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Short communication

A preliminary evaluation of the effectiveness of massed delivery of PTSD psychotherapy in VA residential treatment

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ABSTRACT

Objective: "Massed" (≥ 3 times a week) delivery of psychotherapy for posttraumatic stress disorder (PTSD) has emerged as an alternative to traditional "spaced" (weekly/bi-weekly) delivery. Massed delivery has been shown to be non-inferior to spaced delivery, with higher rates of treatment completion. This pilot project evaluated the effectiveness of massed delivery in Department of Veterans Affairs (VA) PTSD Residential Rehabilitation Treatment Programs (RRTPs).

Method: A massed treatment program called Models of Accelerated Service Delivery (MASD) was piloted in six RRTPs. Data from Veterans who received either MASD or non-MASD delivery at a pilot site between 10/2022–09/2023 were included in this evaluation (n = 466). Veterans received PTSD symptom assessment at admission, discharge, and 1-year post-discharge. A hierarchical linear modeling (HLM) approach was used to evaluate trajectories of PTSD symptom change between delivery approaches.

Results: Veterans who received MASD delivery of PTSD psychotherapy had significantly shorter lengths of stay as well as higher rates of treatment completion. Veterans participating in RRTP treatment experienced symptom attenuation, with no observed differences in the trajectory of symptom change between delivery approaches.

Conclusions: This pilot project provides preliminary support for the MASD program in residential treatment. Further research is needed to understand how treatment decisions are made by clinicians and Veterans.

1. Introduction

Trauma-focused evidence-based psychotherapy (TF-EBP) is recommended for treating posttraumatic stress disorder (PTSD; [1]). Evidence suggests that fewer days between therapy sessions can be associated with greater PTSD symptom improvement [2] as well as lower rates of dropout [3]. Consistent with this, clinical trials have shown that "massed" (e.g., intensive administrations multiple times a week) delivery of TF-EBP are at least non-inferior to traditional "spaced" delivery (e.g., weekly or bi-weekly administration) with lower rates of drop-out [4–7]. To date, massed delivery has been implemented largely within intensive outpatient programs with promising findings. Indeed, several studies have noted strong effectiveness and low rates of attrition in intensive outpatient programs [8–11].

While increasingly established as effective in outpatient care, it remains unclear how massed delivery translates to residential treatment

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programs, which are designed to meet the needs of clinically complex individuals [12]. Although some of the IOP programs providing massed treatment may offer overnight housing at local facilities (e.g., Harvey et al., 2017; [13]), the residential level of care is distinct. More specifically, these residential programs offer care for individuals whose treatment needs exceed what can be offered in an outpatient care setting and includes a structured environment with 24/7 supervision and support from staff [12]. For example, residential treatment settings provide programing targeted at minimizing the impact of psychiatric comorbidity and therapy-interfering behaviors and therefore maximizing the potential for therapeutic benefit [12].

The Department of Veterans Affairs (VA) is uniquely equipped to treat such clinically complexity among Veterans with PTSD. Consistent with the mission of VA to address PTSD among those who have served, VA has a nationwide network of PTSD Residential Rehabilitation Treatment Programs (RRTPs). VA PTSD RRTPs offer access to PTSD treatment, associated health services (e.g., primary care), and adjunctive care focused on factors which may impact the Veteran's ability to engage in trauma-focused treatment (e.g., substance use disorder programing) in a residential setting with VA staff.

VA piloted a massed (i.e., *Models of Accelerated Service Delivery* [MASD]) program in six VA PTSD RRTPs[1] to enhance available programing by providing briefer treatment with the potential for rapid symptom relief while minimizing drop out. To understand the benefits of a MASD approach, this paper will evaluate the effectiveness, as well as associated characteristics (e.g., length of stay, dropout, serious adverse events), of MASD and non-MASD (traditional delivery of PTSD treatment in VA PTSD RRTPs) delivery of PTSD psychotherapy.

2. Method

2.1. Study cohort and delivery approaches

Data for all Veterans admitted to one of the six pilot VA PTSD RRTPs in fiscal year 2023 (10/2022–09/2023) were included in this evaluation (n = 466). Veterans received either MASD (n = 260) or non-MASD treatment delivery (n = 206). For the purpose of this evaluation, non-MASD delivery represents typical VA PTSD RRTP treatment as usual [14]. In VA PTSD RRTPs, TF-EBP is core to treatment, with TF-EBP sessions provided 1–2 times per week. Veterans also receive adjunctive treatments targeting comorbidities (e.g., substance use disorders) or developing coping skills. Specific interventions (including the type of TF-EBP) are selected based on shared decision-making. In contrast to non-MASD delivery, Veterans in the MASD delivery cohort received four TF-EBP sessions per week. As such, the TF-EBP treatment density is the only prescribed difference between the MASD and non-MASD treatment approaches. Mirroring aforementioned treatment selection, Veterans were assigned to receive either non-MASD or MASD treatment following shared decision-making between the treatment team and Veteran. More specifically, Veterans received an individualized treatment plan based on clinical presentation. In addition, all providers were trained in various evidence-based treatments, including TF-EBP. Finally, Veterans receiving MASD delivery could be transferred to non-MASD delivery based on the recommendation of their treatment team. The limited number of Veterans who transferred from MASD to non-MASD delivery (n = 4; 1.51 %) were included in the non-MASD cohort for all analyses.

2.2. Measures

Each Veteran received an intake packet which assessed PTSD symptoms using the PTSD Checklist for DSM-5 [15]. PTSD symptoms were then re-assessed at discharge and at 1-year post-discharge. At discharge, providers indicated whether they provided a TF-EBP during the RRTP as well as the type(s) of treatment that was delivered during the VA PTSD RRTP (e.g., cognitive processing therapy, prolonged exposure therapy, eye movement desensitization and reprocessing, written exposure therapy). Age, sex, length of stay, severe adverse events (e.g., suicide attempt, drug overdose), and program completion (based on provider report) were also collected from administrative data. All procedures were approved by the local Institutional Review Board.

2.3. Analytic approach

Sex, age, length of stay, PTSD symptom severity at each timepoint, and serious adverse events were compared between Veterans participating in MASD vs. non-MASD treatment (t-test [continuous]; chi-square analyses [categorical]). Given its ability to model data with high levels of missingness, a hierarchical linear modeling approach was used to evaluate trajectories of treatment response [16]. We evaluated several different growth curves (i.e., linear, quadratic, logarithmic) and modeling approaches (i.e., scaled identity, Topelitz, or unstructured covariance matrix). Intercept was set at program admission. A quadratic approach utilizing an unstructured covariance matrix and a maximum likelihood approach was found to the be the best fit for the data. Receipt of MASD vs. non-MASD treatment was nested within the growth curve. All statistical analyses were conducted using SPSS 29.0.

3. Results

Of the 466 Veterans, 260 (55.79 %) received MASD delivery of PTSD psychotherapy. There were no significant differences based on age or sex ($p > .05$) between veterans receiving MASD and non-MASD delivery. However, veterans receiving non-MASD delivery had higher initial PTSD symptom severity relative to those receiving MASD delivery (p = .016; see Supplementary Table 1). Length of stay was significantly briefer for Veterans receiving MASD (M = 28.30; SD = 13.11) versus non-MASD (M = 53.39; SD = 28.25; $p < .001$) delivery. Rates of completion were significantly higher for those in MASD (n = 204; 78.46 %) compared to those in the non-MASD (n = 138; 66.99 %; p = .006) delivery. Importantly, serious adverse events were rare for Veterans receiving either delivery approach, with no significant differences observed between groups (MASD: n = 2, 0.77 %; non-MASD: n = 4, 1.94 %; $p > .05$). Finally, receipt of a TF-EBP was high in both cohorts; however, those receiving MASD delivery were significantly more likely to receive a TF-EBP (n = 260; 100.0 %) compared to those receiving non-MASD delivery (n = 189; 91.75 %; $p < .001$).[2]

Hierarchical linear modeling results showed a significant effect of delivery type on the intercept, such that Veterans in non-MASD delivery had more severe PTSD symptoms at program admission (see Table 1, Fig. 1). However, delivery type did not significantly impact the quadratic growth curve, indicating a similar trajectory of symptom change between delivery approaches (see Table 1, Fig. 1). More specifically, regardless of delivery approach, Veterans experienced a steep attenuation of PTSD symptoms from admission to discharge, with a small recurrence in symptoms at 1-year post-discharge.

4. Discussion

This evaluation provides preliminary support that the MASD treatment program was effective in reducing PTSD symptoms among a clinically complex cohort of Veterans participating in VA PTSD residential treatment. More specifically, Veterans receiving MASD delivery

[1] Pilot sites were as follows: Battle Creek VA Medical Center, Bay Pines VA Health Care System, Gulf Coast Veterans Health Care System, Coatesville VA Medical Center, VA Black Hills Health Care System, and Kansas City VA Medical Center

[2] In a sensitivity analysis excluding Veterans in non-MASD delivery who did not receive TF-EBP, results were largely consistent with the primary analysis.

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Table 1
Hierarchical linear model comparing a quadratic growth curve of veterans receiving MASD versus non-MASD delivery of PTSD psychotherapy in VA residential treatment.

Variable	*b*	*SE*	*t*	*p*	95 % CI
Intercept	54.88	1.09	50.42	<0.001	52.74, 57.02
Linear time	−35.95	2.23	−16.15	<0.001	−40.33, −31.57
Quadratic time	12.03	0.77	15.59	<0.001	10.51, 13.55
MASD treatment	4.77	1.77	2.69	0.008	1.28, 8.26
MASD treatment x linear time	−1.33	3.54	−0.38	0.708	−8.29, 5.63
MASD treatment x quadratic time	0.55	1.23	0.45	0.652	−1.86, 2.96

Note. Intercept was set at admission and non-MASD treatment was coded as 1. CI = confidence interval; MASD = Models of Accelerated Service Delivery; PTSD = posttraumatic stress disorder; VA = Department of Veterans Affairs.

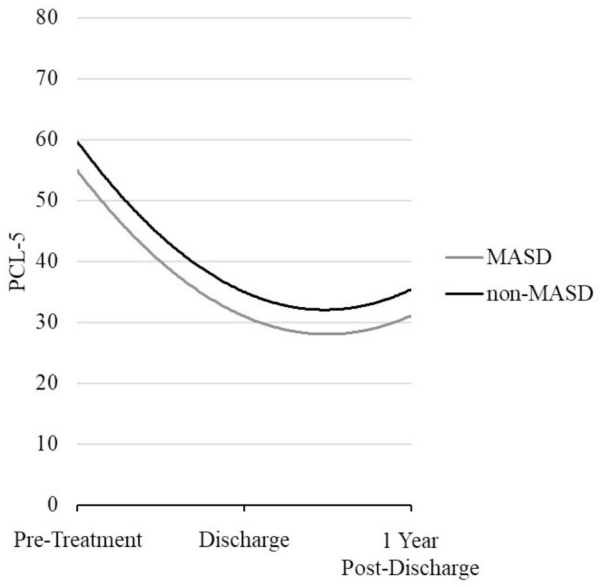


Fig. 1. PTSD symptom change among veterans receiving MASD versus non-MASD delivery of PTSD psychotherapy in VA residential treatment.
Note. MASD = Models of Accelerated Service Delivery; PCL-5 = PTSD Checklist for DSM-5; PTSD = posttraumatic stress disorder; VA = Department of Veterans Affairs.

not only responded similarly to those receiving a non-MASD delivery, they also did so in a much briefer length of stay. Moreover, Veterans receiving MASD delivery had few serious adverse events, and completed treatment at greater rates. Results are largely consistent with prior randomized clinical trials and evaluations of routine clinical practice conducted in outpatient settings. Taken in aggregate, these real world data add to existing clinical trial data to provide support that MASD may be a viable and effective treatment approach for residential PTSD care that can significantly reduce length of stay.

Veterans in the non-MASD approach cohort were significantly more symptomatic at admission. Providers may have concerns with providing MASD treatments to specific Veterans based on clinical judgment, including factors such as psychiatric comorbidity and suicide risk. Additionally, it is possible that Veterans with higher symptom severity are more reluctant to participate in MASD delivery. Given serious adverse events were rare, additional research to elucidate factors driving provider decision-making regarding MASD versus spaced delivery is needed.

Additionally, although similar trajectories between MASD and non-MASD approaches were observed, point estimates suggested stronger maintenance of gains from discharge to 1-year post-discharge in the MASD treatment condition. Importantly, HLM is better able to account for missing data and Veteran-level trends compared to these point estimates. However, given the preliminary nature of this evaluation, further research should explore whether potential differences in retention of treatment gains between delivery approaches exist.

Limitations should be noted. This study emphasized external validity, observing MASD delivery in routine clinical practice. This emphasis on external validity is often associated with threats to internal validity. As is common with routine clinical practice data, there was substantial missing data. MASD and non-MASD treatments are not specific treatment packages, and the types of treatments provided between these groups were likely not identical. Additionally, Veterans were allocated to delivery approach based on shared decision-making, rather than random assignment, and it is possible that selection bias impacts which delivery approach Veterans received. For example, Veterans in non-MASD treatment tended to have higher baseline PTSD symptom severity. Other unexamined factors may have had a significant effect on treatment trajectory (e.g., psychiatric and traumatic brain injury comorbidity; extent and type of trauma history [e.g., military sexual trauma]; concurrent psychosocial stressors [e.g., housing instability]; [17–19]). Finally, our sample was too small to evaluate the potential impact of some measured factors (e.g., site variability, variability in treatment approaches). Considering these limitations, findings are preliminary with need for further replication.

Despite these limitations, findings preliminarily support the utility of the MASD program in VA residential treatment settings. Such an approach has the potential to both expedite recovery and reduce length of stay, benefiting both Veterans and the efficiency of the VA system. Future research should investigate clinician and Veteran decision-making regarding MASD versus non-MASD delivery as well as potential moderators of treatment outcome.

CRediT authorship contribution statement

Ryan Holliday: Writing – original draft, Methodology, Funding acquisition, Formal analysis. **Nicholas Holder:** Writing – review & editing, Methodology. **Cynthia Yamokoski:** Writing – review & editing, Conceptualization. **Jennifer Burden:** Writing – review & editing. **Lauren M. Sippel:** Writing – review & editing. **Ilan Harpaz-Rotem:** Writing – review & editing. **Noelle B. Smith:** Writing – review & editing, Funding acquisition, Data curation.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.genhosppsych.2025.10.004.

Data availability

The authors do not have permission to publicly share data. Data available upon request and approval from regulatory bodies.

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