-IMR) was developed in response to the high rates of comorbid physical illnesses in people who have a serious mental illness. The purpose of the program is to empower consumers with knowledge and skills to better manage their mental and physical health so they can work on meaningful life goals. The approach and curriculum was modeled after the evidenced-based Illness Management and Recovery Program (IMR). At the onset of the program, the concept of recovery is introduced and consumers begin developing personally meaningful goals to work toward during the program. These goals are the foundation of the program.

We adapted I-IMR for this study to fit the needs of ACT teams. The adapted version of I-IMR was developed using a pilot version of I-IMR that was originally piloted with persons with SMI who were older and had an identified SMI and physical health diagnosis. In order to address the needs of consumers and practitioners on an ACT team, we adapted I-IMR by targeting the educational and illness self-management topics to focus on priorities for managing both mental and physical health. The original IMR intervention includes eleven modules and the adapted I-IMR version includes ten topic areas that exclusively focus on managing both mental and physical health problems. In addition, the consumer handouts were formatted to improve readability such as offering material in smaller chunks and including more pictures for examples.

I-IMR Supervision Model & Manual

Clinical supervision is an integral and necessary part of successful implementation of all evidence-based practices (EBPs). An I-IMR Supervision Model and Manual was developed for this pilot project. The purpose of the I-IMR Supervision Model was to:

- Monitor the delivery of I-IMR to clients and enhance client outcomes
- Provide feedback about implementation of I-IMR
- Provide knowledge and practice on using integrated teaching strategies
- Provide opportunities for clinical problem-solving
- Increase practitioner competence and quality of services provided

Components of the I-IMR Supervision Model include the following:

- Weekly check-ins to assess level of implementation of I-IMR materials and teaching strategies
- Integrated skills development for practitioners to reinforce I-IMR skills
- Case presentations and case studies to address specific questions and/or challenging cases
- Role-plays in supervision to foster practitioner learning and problem-solving
- Training and follow-up with consultation by I-IMR experts to address specific physical and mental health content and skills

I-IMR supervision includes 1-hour weekly group meetings with I-IMR clinicians. I-IMR content consultants (IMR trainer and nursing educator) join these meetings 1-2 times per month either on-site or via phone. The nurse consultant provides additional support to medical staff on a quarterly basis, with added support as needed. Additionally, nurse consultants conduct two 1-hour training sessions with ACT team nurses to provide training on integrating mental and physical health needs and liaising with health professionals.

The initial focus of I-IMR supervision revolves around start-up issues: educating clients about I-IMR, educating staff about their role in I-IMR, prepping to run first orientation and first group sessions, assessing for stage of change, and utilizing integrated teaching strategies. I-IMR supervision continues to focus on skills teaching and practice with staff, specific illness knowledge, information about treatment review, and case presentations from staff. Meetings including I-IMR nurse consultants utilize short, integrated health scenarios to teach and practice skills and identify specific areas for additional knowledge and skills building.

Methods

Ten Minnesota ACT teams participated in this study. There were a total of 42 mental health practitioners and 153 mental health consumers enrolled in this study. In May 2014, practitioners participated in a two-day I-IMR training and a one day IMR refresher course. I-IMR is a manual based intervention that focuses on teaching illness self-management for mental and physical health problems to help make progress towards recovery.

Outcome measures for both practitioners and consumers included the following:

- Practitioner Confidence
- Practitioner Recovery Knowledge
- Illness Management Recovery Scale (Consumer and Practitioner Versions)
- Colorado Symptom Index
- Stanford Chronic Disease Self-Efficacy

The pilot study occurred between July 2014 and December 2014, lasting a total of 6 months. Outcome measures were collected for consumers and practitioners at baseline and post-intervention. Differences between baseline and post-intervention outcomes were

analyzed to detect whether there was a change between baseline and follow-up after implementation of the I-IMR intervention.

Results

Overall results indicated that practitioners and consumers made positive changes over the course of the intervention. Practitioners reported a significant increase in confidence to implement the skills associated with I-IMR at post-intervention. Practitioners remained stable on their beliefs about recovery at both baseline and post-intervention assessments. Their scores suggest that as a group, the practitioners generally had positive beliefs and attitudes towards recovery, which may have contributed to an inability to detect a difference over time.

Consumer outcomes included evaluated illness self-management for mental and physical health and frequency of medical and psychiatric hospitalizations. Consumers showed significant improvement towards illness self-management (Illness Management and Recovery Scale) on both self-rating and practitioner ratings of consumer progress. There was no significant change in mental health symptoms. Results for consumer physical health outcomes were explored for the full sample and consumers with a minimum exposure to I-IMR (≥ 12 sessions). In the full sample, consumers had significant decreases in both psychiatric and medical hospitalizations. Consumers with a minimum dosage of I-IMR showed a significant improvement in general disease management.

Evaluation of Project Planning and Design

Training

Onboarding Process

ACT teams are generally composed of a Team Leader, Psychiatrist, Registered Nurse, Substance Abuse Specialist, Vocational Specialist as well as other direct service staff. Consumers eligible to participate in ACT team services must meet the following criteria: have a diagnosed mental illness that causes functional impairment in critical areas of daily living, and have been hospitalized 2 or more times in the past year, would require residential or hospital placement if intensive community-based services were not in place, are experiencing homelessness, or have frequent use of the mental health, crisis and criminal justice system.

ACT teams were selected based on interest from the ACT team leader and participation in the Minnesota 10 X 10 project. The lead staff in charge of ACT services from the Adult Mental Health Division of the Minnesota Department of Human Services contacted ACT teams across the state to invite participation in the I-IMR pilot project. Participation in the I-IMR pilot project was voluntary and ten ACT teams were selected based on their interest and availability. As part of the I-IMR pilot study, we invited up to 4 ACT team members to participate in the I-IMR training. ACT teams were required to include at least one nurse in

the I-IMR training and one ACT team member specializing in mental health treatment on the team. We also strongly recommended that the ACT team leader attend the training.

Of the 42 practitioners involved in the study, 31.0% were Nurses, 26.2% were Mental Health Practitioners/Case Managers, 23.8% were Team leaders and the remaining 19% were Substance Abuse, Peer Support or Vocational Specialists. Practitioners varied on the number of consumers they had enrolled in the study. On average, each practitioner had 3.64 consumers engaged in individual or group sessions. Of the 153 consumers enrolled in the study, 60.8% were diagnosed with a Schizophrenia Spectrum Disorder, 24.8% with Bipolar Disorder and 17.6% with Major Depressive Disorder.

Prior to practitioner training for I-IMR, the MNCAMH research team spoke with each ACT team leader over the phone to review the purpose and process of the ACT Quality Improvement Project. During these phone meetings, ACT team leaders also discussed prior IMR training for their teams. Most ACT team leaders expressed a high need for additional training in IMR due to high staff turnover and lack of clinical expertise. Due to the expressed need for additional IMR training, it was decided to offer an IMR refresher course to be held after the initial I-IMR training, which had already been scheduled at the time of onboarding.

I-IMR Training

Two researchers involved in the development of the I-IMR model, Dr. Sarah Pratt and Meghan Santos, MSW, from Dartmouth, provided a two-day training to practitioners in May, 2014. The training emphasized the importance of using an integrated approach when working with consumers to address both mental health and physical health conditions. Topics covered in the training included the following:

- Background and rationale for using an integrated approach
- Integrated care models
- Recovery-oriented treatment
- Structure, goal-setting, and utilization of I-IMR materials during sessions with consumers
- Intervention techniques (i.e. role-playing, psycho-education, motivational interviewing)

A total of 37 practitioners attended both I-IMR training days and 9 of the 10 team leaders attended both days.

IMR Refresher Course

Piper Meyer-Kalos, PhD, MNCAMH Director, provided training on IMR basics to enhance understanding for those who may have not had previous training or experience with IMR. The training covered goal setting, recovery, teaching strategies, and how to practice IMR structure in a session. A total of 22 practitioners from 9 ACT teams participated in this training.

The IMR refresher course was not part of the initial training plan. As discussed in the section regarding onboarding, ACT team leaders requested this additional training due to some practitioners' inexperience or lack of formal training in IMR. Because of the previously scheduled I-IMR trainings with national consultants, who had limited availability, the IMR refresher course was offered after the I-IMR training.

Ideally, the IMR training would have preceded the I-IMR refresher in order to provide a foundation for delivering a manualized intervention and to practice the delivery of illness self-management skills. In future studies, it would be preferable to assess the needs of the participants well enough in advance to allow for more scheduling options. Future implementation of I-IMR programs also could benefit from assessing baseline IMR knowledge before the I-IMR training to build clinical skills as part of the training process.

Implementation of I-IMR

After practitioners completed training, they approached consumers for participation in the I-IMR intervention. Practitioners explained the project to the consumer and obtained informed consent prior to starting I-IMR with enrolled consumers. The University of Minnesota-Twin Cities Institutional Review Board approved the I-IMR pilot project prior to practitioner and consumer data collection. Consumers received a $10 gift card upon completion of baseline measures and post-intervention measures. Once consumers were enrolled, they participated in the I-IMR intervention in group and/or individual sessions facilitated by an I-IMR practitioner in the study.

Intervention Timeline

The project intervention started in July 2014 and concluded in December 2014, for a total intervention duration of 6 months.

Technical Assistance

Consultation was provided to each ACT team for the duration of the project to provide support and technical assistance regarding the implementation of I-IMR. Each agency was offered a minimum two consultations per month, one over the phone and one in-person consultation. Consultations were facilitated by Matthew Lindberg, M.A., LPCC (IMR Trainer) and Maria Tice, M.S., R.N. (Nursing Educator and IMR practitioner). The average number of consultations per site was 7. There were a total of 74 consultations provided, with 62% in-person and 38% over the phone. The average consultation lasted 58 minutes.

Consultations focused on supporting ACT teams in the implementation of I-IMR. Facilitators focused on integration of illness self-management within the I-IMR intervention. This included education of practitioners in physical health topics to promote practitioner engagement with consumers pertaining to physical health conditions. ACT team nurses were encouraged to view their role as both a nurse and mental health practitioner. Facilitators educated ACT team nurses on Readiness for Change and using skills such as Motivational Interviewing to work more effectively with consumers with SMI.

By request of the ACT team members, physical health was the focus of many of the consultations. Facilitators noted that many agencies spent several sessions on Module 3 (Practical Facts) as this module included information pertaining to mental health and physical health conditions. Practitioners were able to focus specifically on each individual's mental and physical health problems and provide in depth education. One recommendation going forward is for ACT team nurses to provide ongoing education and training to practitioners on physical health to promote practitioner engagement with consumers regarding their physical health conditions.

Description of the Sample

Consumers

A total of 153 consumers were enrolled in the pilot project. Consumers participated in six months of I-IMR intervention. We were able to assess 123 consumers at follow-up for post-intervention measures. Thirty consumers dropped out of the study. Reported reasons for dropping out included: hospitalization, disinterest, and gaining employment. Table 1 represents the demographics of all consumers (N=153) enrolled in the pilot project.

Table 1. Consumer Demographics

CONSUMER DEMOGRAPHICS (N=153)		
	Mean	**% of Total Sample**
Age	47.20	
Total Number of Hospitalizations (self-report)	9.83	
Gender		
Female		59.5 %
Male		40.5 %
Race (N=152)		
White		82.9 %
Black/African American		7.9 %
Other		9.2 %
Highest Level of Education		
Some high school		8 %
GED / High school diploma		43 %
Some college		37 %
College degree		12 %

Consumer Diagnoses

Table 2 represents the frequencies of mental health diagnoses in the study sample. Schizophrenia spectrum, bipolar disorder, and major depressive disorder were considered primary diagnoses. These categories were not exclusive, so consumers could have two primary diagnoses if listed.

Table 2. Consumer Mental Health Diagnoses

MENTAL HEALTH DIAGNOSES			
	N	Frequency	% of Total Sample
Schizophrenia Spectrum	153	93	60.8 %
Bipolar Disorder	153	38	24.8 %
Major Depressive Disorder	153	27	17.6 %

Table 3 represents the frequency of the total number of physical illnesses reported. Physical illnesses of focus in this study were: diabetes, hypertension, obesity, hyperlipidemia, thyroid disorders, respiratory disorders, and arthritis. The other category in the table captures the frequency of conditions reported that did not fit into the seven physical illnesses previously listed. Note: Obesity was only listed as a diagnosis if it was reported as a diagnosis.

Table 3. Consumer Physical Health Diagnoses

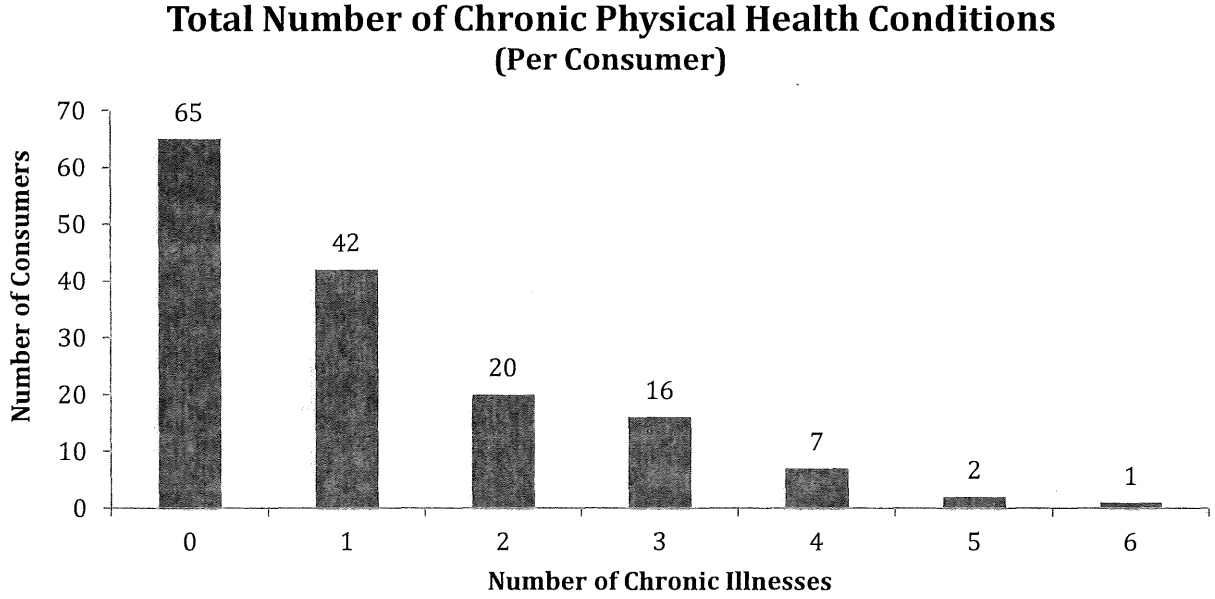
PHYSICAL HEALTH DIAGNOSES			
	N	Frequency	% of Total Sample
Diabetes	153	38	24.8 %
Hypertension	153	23	15.0 %
Obesity	153	19	12.4 %
Hyperlipidemia	153	29	19.0 %
Thyroid Disorders	153	17	11.1 %
Respiratory Disorders	153	22	14.4 %
Arthritis	153	7	4.6 %
Other	153	119	—

Physical Health Diagnoses Note: Percentage of total sample is not included for the "other" category because some consumers reported multiple physical health diagnoses fitting into this category.

Figure 1 below indicates the total number of chronic physical health conditions reported by each consumer. The graph shows that the 68 consumers reported no chronic physical

health conditions. However, over half (58%) of the sample reported at least one or more chronic physical health conditions.

Figure 1. Total Number of Chronic Physical Health Conditions per Consumer



Practitioners

A total of 10 ACT teams participated in the pilot project. There were 5 ACT teams located in Minneapolis/St. Paul and 5 ACT teams located in greater Minnesota (Monticello, Worthington, Brainerd, Owatonna, and Duluth). Table 4 represents selected practitioner demographics. The following information represents the key demographics of the practitioners participating in this pilot project:

- The mean age of practitioners (N=42) was 42.48 years. Practitioners ranged from 25 to 61 years old.
- 71.4% of the practitioners identified as female. 97.6% of the practitioners identified as white.
- Practitioners (N=42) varied on the number of consumers they had enrolled in the study. On average, each practitioner had 3.64 consumers engaged in individual or group sessions. The number of consumers enrolled ranged from 0 to 20. Many of the ACT team nurses functioned as I-IMR supporters, and did not conduct individual or group sessions with consumers. Four practitioners left their jobs with the enrolled agencies during the course of the study.

Table 4. Practitioner Demographics

PRACTITIONER DEMOGRAPHICS (N=42)		
	Mean	**% of Total Sample**
Years of Experience in Mental Health	13.53	
Years in Current Position (N=41)	4.57	
Highest Level of Education		
Some college/ Associate degree		26.2 %
Bachelor degree / some graduate coursework		35.7 %
Graduate degree		38.1 %
Discipline		
Social Work / Psychology		40.5 %
Nursing		31.0 %
Other		28.5 %
Current ACT Team Role		
Nurse		31.0 %
Mental Health Practitioner / Case Manager		26.2 %
Team Leader		23.8 %
Other		19.0 %

Summary of Results

ACT I-IMR Study Outcome Measures

There were six outcome measures collected at both pre-intervention and follow-up. There were four consumer outcome measures and two practitioner outcome measures.

Practitioner Outcomes

- Practitioner Confidence
- Recovery Knowledge Inventory

Consumer Outcomes

- IMR Scale (Practitioner & Consumer Versions)
- Symptom Index
- Chronic Disease Self-Efficacy Scale

The results of each measure are discussed in detail below.

Consumer

Consumers showed improvements in both psychiatric and physical health outcomes. Consumers showed significant improvement towards psychiatric illness self-management (Illness Management and Recovery Scale) on both self-rating and practitioner ratings of consumer progress. There was no change in mental health symptoms, but pre- and post-means of the Symptom Index showed a trend towards decreasing symptoms. Consumer self-efficacy for the management of physical health symptoms showed no significant overall differences; however, for consumers that participated in twelve or more I-IMR sessions, results showed significant improvements associated with their physical health self-management.

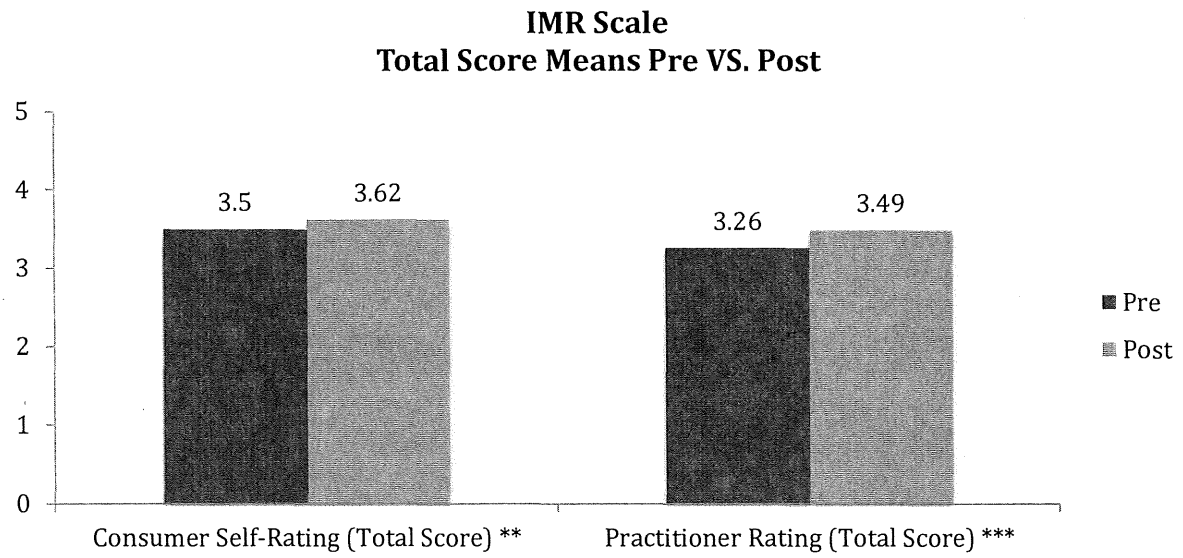
Illness Management and Recovery Scale

The IMR Scale was used to assess the extent to which consumers made progress towards recovery and psychiatric illness self-management. The scale includes 15 items that measure progress towards personal goals, knowledge about illness, symptom severity, use of coping skills, engagement in self-help activities, adherence to medication regimen, and substance use. Each consumer completed this scale at baseline and follow-up. We calculated a total score to assess overall progress. The practitioner for each consumer also completed the scale, assessing the consumer's progress in each of the 15 items.

Consumer total score for the IMR Scale improved significantly between baseline and post-intervention. The practitioner version of this scale, which practitioners completed for each consumer to assess progress, also indicated significant improvement over the course of the intervention. Both consumers and practitioners reported significant improvements in knowledge about illness, symptom distress, functioning, relapse prevention planning, and the ability to cope with symptoms. In addition, consumers reported significant improvements in improving taking medication effectively while practitioners reported improvements in progress towards goals, relapse of symptoms and involvement in self-help activities. Consumer and practitioner versions of the IMR Scale showed similar improvements, which suggests that both practitioners and consumers enrolled in this study were similar in assessing progress towards IMR goals and illness self-management skills.

Figure 2 shows the mean scores of the total score on the original scale of 1-5, with 5 indicating better outcomes. Asterisks denote statistical significance.

Figure 2. IMR Scale Total Score Means (Practitioner and Consumer Versions) Pre VS Post



Note: ** denotes significance at $p \leq 0.01$ level, *** denotes significance at $p < 0.00$

Table 5 and Table 6 show the pre- and post-means for each item on the consumer and practitioner versions of the IMR scale, respectively. Asterisks denote significance. Additionally, a column is included to indicate whether the change between pre and post is positive or negative.

Table 5. IMR Scale Consumer Version Pre- and Post Means

IMR SCALE CONSUMER VERSION	N	pre-mean	post-mean	p-value	change pos/neg
#1 – Progress toward personal goals	123	3.24	3.33	0.32	
#2 – Knowledge	123	3.56	3.78	0.04*	pos +
#3 – Involvement of family and friends in mental health treatment	123	2.99	3.21	0.19	
#4 – Contact with people outside of family	122	3.12	3.08	0.90	
#5 – Time in structured roles	122	2.20	2.29	0.68	
#6 – Symptom distress	121	2.72	2.98	0.02*	pos +
#7 – Impairment of functioning	122	2.80	3.06	0.02*	pos +
#8 – Relapse prevention planning	122	3.56	3.83	0.05*	pos +
#9 – Relapse of symptoms	121	3.33	3.25	0.75	
#10 – Psychiatric hospitalizations	121	4.40	4.59	0.12	
#11 – Coping	121	3.37	3.57	0.02*	pos +
#12 – Involvement with self-help activities	123	3.15	3.37	0.38	
#13 – Using medication effectively	121	4.64	4.75	0.05*	pos +
#14 – Functioning affected by alcohol use	121	4.68	4.70	0.75	
#15 – Functioning affected by drug use	120	4.79	4.83	0.80	

Note: * denotes significance at $p \leq 0.05$ level

Table 6. IMR Scale Practitioner Version Pre- and Post Means

IMR SCALE PRACTITIONER VERSION	N	pre-mean	post-mean	p-value	change pos/neg
#1 – Progress toward personal goals	122	3.14	3.36	0.03*	pos +
#2 – Knowledge	123	3.21	3.55	0.00***	pos +
#3 – Involvement of family and friends in mental health treatment	123	2.90	3.14	0.15	
#4 – Contact with people outside of family	123	3.12	3.26	0.11	
#5 – Time in structured roles	123	2.00	2.07	0.45	
#6 – Symptom distress	123	2.26	2.56	0.00***	pos +
#7 – Impairment of functioning	123	2.21	2.46	0.00***	pos +
#8 – Relapse prevention planning	122	3.22	3.63	0.01**	pos +
#9 – Relapse of symptoms	122	3.20	3.51	0.02*	pos +
#10 – Psychiatric hospitalizations	122	4.49	4.69	0.17	
#11 – Coping	123	2.88	3.23	0.00***	pos +
#12 – Involvement with self-help activities	122	2.94	3.35	0.01**	pos +
#13 – Using medication effectively	121	4.28	4.43	0.10	
#14 – Functioning affected by alcohol use	120	4.49	4.61	0.26	
#15 – Functioning affected by drug use	120	4.60	4.65	0.62	

Note: * denotes significance at $p \leq 0.05$ level, ** denotes significance at $p \leq 0.01$ level, *** denotes significance at $p < 0.00$

Symptom Index

The Symptom Index was used to assess the frequency of psychiatric symptoms. The Symptom Index contains 14 items that are scored on a scale of 1-5, with 5 indicating a lower frequency of symptoms. The Symptom Index is divided into 2 subscales that measure symptoms of depression/anxiety and psychosis. We also calculated a total score to assess for overall symptoms.

There was not a significant difference in the scores for the depression and anxiety subscale between baseline (M= 29.27, SD= 8.96) and follow-up (M= 30.26, SD= 9.15); $t(119) = 1.77$, $p = 0.08$. There was not a significant difference in the scores for the psychosis subscale between baseline (M= 21.49, SD= 3.69) and follow-up (M= 21.74, SD= 3.58); $t(122) = 0.74$, $p = 0.46$. There was not a significant difference for total score on the Symptom Index between baseline (M= 50.77, SD= 11.57) and follow-up (M=52.00, SD= 11.69); $t(119) = 1.54$, $p = 0.13$.

There was no significant improvement of symptoms for consumers between baseline and post-intervention. However, pre- and post-means indicate a trend upwards on the scale, meaning that symptoms did not change significantly during the course of the intervention, but were getting better.

Chronic Disease Self-Efficacy

The Chronic Disease Self-Efficacy (CDSE) scale assessed the consumer's perceived ability to manage physical health conditions. The measure consisted of 27 items that were divided into 9 subscales. The subscales measured consumer confidence in exercising regularly, getting information about disease, obtaining help from family and friends, communicating with a physician, managing disease in general, completing chores, engaging in social and recreational activities, managing symptoms, and managing shortness of breath.

There were no significant differences for any of the subscales or total scores for the Chronic Disease Self-Efficacy scale between baseline and post-intervention. We anticipated that consumers participating in I-IMR would benefit more if they attended more I-IMR sessions so we examined the outcomes for consumers who attended at least twelve sessions. For consumers who attended twelve or more sessions, the General Self-Efficacy subscale showed significant improvement, $t(63) = 2.16$, $p = 0.02$. Pre- and post-means of this analysis showed a trend upward on 5 of the 9 subscales. We suspect that a longer intervention time may be needed to increase self-efficacy for physical health outcomes.

Table 7. Chronic Disease Self-Efficacy Pre VS. Post (equal or greater than 12 sessions)

CHRONIC DISEASE SELF-EFFICACY PRE VS. POST

≥ 12 sessions

	N	pre-mean	post-mean	p-value
Completing Chores	64	6.96	6.93	0.92
Exercising Regularly	64	6.64	6.37	0.31
General Self-Efficacy	64	6.89	7.36	0.03*
Obtain Information About Disease	64	7.62	8.09	0.20
Obtain Help from Friends and Family	63	6.71	6.74	0.93
Communicating with Physicians	63	7.96	8.11	0.59
Managing Shortness of Breath	63	6.97	7.29	0.33
Engage in Social and Recreational Activities	63	6.73	6.52	0.38
Managing Symptoms	63	6.41	6.71	0.25
Total Score	61	6.87	7.06	0.50

Note: * denotes significance at $p \leq 0.05$ level, ** denotes significance at $p \leq 0.01$ level, *** denotes significance at $p < 0.00$

We also considered whether consumers diagnosed with at least one physical health condition would benefit more from the I-IMR intervention. For persons with at least one health condition, we examined physical health self-management. No significant changes were noted.

Practitioner

Practitioners participating in the pilot study reported improvements in their use of I-IMR skills and strategies. Practitioners reported a significant increase in confidence between baseline (prior to training) and post-intervention follow-up (6 months later). Practitioners did not report significant changes in their beliefs about recovery. However, practitioner recovery knowledge at baseline was relatively high, indicating that most practitioners already positive attitudes and beliefs about recovery.

Practitioner Confidence

The Practitioner Confidence scale assessed how confident practitioners felt in implementing I-IMR. This measure consisted of 31 items, which were divided into 3 subscales. These subscales assessed practitioner confidence in working with different types of consumers (i.e. consumers with mental illness, consumers with physical illness,

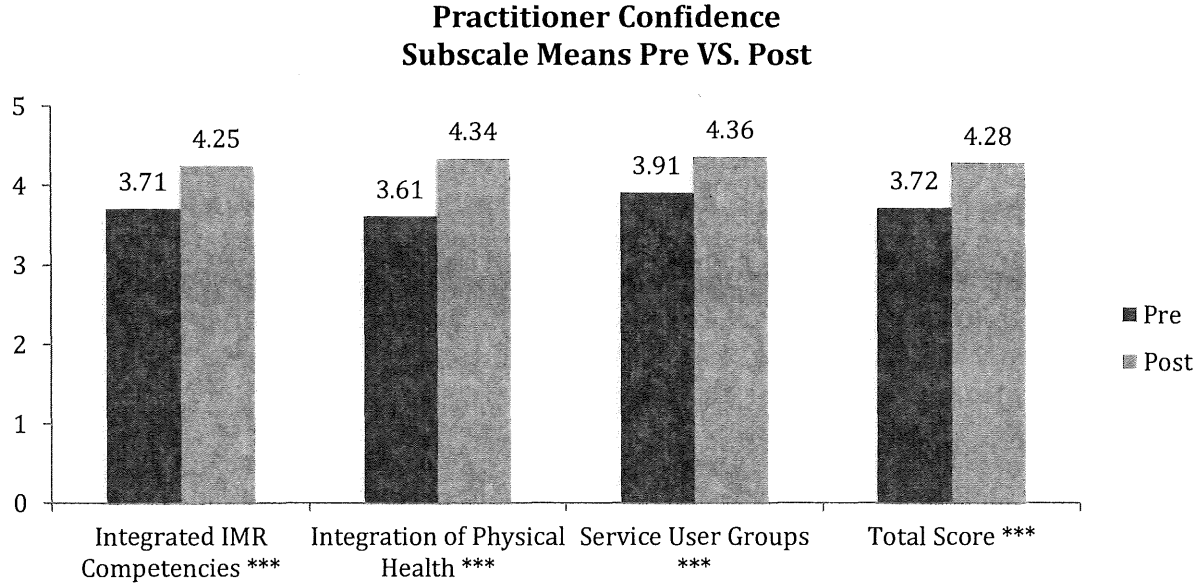
and consumers with both mental and physical illnesses), confidence in implementing I-IMR skills, and confidence in providing integrated treatment for physical and mental health.

Practitioner confidence increased significantly between baseline and the end of the study. Practitioners completed this measure prior to training in I-IMR and at the conclusion of the 6-month intervention. In addition to statistical significance, results indicated clinical significance on three items. Clinical significance occurs when there is an increase of at least one point between baseline and post-intervention on the scale (1-5). A score of 5 indicated complete confidence.

- Practitioners went from feeling a little confident (2.93) to mostly confident (4.32) in their ability to successfully **make comprehensive use of the I-IMR curriculum.**
- Practitioners went from feeling somewhat confident (3.02) to mostly confident (4.24) in their ability to successfully **apply knowledge of I-IMR modules.**
- Practitioners went from feeling somewhat confident (3.31) to mostly confident (4.37) in their ability to successfully **integrate mental health and physical health concerns into each I-IMR session.** Table 5 represents the statistical findings of the Practitioner Confidence scale. Figure 2 represents the means of each subscale on the original scale of 1-5.

Figure 3 represents the means of each subscale on the original scale of 1-5. Asterisks denote statistical significance.

Figure 3. Practitioner Confidence Subscale Means Pre VS. Post



Note: *** denotes significance at $p < 0.00$

Recovery Knowledge Inventory

The Recovery Knowledge Inventory assessed practitioner beliefs and attitudes regarding recovery. Recovery is defined as a process of change guided by personally meaningful goals to improve quality of life. This measure consisted of 20 items, which were divided into 4 subscales. These subscales assessed practitioner beliefs about roles and responsibilities in recovery, the non-linearity of the recovery process, the roles of self-definition and peers in recovery, and expectations regarding recovery.

Overall, results of the Recovery Knowledge Inventory trended upward or remained the same for practitioners during the course of the intervention. Role of self-definition and peers in recovery was significant at a level of 0.10, $t(37) = 1.74$, $p = 0.09$. All other subscales were insignificant. At baseline, practitioners reported high ratings on this scale, which may explain why this scale did not reach significance.

Intervention Dosage

Practitioners completed dosage logs for each consumer during the intervention. These dosage logs were records for each session completed with a consumer. Dosage logs included session length, module, and type of session (group or individual).

Table 8. I-IMR Modules

1. Recovery Strategies	6. Social Support
2. The Brain Body Connection	7. Managing Stress
3. Practical Facts	8. Managing Physical and Mental Health
4. Healthy Lifestyles	9. Relapse Prevention
5. Using Medication Effectively	10. Self-Advocacy

The following outlines the descriptive statistics for each component of the dosage log:

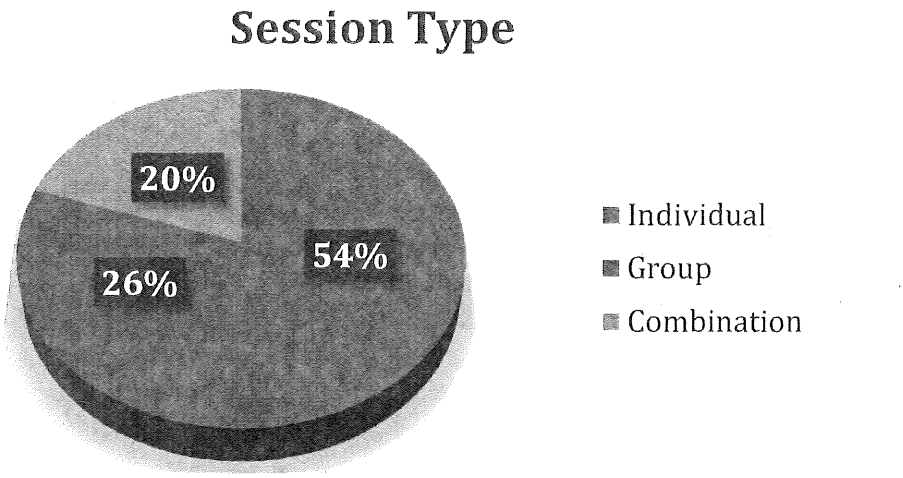
- Module 3 (Practical Facts) was the most frequently reported module used during sessions (40.8%).
- Module 1 (Recovery Strategies) (13.5%) and module 2 (The Brain Body Connection) (11.7%) were the second and third most frequently reported modules used during sessions.

Table 9. Dosage Log Summary

	N	Minimum	Maximum	Mean	SD
Total Number of Sessions	122	1	42	13.83	8.08
Length of Session (in minutes)	1678	10	120	53.27	12.58

Consumers often participated in more than one session type. In other words, some consumers participated in both group and individual sessions. Because of this, consumers were distinguished as receiving only individual sessions, only group sessions, and a combination of both. The following figure represents the percentage of clients who fell into individual, group, and a combination of individual and group sessions (N=153).

Figure 4. Session Type



There was a wide range for the number of total consumer I-IMR sessions (N=122). Total number of sessions ranged from 1 to 42, with 53.4% of the final sample participating in 12 or more sessions. Minimum dosage and exposure to I-IMR was determined based on the length of the study (i.e., six months) and IMR fidelity scale, which sets a standard of a minimum of three months of weekly sessions as part of the program length.

Evaluation of Data Collection and Analysis

Health Outcomes

In addition to the outcome measures previously discussed in this report, we also used data that we received from DHS to measure changes in consumer psychiatric and health outcomes. The data we received from DHS included consumer health variables (BMI, blood

pressure, LDL, blood glucose, etc.), hospitalizations, diagnoses (mental health and medical), and information regarding tobacco and alcohol use.

Health Variables

In summary, health variable data that we received was limited. The Systems Change Report addressed this issue in greater detail. We received data for consumer height, weight, BMI, blood pressure, LDL, fasting blood glucose, and A1c from DHS. Practitioners were instructed to submit this information through the Mental Health Information System (MHIS). The original plan was to compare difference between three time points (baseline, pre-intervention, and post-intervention). However, 91.16% of the data needed to run the planned analyses were missing. Therefore, we were unable to analyze any health outcomes with this information due to missing data. While we did not expect to see any significant improvements in health variables over the six-month intervention, it may have been useful to assess for trends in one direction or the other. Table 10 represents the number of consumers who had data entered for one, two, or three time-points. It should be noted that 117 out of 153 consumers in this study had a MHIS report. Practitioners seemed to have difficulty collecting and inputting the data, but the reason for missing data and methods to improve the collection of health variables should be considered going forward.

Table 10. Health Variables for Consumers with 10x10 Report

N= 117	BMI	Blood Pressure	LDL	Glucose	A1c
Consumers with at least 1 Time-Point Reported	50	76	34	34	16
Consumers with 2 Time-Points Reported	11	24	1	1	2
Consumers with 3 Time-Points Reported	1	6	0	0	1

Diagnoses

During data analysis, we distinguished the diagnoses of interest based on previous research pertaining to the SMI population. Mental health diagnoses of interest included: schizophrenia spectrum disorders, bipolar disorder, and depressive disorders. Physical health diagnoses of interest included: diabetes, hypertension, obesity, hyperlipidemia, thyroid disorders, respiratory disorders, and arthritis.

We received mental health diagnoses from DHS for 119 of the 153 consumers enrolled in the pilot project. We only received physical health diagnoses for 11 of the 153 enrolled consumers. The mental health diagnoses from DHS were used for the consumers with reported diagnoses. For those that were missing from the dataset, we used self-reported diagnoses. Upon comparing the physical health diagnoses from DHS and the self-reported physical health diagnoses, we found that the self-reported diagnoses were more comprehensive and complete. For this reason, we used self-reported physical health diagnoses for consistency.

Practitioners were contacted to provide physical health diagnoses when consumers left the question blank. We found that diagnoses provided by practitioners appeared more complete than those provided by consumers. In future studies, it may be beneficial to have practitioners fill out this information for enrolled consumers to verify consumer reported diagnoses.

Tobacco and Alcohol Use

We received tobacco and alcohol use data for 81 out of 153 consumers from DHS. Questions pertaining to tobacco and alcohol use included the following:

- During the past 30 days, how many days per week did you have at least one drink of any alcoholic beverage such as beer, wine, a malt beverage, or liquor?
- One drink is equivalent to a 12-ounce beer, a 5-ounce glass of wine, or a drink with one shot of liquor. During the past 30 days, on the days when you drank, about how many drinks did you drink on average?
- One drink is equivalent to a 12-ounce beer, a 5-ounce glass of wine, or a drink with one shot of liquor. What's the maximum number of drinks you had on a given occasion in the last 30 days?
- Do you use any tobacco product (smoking or chewing)?

Table 11. Tobacco and Alcohol Use

TOBACCO AND ALCOHOL USE				
	N	Frequency	% of Total Sample	Mean
Tobacco Use	81	41	49.4	
Alcohol Use Past 30 Days	81	13	18.5	
Alcohol Use Days Per Week	13	---	---	2.46
Alcohol Use Average Number of Drinks	8	---	---	3.88
Alcohol Use Max Drinks One Occasion	8	---	---	5.0

In this pilot study, we used this data as a descriptive measure of our sample. We did not directly collect data from consumers regarding alcohol or tobacco use. In the future, it may be useful to include questions regarding these measures on the consumer demographic form. Additionally, it may be interesting to inquire about drug use to obtain a more complete understanding of substance use in the sample.

Consumer Hospitalizations

DHS provided a complete list of all enrolled consumer hospitalizations since June 2013. We analyzed hospitalizations between the period of January 2014 and March 2015. The reasoning for using hospitalization data starting in January 2014 was to ensure that the pre-intervention timeframe was the same length as the intervention to prevent inflation of pre-intervention hospitalization totals. The timeframes designated as follows:

- Pre-intervention: January 2014 – June 2014
- During-intervention: July 2014 – December 2014
- Post-intervention: January 2015 – Current (most recent hospitalization was March 2015)

The table below shows the total number of hospitalizations divided into mental health inpatient hospitalizations, medical hospitalizations, and total number of hospitalizations (mental health and medical combined).

Table 12. Consumer Hospitalizations

CONSUMER HOSPITALIZATIONS	PRE	DURING	POST
Total Number of Hospitalizations	35	19	10
Number of Mental Health Inpatient Hospitalizations	21	9	6
Number of Medical Hospitalizations	14	10	4

Statistical analysis using the Wilcoxon signed-rank test for hospitalization data revealed the following significant findings:

- The total number of psychiatric hospitalizations during the intervention (July 2014 – December 2014) was **significantly lower** than the total number of psychiatric hospitalizations during the pre-intervention timeframe (January 2014 – June 2014) ($W = 41.0$, $p = 0.05$).
- The total number of hospitalizations (combined psychiatric and medical) during (July 2014 – December 2014) the intervention timeframe was **significantly lower** than the total number of hospitalizations during the pre-intervention time frame (January 2014 – June 2014) ($W = 114$, $p = 0.04$).
- The total number of medical hospitalizations during the intervention time frame (July 2014 – December 2014) was not significantly different from the pre-intervention timeframe (January 2014 – June 2014) ($W = 49.5$, $p = 0.54$). However, the total number of medical hospitalizations post-intervention (January 2015 – March 2015) was **significantly lower** than the total number of medical hospitalizations pre-intervention ($W = 5.0$. $p = 0.02$). It should be noted, however, that the data we received for the post-intervention timeframe covered a shorter timeframe (3 months) than the pre-intervention timeframe (6 months).

In summary, data for consumer hospitalization shows that participation in I-IMR has the potential to reduce medical and psychiatric hospitalizations for consumers but this finding will need to be explored by comparing I-IMR to usual treatment or an active control group. Reducing the number of consumer hospitalizations improves consumer quality of life and is one important factor in reducing the cost of treatment.

Overall Project Evaluation

Strengths

This project was a pilot study of the implementation of an integrated treatment on an ACT team. The primary goal of the pilot study was to test the feasibility and tolerability of the I-IMR intervention in an ACT team setting and to explore the potential mental and physical health benefits of an integrated intervention for people with SMI. One positive outcome of this study was the training of 42 ACT practitioners in I-IMR. The I-IMR training and supervision showed significant improvements in ACT practitioners' confidence to use integrated skills with consumers. They were successfully able to implement the intervention with 123 ACT consumers. The consumers enrolled in I-IMR received the intervention in a variety of formats (individual, group, and a combination) and at the six-month evaluation there was a small sample (n = 30; 20%) that dropped out or were unable to be located. Consumer outcomes showed improvements in hospitalizations, both medical and psychiatric, and psychiatric illness self-management. Physical self-efficacy needs further evaluation but the results from this pilot study suggest that consumers may need to have at least a three-month exposure to the intervention to make sustainable changes to physical health self-management.

Overall, the results from this pilot study suggest that I-IMR is feasible to implement on an ACT team and I-IMR has a strong potential to improve both consumer psychiatric and physical health self-management. The ACT practitioners that implemented I-IMR benefited positively from the training and technical assistance provided through consultations. The consumers that participated reported improvements in self-management that was confirmed in the reports from the practitioners. The reductions in consumer hospitalizations may indicate the first stages of improving integrated mental and physical health management. Since the physical health measure of self-efficacy was only significant for persons with twelve or more sessions, this data along with the hospitalization data suggests that consumers could benefit from longer exposure to I-IMR. The reductions in hospitalization suggest that consumers are taking the first steps to improving integrated health management and outcomes.

Limitations

The major limitation of this pilot project was the short intervention period of six-months. Consumers reported fewer gains in physical health self-management as compared to psychiatric illness self-management. We believe that with a longer intervention period consumers would have reported greater improvements in physical health self-management. Extending exposure to I-IMR longer than six months may also contribute to greater improvements and greater sustainability of improvements over time.

Another limitation of this pilot project is the lack of a control group for comparison. Improvement in outcomes could have been influenced by time or exposure to additional interventions. It would be helpful in future studies to compare consumers participating in

I-IMR to a control group and to an active treatment group to explore the added benefits of the I-IMR intervention.

Future research could explore additional targets and outcomes for improvements in physical health illness self-management. In addition, future studies should consider a longer intervention exposure and evaluation period because of the challenges of addressing more than one illness and the extended change process often associated with improvements in physical health.

Sustainability

This pilot project did not include a follow-up to assess for maintenance, so it is unknown if practitioners continued to adhere to the I-IMR model following the study. However, there is a potential to explore the sustainability of I-IMR in future studies, which could help better understand the added benefits of I-IMR to physical health. Additionally, there was a significant improvement in practitioner confidence between baseline and post-intervention, but it is unclear how these improvements will be sustained with the lack of access to technical assistance. During the intervention, practitioners received consultations from MNCAMH staff to provide guidance and troubleshoot problems that may have come up during the implementation of I-IMR. The technical assistance was utilized by all participating ACT teams and likely contributed to the increase in practitioner confidence.

Practitioners may require continued training to maintain the skills for implementing I-IMR. Consultants noted that one of the main concerns for practitioners was grasping the physical health component of I-IMR. Given that most of the time in consultation was devoted to this topic and the majority of sessions focused on module 3 (Practical Facts about Mental and Physical Illness), practitioners may benefit from ongoing training regarding the physical health components of integrated care. One potential way for agencies to continue education in the physical health needs of consumers might be for agency nurses to conduct brief trainings or meetings with mental health practitioners on a regular basis to review basic physical health knowledge (monitoring blood pressure, when to notify a doctor of low blood sugar, promoting healthy lifestyle, etc.) and answer any questions practitioners may have regarding the physical health of consumers.

As noted in the discussion regarding consumer hospitalizations, the data we received for the post-intervention timeframe only covered three months (January 2015 through March 2015). The timeframes for the pre-intervention timeframe and the during-intervention timeframe were six months each. In order to make stronger claims regarding the ability of I-IMR to sustain improvements overtime, we would need to reassess data for the post-intervention, including data through June 2015.

Lessons Learned

One of the major strengths of this pilot study was the relatively large sample size and high retention rate. Considering the high retention rate, it appears that I-IMR was widely

embraced by consumers. One major limitation of this study was the short intervention period. In addition, the amount of physical health variable data provided was not sufficient to detect change in the sample.

The list below includes priority recommendations for future studies:

- Plan for a longer and more individualized exposure to I-IMR
- Evaluate ways to obtain a more complete dataset of health variables for participants
- Exploring the differential benefits of I-IMR to consumers with a diagnosed physical health condition compared to participants who may be at risk of developing a physical health condition
- Exploring the benefits of implementing I-IMR in an individual setting, group setting, and combined setting
- Implementing practitioner education on basic health information and physical illnesses on an ongoing basis to increase the integration of mental and physical health self-management for consumers

Next Steps

The results of this pilot project are promising. The I-IMR ACT pilot study found that I-IMR can be implemented on ACT teams and showed positive results for improving practitioner confidence in delivering an integrated intervention and positive results of decreases in hospitalizations for consumers. We recommend that future projects compare I-IMR with existing treatment to understand how I-IMR compares to usual care. We also recommend exploring how to expand these findings and sustain improvements in illness self-management with a longer exposure to the intervention and a six-month follow-up after completing the intervention.