

Impacts of Implementing a Forensic Treatment Mall: A Program Evaluation

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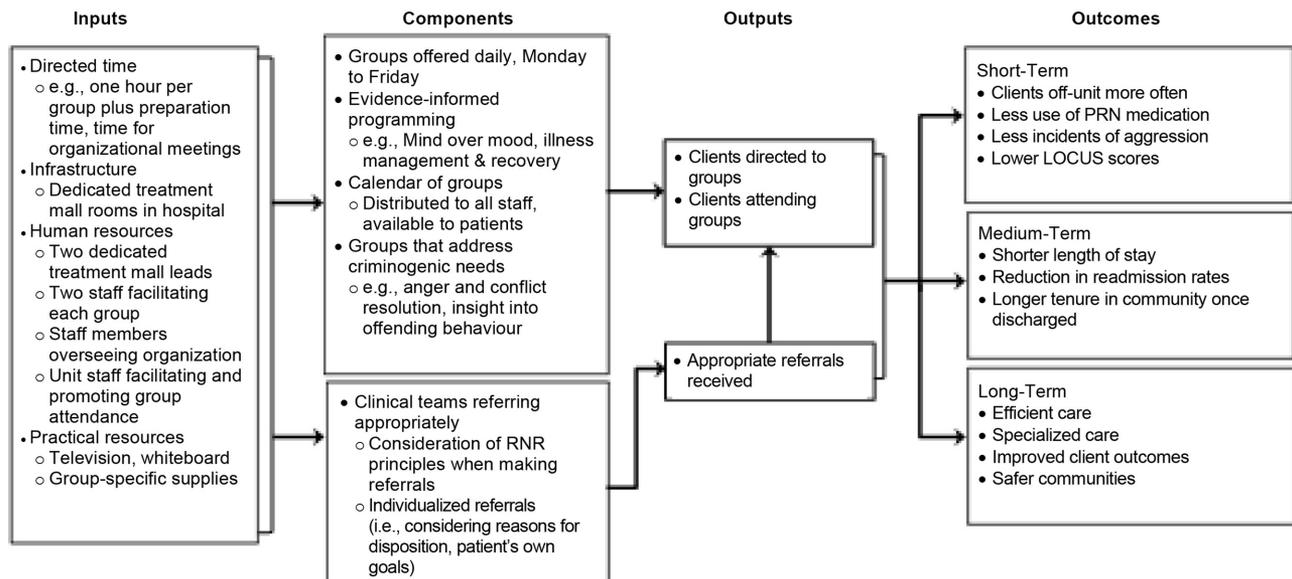
Psychiatric in-patients need programming and clinical interventions to support recovery and gradual re-integration into the community. Treatment malls are designed to meet these needs by offering psychosocial, person-centred rehabilitation groups in a centralized setting. Evidence suggests this treatment model increases patient engagement, broadens social networks, and improves functioning. Given this, our hospital implemented a treatment mall in our forensic services department in 2018. Because this was a new initiative at our hospital and the lack of outcome data on treatment malls in Canada, we conducted a program evaluation to explore the effects of the treatment mall and identify possible areas of improvement. Guided by a logic model, this evaluation used a retrospective chart review. Variables of interest included patient engagement, psychotropic pro re nata (PRN) administration, recovery scores, time spent off unit, elopement, use of restraints and seclusion, and patient activity levels. We assessed whether these changed post-implementation of the treatment mall. The results provide preliminary evidence of the positive effects of the treatment mall. Patient engagement and time spent off unit increased. Maintenance of changes and long-term outcomes remain to be seen; however, this evaluation provides support for the continued use and investigation of the treatment mall for our forensic services department.

Key words: *treatment mall, psychosocial rehabilitation, in-patients, treatment, forensic services*

The treatment mall is an integrative model of in-patient psychiatric care involving psychosocial treatments delivered in a centralized physical space (Matthews et al., 2015). It provides comprehensive and evidence-based treatment to psychiatric in-patients off-ward, allowing for occupational engagement, improved preparation for community living, and broadened social networks and opportunities to engage with others. These services are often provided in a classroom setting by a multidisciplinary team (Matthews et al., 2015). This set-up allows for greater use of staffing resources (Dhillon & Dollieslager, 2000), increased programming and treatment offerings (Holland et al., 2005), and greater patient engagement (Bopp et al., 1996). Indeed, treatment malls allow patients access to the hospital's full complement of treatment and rehabilitation

services rather than only those provided on their own units. This increased engagement is noteworthy as prior research has found that involvement in treatment is positively correlated with functioning (Brekke et al., 1999). Treatment malls implemented in forensic psychiatric facilities can use the Risk-Need-Responsivity (RNR) model, which posits that services should directly address criminogenic needs and be tailored to match a patient's level of risk and their ability to respond to an intervention (Bonta & Andrews, 2007). Accordingly, programming should include interventions focused on reducing pro-criminal attitudes, self-management skills, and substance misuse (Bonta & Andrews, 2007). Initial investigations on treatment malls have largely been positive. Participants report increased confidence, improvements in emotion regulation, and a better

Figure 1
Logic Model



understanding of their mental illness (e.g., Estrella et al., 2019). However, despite the growing positive feedback, there remains a lack of literature evaluating the effectiveness of treatment malls.

Because the treatment mall was a new initiative at our hospital and the lack of outcome data of treatment malls—especially in Canada—we determined it crucial to explore both its effects and possible areas of improvement. This paper reports on the initial outcomes as guided by our logic model (see Figure 1). Based on the literature and our clinical expertise, we hypothesized that post-implementation of the treatment mall, forensic patients would (relative to pre-implementation):

1. be off the units more often;
2. have lower Level of Care Utilization System (LOCUS) scores;
3. have higher Recovery Assessment Scale (RAS) scores;
4. have less psychotropic pro re nata (PRN) medication administrations; and
5. have less aggression incidents.

The links in the model indicate only associations. Claims of causality are beyond the scope of our evaluation as this was a small program evaluation without a control group. Our logic model hypothesizes that implementation of the treatment mall would be associated with a variety of outcomes, ranging from short to long term. Our evaluation serves as an initial look at the early effects and, as such, only short-term measures were evaluated. Of

the limited literature available, most studies report on the design (Dvoskin et al., 2002), implementation process (Holland et al., 2005), or satisfaction with treatment malls (Ballard, 2008) rather than effect, which prompted us to publish our evaluation.

Method

Design

We used a retrospective chart review. Variables of interest were collected from patients' electronic health records at three specified times. As this was not a research study, it was exempted from an ethics review.

Pre-implementation variables were collected for the period running January 2018 to March 2018 (Time 1). Post-implementation variables were collected for two times: January 2019 to March 2019 (Time 2) and December 2019 to February 2020 (Time 3). Time 3 was shifted a month earlier than originally planned due to unanticipated changes implemented in March 2020 in response to the COVID-19 pandemic. We believed that the data from March were compromised and confounded by external factors, and thus shifted the measured time to reduce this potential confound.

We have included two follow-up times for several reasons. First, with any new initiative, growing pains during initial stages of implementation often inform adjustments that are later incorporated and, as such, the full effects of the initiative may take

time to become evident. In addition, collection of more data allowed an opportunity to assess the process of change. We reasoned that the paradigm would allow an opportunity to assess whether changes were linear (i.e., steady increases from Time 1 through to Time 3) or whether some changes took time to manifest (i.e., becoming evident only after two years).

Treatment Mall

Our facility is a public psychiatric hospital located in Ontario, Canada. This project involved the forensic in-patient program, which provides assessment, treatment, rehabilitation, and community re-integration services to patients deemed unfit to stand trial or not criminally responsible on account of mental disorder (NCR).

Traditionally, rehabilitative programming for forensic patients at our hospital was decentralized and unit specific. This meant that patients only had access to certain groups. Before implementing the treatment mall, a program-wide survey was conducted to determine current and previous group offerings, and what patients were interested in participating in. The RNR model was adopted as a guiding framework. For example, care was taken to include groups addressing criminogenic needs. Staff applied RNR principles when referring patients to groups to ensure the group matched their learning needs or risk level. The Good Lives Model (GLM), which capitalizes on patient strengths and goals (Ward & Gannon, 2006), guided programming decisions to help adopt a strengths-based and personalized approach to care. Groups for the initial cycle were determined by considering the priority needs of patients from the perspective of risk management and recovery, which programming would likely maximize patient attendance, and clinicians' ability to facilitate them.

The groups offered through the treatment mall fall under four categories and include:

- Risk Reduction
 - Anger and Conflict Resolution
 - Wellness Recovery Action Plans (WRAP)
- Education
 - Navigating the Forensic System
 - Discharge 101
- Psychotherapy
 - Cognitive Behavioural Therapy for Psychosis
 - Cognitive Restructuring Therapy
- Therapeutic Recreation
 - Explore Your Senses
 - Expressive Art Therapy

Groups were facilitated by the interdisciplinary team, including psychologists, behavioural therapists, occupational therapists, social workers, and recreational therapists. Facilitators were chosen based on credentials and areas of interest. Two facilitators led each group. Each group typically included eight participants.

Participants

The sample includes data from 244 adult forensic in-patients, most of whom were male with a primary diagnosis of a psychotic disorder. All patients had been found NCR for illegal, violent behaviour and given a detention order, which resulted in their admission to our facility.

We did not distinguish between patients who had participated in the treatment mall and those who had not, but rather included everyone to examine the overall effect of this initiative on the forensic program. This was due in part to sample size. If we included only those who had participated, the small sample size would contraindicate subsequent statistical analyses. Moreover, our logic model—which serves as the basis of this evaluation—predicts program-wide outcomes rather than outcomes specific only to treatment mall participants. In the first year of implementation, 105 patients (43%) participated (i.e., completed at least one group). We do not have participation rates for the subsequent (i.e., second) year of implementation but believe rates were similar.

Data Collection

Data were collected from electronic health records for each specified period. Extracted variables are described below.

Defined Variables

Incidents of Aggression. This variable was the number of staff-documented aggressive incidents for a given patient. Aggressive incidents were defined as behaviours carried out with the intent to harm and could have or did result in harm to a person or property (e.g., violence, threats of violence, use of weapons).

Absent Without Leave (AWOL) Incidents. This variable was the number of times a patient eloped from their designated unit without off-unit privileges. These privileges are determined by the patient's Ontario Review Board (ORB) disposition and used at the discretion of the care team.

Level of Care Utilization System (LOCUS). The LOCUS (American Association of Community Psychiatrists, 2009) is designed to help staff working with patients in psychiatric facilities determine

the level of care that a patient should receive. An individual is scored on six parameters from 1 to 5, with higher scores indicative of more difficulties. Research has found this tool to be reliable and effective (Sowers et al., 1999). At our hospital, patients are scored monthly by care teams. The following two parameters were collected for this evaluation:

- **Engagement and Recovery:** An individual's understanding of their illness and the treatment plan to manage their illness, as well as willingness and ability to engage in the recovery process. This was assessed on a scale from 1 (optimal Engagement and Recovery) to 5 (unengaged and stuck).
- **Functional Status:** Degree to which an individual can fulfill social responsibilities, interact with others, and maintain capacity for self-care. This was assessed on a scale from 1 (minimal impairment) to 5 (severe impairment).

Psychotropic PRN Medication Administrations. PRNs are medications administered as needed, meaning that they can be requested by the patient or recommended by their care team provided the patient consents. For this evaluation, we examined PRNs administered for psychotropic reasons (i.e., supporting mental state), rather than other indications (e.g., physical pain, allergies). The variable we used in our evaluation was the number of PRN administrations throughout the specified period.

Recovery Assessment Scale (RAS). The RAS is used to assess patient recovery and improvements. Patients describe themselves using a five-point agreement scale (1 = strongly disagree; 5 = strongly agree) on 41 items. Example items include "I have a desire to succeed" and "Coping with my mental illness is no longer the main focus of my life." A review of psychometric properties supports use of the RAS (Salzer & Brusilovskiy, 2014). At our hospital, patients completed the RAS about monthly.

Restraint and Time Spent in Seclusion. This variable was coded as the total minutes of mechanical restraints and seclusion used for a patient in each period. Seclusion refers to confinement to a designated room or area to manage unsafe behaviours. Mechanical restraint refers to an appliance restricting free movement and is attached to or worn by the patient to prevent harm to themselves, others, or both. Restraints and seclusion are used as a last resort and for the shortest possible duration.

Time Off Unit. The number of times a patient left their unit was used as a proxy for time spent off the unit. This measure only applies to those in minimum security who were deemed clinically able to leave the unit and have the condition in their

Table 1
Means and Standard Deviations of Specific Measures in the Forensic Inpatient Program Before and After Implementation of a Forensic Treatment Mall

Pre-Implementation (Time 1)			
	<i>n</i>	<i>M</i>	<i>SD</i>
Aggression incidents	31	2.10	1.94
AWOL incidents	4	1.25	0.50
Engagement & Recovery	99	3.76	0.96
Functional Status	99	3.32	0.76
PRN administrations	59	2.95	2.34
RAS total score	59	98.61	16.24
Restraints and seclusion minutes	12	2,839.50	4,511.71
Time off unit	107	165.88	142.56
Post-Implementation 1 (Time 2)			
	<i>n</i>	<i>M</i>	<i>SD</i>
Aggression incidents	30	2.27	2.08
AWOL incidents	4	2.00	0.82
Engagement & Recovery	95	3.43	0.94
Functional Status	96	3.06	0.81
PRN administrations	71	4.52	3.76
RAS total score	59	98.26	16.77
Restraints and seclusion minutes	13	1,866.54	1,394.79
Time off unit	97	162.89	137.09
Post-Implementation 2 (Time 3)			
	<i>n</i>	<i>M</i>	<i>SD</i>
Aggression incidents	28	3.04	3.35
AWOL incidents	7	1.14	.38
Engagement & Recovery	101	3.45	1.06
Functional Status	101	2.97	.85
PRN administrations	60	3.67	3.76
RAS total score	53	100.27	14.80
Restraints and seclusion minutes	12	1,703.08	2,251.49
Time off unit	92	225.67	184.03

disposition order. This time also included time they may have spent in a treatment mall group.

Data Analysis

We wanted to assess whether variables of interest changed across the three timepoints. However, there was substantial missing data as

Table 2
Paired t-tests of Specific Measures in a Forensic Inpatient Program Before and After Implementation of a Forensic Treatment Mall

Pair 1: Time 1 and Time 2	t	df	p	d
Engagement & Recovery	3.98	46	< .01	.58
Functional Status	3.73	46	.001	.54
RAS total score	.291	17	.78	.07
Time off unit	-1.16	57	.25	.15
Pair 2: Time 1 and Time 3	t	df	p	d
Engagement & Recovery	2.84	35	.01	.47
Functional Status	2.35	35	.03	.39
RAS total score	-1.17	8	.28	-.39
Time off unit	-3.75	30	.001	-.67
Pair 3: Time 2 and Time 3	t	df	p	d
Engagement & Recovery	-.35	60	.73	.04
Functional Status	.39	60	.70	.05
RAS total score	1.42	19	.17	.32
Time off unit	-2.20	50	.03	-.31

only a small proportion of patients engaged in the treatment mall during all three timepoints. This was managed through pairwise deletion, precluding certain statistical analyses (i.e., analysis of variance [ANOVAs]) for several variables, namely Engagement and Recovery (LOCUS), Functional Status (LOCUS), RAS, and time off unit. For these variables, we conducted paired *t*-tests to assess differences pre- and post-program implementation. Specifically, pre-program data (Time 1) were compared with Time 2 (January to March 2019) and Time 3 (December 2019 to February 2020) post-program data. An alpha of .05 was used for all analyses. Cohen's *d* effect sizes are reported for *t*-tests, with .2, .5, and .8 reflecting small, medium and large effect sizes, respectively (Cohen, 1988). The means and standard deviations presented in Table 1 reflect the entire sample, whereas results discussing the *t*-tests include only those for which there were sufficient data for inclusion in these analyses. As such, some differences in descriptive data are to be expected.

To standardize results and facilitate future comparisons, variables were transformed into scores that represented rates per 1,000 occupied beds. This was done for each of the following variables: time off unit, minutes in restraint or seclusion, aggression incidents, AWOLs, and PRN administrations. We compared data from pre-implementation to two

post-implementation periods to assess whether changes occurred.

Paired *t*-tests were used to assess changes from year to year. Time 1 measurements were compared to Time 2 measurements, Time 1 to Time 3, and finally, Time 2 to Time 3.

Results

Descriptive statistics are presented in Table 1. Table 2 summarizes the results of the paired *t*-tests.

The results of the paired *t*-tests between Time 1 and Time 2 revealed that only LOCUS scores differed between timepoints. Specifically, Engagement and Recovery Status score at Time 1 ($M = 4.03$, $SD = .85$) decreased by Time 2 ($M = 3.35$, $SD = 1.03$, $t(46) = 3.98$, $p < .01$, $d = .58$). Similarly, the Functional Status score at Time 1 ($M = 3.43$, $SD = .61$) decreased by Time 2 ($M = 2.96$, $SD = .75$, $t(46) = 3.73$, $p < .001$, $d = .54$). In contrast, neither RAS score nor time off unit differed between timepoints.

For analyses comparing Time 1 with Time 3, several noteworthy results emerged. Unlike at the one-year mark (i.e., Time 1 vs. Time 2), after two years (i.e., Time 1 vs. Time 3), time off the unit significantly increased ($M = 143.65$, $SD = 132.00$ to $M = 282.87$, $SD = 213.77$, $t(30) = -3.75$, $p = .001$, $d = -.67$). LOCUS scores for the Engagement and Recovery Status parameter continued to stay lower

Table 3
Repeated Measures ANOVA of Specific Measures within the Forensic Inpatient Program

Effect	<i>n</i>	<i>MS</i>	<i>F</i>	<i>df</i>	<i>p</i>
Time (PRN)	46	17.31	2.39	2, 90	.10
Time (AWOL)	46	.01	.33	1.49, 67.25	.66
Time (Restraint & Seclusion)	46	2,328,154.91	.74	1.22, 55.07	.42
Time (Aggression)	45	.27	.30	2, 88	.74

than at Time 1 (from $M = 4.09$, $SD = .88$ to $M = 3.57$, $SD = 1.10$, $t(35) = 2.84$, $p = .01$, $d = .47$). Similarly, LOCUS scores for Functional Status were lower at Time 1 than Time 3 (from $M = 3.45$, $SD = .65$ to $M = 3.09$, $SD = .77$, $t(35) = 2.35$, $p = .03$, $d = .39$).

Finally, when Time 2 was compared to Time 3, no differences emerged for LOCUS or RAS scores. However, there was an increase in time off unit from Time 2 to Time 3 (from $M = 202.59$, $SD = 155.43$ to $M = 261.14$, $SD = 190.51$; $t(50) = -2.20$, $p = .03$, $d = -.31$).

A repeated measures ANOVA involving participants who engaged in the treatment mall at all three timepoints was conducted. Given the small number of such participants, analyses were limited to the following variables: PRN administration, AWOLs, minutes of restraints or seclusions, and aggressive incidents. Results did not reveal any significant changes; however, given the limited data available, this needs cautious interpretation. Table 3 summarizes these results.

Discussion

Overall, our program evaluation examined preliminary outcomes of shifting the existing treatment model in our forensic program to a treatment mall structure. One year after implementation, we found that patient engagement and function (i.e., LOCUS scores) improved. That is, patients were rated to have an improved understanding of their illness, ability to engage in recovery (Engagement and Recovery Status), or both and exemplified improved social, physical, and adaptive functioning (Functional Status). Although the improvement was maintained after the second year (i.e., Time 3), no further improvements were observed. To some degree, these findings are consistent with hypotheses stemming from the logic model: that the introduction of a new treatment model would support progress through the program and result in a decreased need for support over time. However, it is unexpected that improvements—while maintained after the second iteration—did not further

improve. Possible explanations for this may be that the positive benefit of treatment mall on LOCUS scores may have an upper limit, or there was human error with staff using this tool—although the demonstrated reliability of this tool (i.e., Sowers et al, 1999) and administration by trained members of the treatment team admittedly limits the possibility of the latter. Regardless, given that this finding was unexpected, re-evaluation at a later juncture is prudent.

Similar to prior observations (Webster & Harmon, 2006), there were no changes in aggressive incidents over time. This runs contrary to hypotheses, but the lack of increase bears consideration. Indeed, aggressive incidents did not increase despite changing the location and structure of group delivery despite patients attending a central area and interacting with those from other units. This is important as it dispels the notion that patients' risk for violence is best managed by restricting them to their units and not permitting off-unit programming attendance.

Finally, the number of times patients were off unit did not change between Time 1 and Time 2 but did increase from Time 2 to Time 3. This suggests that the treatment mall may have helped patients better use privilege levels. It appears that this change required time (i.e., two years) to manifest. In offering a potential reason as to why this may be, consider that changes in privileges also take time. A patient must first demonstrate improvements to sufficiently convince the care team that increased access to privileges would not cause additional risk. Moreover, if the ORB has not yet granted a patient off-unit privileges, it may take at least one year for this to be added to one's disposition, which may also account for the observed lag. Nonetheless, that a change over time has been found (despite the delay in its emergence) is promising. It stands to reason that clients who are permitted to leave their unit and do so without issue are more likely to be behaviourally activated and engage in healthy behaviours (e.g., socializing, physical activity).

Limitations

Our evaluation presents with limitations that should be acknowledged. Firstly, given organizational constraints, the treatment mall was implemented across the entire forensic program without a control group. Our ability to draw strong, generalizable conclusions is thus weakened. It is possible that simply placement in a psychiatric facility with access to medical care and attention may lead to positive change over time. However, a pre–post evaluation design is nonetheless common in research conducted in real-world environments. Moreover, our evaluation is meant to be preliminary. Its purpose was to provide initial data to support continued exploration in this area. To this end, the current results—albeit not widely generalizable at the present time—nonetheless support the idea that treatment malls merit continued investigation. We certainly hope that future investigations employ a more controlled evaluation paradigm.

In addition, our results are subject to real-world factors (e.g., limited quality control for data collection, staffing), which limit data accuracy. For example, we were unable to measure the exact number of minutes each patient was off unit but rather constructed a proxy by using the number of times a patient signed out of their units.

Furthermore, the recorded amount of time a patient was kept in restraints, seclusion, or both may be skewed by documentation practices (e.g., documenting discontinuation of seclusion several minutes after it happens) or clinical practices (e.g., a patient in seclusion being permitted a short walk accompanied by staff). The reduced accuracy of data limits our ability to accurately assess changes over time. The incidence of restraints and seclusion was also subject to an organizational effort to reduce this practice, so changes to this variable cannot be fully credited to the treatment mall.

Additionally, some variables had very low occurrences (e.g., AWOLs). The statistical analyses employed are not well-equipped to assess incidents occurring at such low base rates.

Future investigation would benefit from minimization of the effect of the real-world factors described above. For example, offering refresher training for staff about documentation practices may be effective. Moreover, to the extent that future evaluation iterations will have access to more data (by virtue of having more time to accumulate the same), analyses may be better able to speak to low-frequency events (i.e., AWOLs), and a larger dataset will minimize the undue influence of any anomalous scoring.

Another limitation relates to our sample. We

included all in-patients in the forensic program, even though only a subset participated in the treatment mall. Indeed, most patients did not participate due to a variety of reasons, including mental health status, risk, and apathy. On the one hand, that we were able to detect significant changes despite inclusion of nonparticipants is promising. It appears possible that such individuals may have indirectly benefited from the active behaviour of others (patients and staff). Stated differently, it may be that there was a spillover effect that positive changes in some had a positive effect on others. However, an alternative explanation is that inclusion of nonparticipating in-patients may have attenuated observed results. That is, it may well be that participants experienced greater improvements than demonstrated in our evaluation, as inclusion of nonparticipants weakened the strength of observed changes. It is unfortunate that our sample size was insufficient to assess changes among only those who participated in treatment mall programming. However, that we did nonetheless find changes despite this potential attenuation supports continued investigation of treatment malls as a viable treatment model. We hope that future investigations will be able to evaluate patterns both across and between participants and nonparticipants. In addition, to obtain novel insights on participants, benefit may come from exploration of their self-reported gains and overall functioning following completion of treatment mall participation, along with a qualitative analysis of their overall experiences with treatment mall.

Finally, there were substantial missing data. While we used pairwise deletion to manage missing data, the small sample size limited statistical analyses. While it would have been ideal to conduct ANOVAs for all variables, there were insufficient patients for whom data was recorded at all three timepoints. As such, only paired *t*-tests could be conducted for several important variables. This was not ideal for various reasons, primary among which are increased probability of Type 1 error and preclusion of trajectory analyses. Moreover, it hampers the generalizability of our evaluation. Despite this, we contend that given the unavoidable limitations of our dataset and the lack of Canadian outcome data, our evaluation remains informative. However, we will certainly strive to reduce the frequency of missing data for future evaluations.

Clinical Implications

The results of our investigation provide preliminary data suggesting that treatment malls may increase patient engagement and activity. To

be sure, observed improvements were limited to certain domains (i.e., Engagement and Recovery Status, Functional Status, time off unit); however, such changes are nonetheless promising. Previous research on behaviour change found that changes in one domain may inadvertently promote change in others, due in part to improved motivation (Truelove et al., 2014). We believe that the positive experiences of patients who participated in the treatment mall programming may affect how they subsequently interacted with other patients and staff members, how they managed their symptoms on the units, how they influenced the perspectives of staff, or any combination of these.

We did not see hypothesized changes in PRN medication. This has influenced our team to review the existing programming and offer additional groups that target distress tolerance and emotional regulation skills for subsequent iterations.

Overall, the results of our evaluation, albeit preliminary in nature, provide initial support for the continued investigation of the treatment mall as a viable treatment model in in-patient forensic psychiatric programs. However, despite this initial positive prognosis, we caution that continued evaluative work is prudent. The scope of our evaluation was to assess the short-term effects. Per our logic model, however, we also anticipated there to be medium-term and longer-term effects associated with this treatment model structure. Specifically, we hypothesize that patients will have shorter lengths of stay, reduced re-admission rates, and longer tenure in the community once discharged, and that these will in the longer-term promote safer communities. We plan to investigate the identified medium-term variables beginning in the fifth year post-implementation, and in doing so, heed the call of others to evaluate and report on the long-term outcomes associated with treatment malls (Matthews et al., 2015).

Conflict of interest: none

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