




# A Retrospective Pilot Study of Imagery Rehearsal Therapy Enhanced with Narrative Therapy Principles for the Treatment of Nightmares in US Military Veterans

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## Abstract

**Introduction** Chronic nightmares are a common and disabling feature of posttraumatic stress disorder (PTSD) for which broadly effective treatments are still lacking. While imagery rehearsal therapy (IRT) demonstrates benefits for patients with idiopathic nightmares and some patients with PTSD-related nightmares, research indicates it may be less beneficial for veterans. Narrative therapy (NT) is a form of psychotherapy which is client-centered and value-focused and has demonstrated benefits for PTSD patients. The application of NT principles to IRT may provide a valuable therapeutic approach for treatment in veterans.

**Objective** To perform a retrospective chart review of veteran clients participating in a novel, brief intervention developed by the first author consisting of IRT enhanced with NT principles (N-IRT) for the treatment of nightmares. The primary outcomes were nightmare frequency and intensity, and the secondary outcome was the impact of the intervention on nightmare distress and coping, subjective sleep quality, and overall PTSD symptoms.

**Materials and Methods** We conducted retrospective chart reviews for eight veterans referred to the first author for the treatment of nightmares, who completed N-IRT, including baseline and end-of-treatment measures. The protocol involved a single 60-minute NT-enhanced rescripting session and assigned homework to rehearse the

## Keywords

- ▶ PTSD related nightmares
- ▶ nightmares
- ▶ imagery rehearsal therapy
- ▶ narrative therapy
- ▶ PTSD in veterans

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revised dream script, and a follow-up evaluation 4 weeks later. The subjects completed a sleep and nightmare interview developed by the first author and the PTSD Checklist at baseline and after the intervention at the follow-up evaluation. Paired *t*-tests were conducted to test for pre-to-post differences.

**Results** In the statistical analysis, we observed a statistically significant and clinically meaningful reduction in the frequency ( $p=0.04$ ) and intensity of nightmares ( $p=0.001$ ) from pretreatment to the 1-month follow-up. Measures of nightmare-associated emotional distress, the ability to cope with nightmares, sleep duration and sleep efficiency, as well as overall PTSD symptoms also demonstrated significant improvements.

**Conclusion** These pilot data provide compelling preliminary evidence that a single-session IRT intervention modified with NT (N-IRT) is effective in reducing nightmare frequency and intensity, reducing nightmare distress, improving the act of coping with nightmares, and improving sleep quality and overall PTSD symptoms in veterans. Further investigation of this method with gold-standard clinical trial designs and larger sample sizes is indicated to confirm effectiveness and to better understand the possible mechanisms of treatment effect.

## Introduction

Chronic nightmares are a pervasive and disabling feature of posttraumatic stress disorder (PTSD) that occurs in up to 96% of individuals with the disorder.<sup>1,2</sup> Therapeutic manipulation of nightmares (NMs) via imagery rehearsal therapy (IRT), or dream rescripting therapy, has demonstrated effectiveness in the treatment of recurring NMs in the medical literature.<sup>3-6</sup> While protocol details have varied across studies, in standard IRT, individuals are typically instructed to write out the dream script, change the content (often the ending) so it is non-distressing, write the revised dream script, and then rehearse the revision in their imagination daily before bedtime and/or during the day for 5 to 20 minutes.<sup>7-9</sup> This treatment has been used in individual and group format along with cognitive-behavioral coping skills, and pleasant imagery practice and/or insomnia-focused strategies in the treatment of recurring NMs for individuals diagnosed with PTSD related to sexual assault, combat, and other trauma, with significant reduction in NMs.<sup>4,10</sup> The American Academy of Sleep Medicine (AASM) issued a best practice guide in 2010 which supported IRT for both idiopathic and PTSD-related NMs with a Level A recommendation.<sup>11</sup> A recent review, Morgenthaler et al.<sup>4</sup> reported that IRT benefits subjects with moderate to large effect sizes. However, studies on IRT in veterans, including a well-powered randomized controlled trial in combat veterans,<sup>12</sup> report less promising results. Cook et al.<sup>12</sup> tested standard IRT against a credible psychotherapy control (sleep and NM management) in 124 veterans, and found no pre-to-post treatment change in their primary clinical outcomes, including NM frequency and number of nights with NMs, in either group, and no difference between treatment groups. Furthermore, despite the brevity of most IRT protocols (3 to 6 sessions is typical), high drop-out rates are often

reported.<sup>6,12,13</sup> In veteran studies,<sup>6,12</sup> the reasons reported for drop-out include lack of benefit, distressing session content, and discomfort with treatment approach, in addition to the frequent practical barriers to treatment engagement and continuation. Overall, these findings highlight the dire need for alternative therapeutic strategies for the treatment of NMs in veterans with PTSD which are efficient (that is, brief), engaging, and less burdensome.

Narrative therapy (NT) was developed by Michael White and David Epston in the late 1980s,<sup>14,15</sup> and had early research support for its efficacy as a nonexposure approach in the treatment of PTSD.<sup>16,17</sup> As humans, we relate with others and ourselves in “stories,” the narratives of our experiences. Narrative therapists ask questions intended to deconstruct or weaken the “problem” narratives the person is struggling with, and to strengthen the “preferred” narratives and practices the person wants to claim.

Narrative therapy is appealing to clients who value recovery but are opposed to trauma-focused exposure-based models of care, which require clients to discuss trauma and/or NM experiences in detail with the objective of processing trauma-related emotions. Narrative therapy emphasizes the client's words, meanings and personal agency, and it externalizes problems as separate from the person. The relevant principles emphasized in the current IRT enhanced with NT (N-IRT) approach include externalization, intentionality, personal agency, and absent but implicit. Weaving in the externalization principle through the entire session, using *the* NM, *the* emotions, *the* memory, instead of *your* NM, *your* memory, *your* emotions, creates a different position for the client to experience *the problem* (that is, the NM and its contents) as separate from self and identity, and empowers the client to then look at it, to make decisions, take a position of some kind, and claim what to keep or choose to stand against. The intentionality principle supports

questions about values, meanings, and what is important to the client. The personal agency principle supports questions about the client's preferences, what they approve of or not, their stance and/or position on a matter. The voice of the client is paramount. Emphasis on values and what is important to the client support their sense of mastery. The absent but implicit principle holds that something meaningful may be absent from the client's current narrative, but is implicitly known at a core level, such as "if something bothers you, then it means you care about something," and can become an opening to explore the "preferred" narrative, to strengthen what is important to the client. The absent but implicit principle informs the N-IRT step of asking clients what the emotions are telling them about their values, what they care about. These questions support a meaningful processing of emotions and invite a potential repositioning of the narrative of the NM experience from one of struggle to one of connecting to one's own values.

Based on these unique and potentially impactful features, the first author developed, practiced, and trained other clinicians in IRT incorporating narrative principles (N-IRT) within the US Veterans Affairs Healthcare System. The therapy consists of a single-session intervention followed by at-home imagery rehearsal of the value-integrated new script (referred to below as the "rescription"), with follow-up for evaluation and treatment planning four weeks later. The detailed steps of the protocol are provided in supplementary material (► **Appendix B**). The current findings are based on a retrospective chart review of veterans referred for the treatment of NMs, and the pilot data were previously presented as a poster<sup>18</sup> but not previously submitted for publication. Our primary hypothesis was that veterans would report a reduction in NM frequency and/or intensity from N-IRT pretreatment to after the 4-week follow-up. Secondarily, we hypothesized that veterans would report a reduction in NM-associated distress and improved ability to cope with NMs. We also hypothesized that veterans would report improved sleep quality and efficiency (reduced number of nighttime arousals and reduced duration of arousals after NMs) as well as an improvement in overall PTSD symptoms from pretreatment to follow-up.

## Materials and Methods

A retrospective chart review approved by the Institutional Review Board was conducted for veteran clients referred to the first author, Dr. Ann Wagner, for the treatment of NMs and treated using N-IRT from January 2008 to June 2008. Informed consent for psychological services was verbally reviewed with the patients. The criteria for treatment included a report of frequent (at least once a week) NMs with at least some recall of NM content. The charts of eight clients, six male and two female adult veterans, were reviewed, and all had complete data for all pretreatment and follow-up measures. At the beginning of the intervention session, the therapist verbally administered the Sleep and Nightmare Interview (SNI), developed by the first author (see ► **Appendix A**), and the PTSD Checklist-Specific (PCL-S).<sup>19</sup>

The PCL-S is a well-validated 17-item self-report tool of symptoms of PTSD described in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV), which is used as a screening measure and to monitor changes in symptoms over time. A diagnosis of PTSD was not required for inclusion, although PTSD symptoms were tracked during treatment. The SNI contains questions on NM and sleep outcome variables considered important for the assessment of clinical effectiveness that are analyzed individually. After completion of these questionnaires, the remainder of the 60-minute session involved the rescripting session informed by NT principles. For a description of the main components of the session, see ► **Appendix B**. The clients were instructed to practice rehearsal in imagination for 15 to 20 minutes daily, ideally before bedtime and otherwise at another preferred time. At the follow-up approximately 4 weeks later, the SNI and PCL-S were repeated. Additionally, the clients completed four survey questions about rehearsal frequency, days until noticeable benefit, and subjective impressions of the treatment (see SNI, ► **Appendix A**), to gain preliminary information on the clients' engagement and qualitative impressions of the treatment. In addition to treatment-specific information, data on sleep apnea diagnoses and prescribed diuretics was collected to identify alternative explanations for mid-sleep awakenings in the sample. Matched-Pairs *t*-tests were conducted to test for pretreatment to follow-up differences in quantitative self-report measures. All tests used  $p < 0.05$  for significance (two-tailed). The analyses were conducted using the IBM SPSS Statistics for Windows, version 19.0 (IBM Corp., Armonk, NY, United States).

## Results

Demographic and clinical information derived from the chart review of the 8 veterans is presented in ► **Table 1**.

Most of the sample was male (75%), with a mean age of 46.5 (standard deviation [SD]:  $\pm 12.3$ ) years. The chart review revealed that the diagnosis of PTSD was noted in 50%, of depressive disorder, in 50%, of anxiety disorder, in 50%, and of a substance-use disorder in 13% of the cases. Even though PTSD was only formally diagnosed in half of the cases, 7 of the 8 veterans achieved baseline PCL scores well above the positive screen cutoff of 50 (range: 62 to 78), and only 1 came close to this threshold, at 49. It is worth noting that the veterans in this sample endorsed significant PTSD symptoms via this tool. Most (88%) were taking sleep medications and/or psychiatric medications (75%). More specifically, 5 veterans reported taking selective serotonin reuptake inhibitors (SSRIs; paroxetine:  $n = 1$ ; fluoxetine:  $n = 1$ ; sertraline:  $n = 2$ ; citalopram:  $n = 2$ ), and 1<sup>1</sup> veteran reported taking a tricyclic antidepressant (amitriptyline) for primarily non-sleep indications. Two veterans also reported taking antipsychotic medications for primarily non-sleep indications (ziprasidone:  $n = 1$ ; quetiapine:  $n = 1$ ). Seven veterans reported taking, as needed, medications as sleep aids, including zolpidem ( $n = 2$ ), trazodone ( $n = 2$ ), hydroxyzine ( $n = 2$ ), temazepam ( $n = 1$ ), and lorazepam ( $n = 1$ ). One veteran reported taking prazosin and one diuretic

**Table 1** Client baseline characteristics (N = 8).

Demographics	
Age in years: mean ( $\pm$ standard deviation)	46.5 ( $\pm$ 12.3)
Male sex: n (%)	6 (75.0)
Posttraumatic stress disorder: n (%)	4 (50.0)
Anxiety disorders: n (%)	4 (50.0)
Depression: n (%)	4 (50.0)
Substance use: n (%)	1 (12.5)
Sleep apnea: n (%)	2 (25.0)
Sleep medication: n (%)	7 (87.5)
Psychiatric medication: n (%)	6 (75.0)
Diuretic medication: n (%)	1 (12.5)
Nightmare symptoms	
Duration in years: mean ( $\pm$ standard deviation)	12.8 ( $\pm$ 13.0)
Content: n (%)	
<i>Same-content nightmares only</i>	2 (25.0)
<i>Same- and variable-content nightmares</i>	5 (62.5)
<i>Variable-content nightmares only</i>	1 (12.5)

Notes: Comorbid conditions identified by chart review. Medication use identified by client report.

(hydrochlorothiazide). Of note, one veteran taking zolpidem at pretreatment (baseline) had discontinued zolpidem at follow-up. No other veterans reported changes in medication use between baseline and follow-up.

**Table 2** Client symptoms before and after N-IRT (N = 8).

	Pretreatment	Follow-Up			
	Mean ( $\pm$ SD)	Mean ( $\pm$ SD)	t	p	Cohen d
Nightmare measures					
Total nightmares: past month	25.5 ( $\pm$ 17.1)	9.4 ( $\pm$ 7.4)	3.06	0.02	1.08
Total nightmares: past week	7.3 ( $\pm$ 6.0)	2.4 ( $\pm$ 1.9)	2.52	0.04	0.89
Nightmare intensity: 1–100 <sup>a</sup>	79.4 ( $\pm$ 23.4)	41.5 ( $\pm$ 26.7)	5.15	< 0.01	1.82
Nightmare distress: 1–100 <sup>a</sup>	76.3 ( $\pm$ 18.1)	47.1 ( $\pm$ 30.9)	2.56	0.04	0.91
Ability to cope: 1–100 <sup>b</sup>	45.4 ( $\pm$ 21.2)	77.5 ( $\pm$ 18.5)	3.09	0.02	1.09
Subjective sleep measures					
Total sleep time in hours	5.0 ( $\pm$ 1.3)	5.6 ( $\pm$ 1.3)	1.85	0.11	0.66
Sleep efficiency: % <sup>c</sup>	61.3 ( $\pm$ 17.7)	78.0 ( $\pm$ 13.2)	5.08	< 0.01	1.80
Sleep quality: 1–100 <sup>b</sup>	32.0 ( $\pm$ 25.0)	60.6 ( $\pm$ 20.3)	4.93	< 0.01	1.74
Time awake after nightmares per night (in minutes)	86.3 ( $\pm$ 41.5)	40.4 ( $\pm$ 36.9)	4.72	< 0.01	1.67
Number of mid-sleep awakenings per night	2.8 ( $\pm$ 1.2)	2.4 ( $\pm$ 1.1)	0.89	0.4	0.32
PTSD symptom severity (PCL-S score)					
Total score <sup>d</sup>	66.1 ( $\pm$ 10.8)	50.89 ( $\pm$ 13.1)	5.40	< 0.01	1.91
PTSD daytime (symptoms minus nightmares and sleep)	57.5 ( $\pm$ 10.1)	45.0 ( $\pm$ 11.6)	5.04	< 0.01	1.78

Abbreviations: PTSD, posttraumatic stress disorder; PCL-S, PTSD Checklist-Specific; SD, standard deviation.

Notes: <sup>a</sup>Higher scores correspond to poorer functioning; <sup>b</sup>higher scores correspond to better functioning; <sup>c</sup>sleep efficiency = total sleep time/time in bed x 100; Higher scores correspond to better quality sleep. <sup>d</sup>Clinician-administered PCL-S.

The pretreatment SNI revealed that most veterans experienced a mix of same-content and variable-content/same-theme NMs, while only a minority experienced same-content NMs uniquely.

In support of our primary hypotheses, the analyses indicated a statistically and clinically significant reduction in NM frequency, from 7.3 (SD 6.0) per week at pretreatment to 2.4 ( $\pm$  1.9) per week at follow-up ( $p = 0.04$ ), and a statistically significant decline in NM intensity, from 79.4 ( $\pm$  23.4) on a scale from 1 to 100 pretreatment to 41.5 ( $\pm$  26.7) at follow-up ( $p < 0.01$ ; **Table 2**). The analyses also supported our secondary hypotheses. Veterans showed a statistically significant decline in NM-associated distress, from 76.3 ( $\pm$  18.1) on a scale of 1 to 100 pretreatment to 47.1 ( $\pm$  30.9) at follow-up ( $p = 0.04$ ), and a significant increase in the subjective ability to cope with NMs from 45.4 ( $\pm$  21.2) pretreatment to 77.5 ( $\pm$  18.5) at follow-up ( $p = 0.02$ ). Additionally, the subjective sleep quality, of 32.0 ( $\pm$  25.0) on a scale from 0 to 100 pretreatment, improved to 60.6 ( $\pm$  20.3) at follow-up ( $p < 0.01$ ), as well as sleep efficiency: pretreatment: 61.3 ( $\pm$  17.7); follow-up: 78.0 ( $\pm$  13.2); ( $p < 0.01$ ). Finally, the PCL scores declined significantly, from 66.1 ( $\pm$  10.8) pretreatment to 50.89 ( $\pm$  13.1) at follow-up ( $p < 0.01$ ), even with the removal of the two sleep and NM items ( $p < 0.01$ ). The improvement in PCL scores suggest not only improvement in NMs but also attenuation of daytime PTSD symptoms. The results are listed in **Table 2**.

Follow-up assessment also provided information about frequency of rehearsal, number of days to subjective improvement, and subjective impressions of the treatment approach. On average, the veterans reported rehearsing in

82.4% ( $\pm 27.6\%$ ) of the days between the intervention session and the follow-up, reported noticing benefits within 7.6 ( $\pm 6.0$ ) days of the intervention session, and scored the treatment as helpful, at a mean of 80.0 ( $\pm 15.1$ ) on a scale from 0 (not at all helpful) to 100 (extremely helpful). Seven veterans reported rehearsing the original rescription, while one veteran rehearsed the original and later an alternative rescription. The veterans' narrative statements regarding what they found most helpful about the intervention are listed in **Appendix C**. The theme that stands out most in these statements is that of control: four of the eight clients spontaneously and explicitly referred to an enhanced experience of control over NMs. Other statements alluded to this without using the word *control* explicitly. Certain responses indicated that the veterans experienced new realizations that thoughts and dreams could be rescripted and thereby have an impact, as well as the belief that rehearsal was helpful.

## Discussion

The present retrospective chart review involving a novel, modified form of imagery rehearsal therapy (N-IRT) in veterans provides compelling preliminary evidence that it is a brief and effective strategy for the treatment of NMs in this population. Previous research, including a large, randomized Vietnam veteran study<sup>12</sup> demonstrating lack of clear efficacy, calls into question the benefit of standard IRT for veterans with PTSD, underscoring the potential implication of the observed effects.

Unique features derived from NT are likely contributors to the large effect sizes observed. The NT model stands out in its client-centeredness, focusing explicitly on honoring the client's personal perspectives and preferences, and identifying each client's core values for guidance to rescript in ways that are personally meaningful. These factors are likely to result in client buy-in and engagement and in the experience of being heard and valued. Furthermore, this approach does not require detailed exposure to the NM content. Exposure-based therapies, despite evidence of benefits attributed to emotional habituation to trauma-related content in a safe (therapeutic) setting, are also associated with extremely high drop-out rates,<sup>20</sup> testimony to the distress that recounting trauma content in detail may cause. Conventional IRT also may exacerbate NMs in infrequent cases due to exposure-driven hyperarousal. Instead, under N-IRT, clients are invited to reflect upon the most emotional moments of the NM, name the emotions, and utilize those as tools to identify core values to guide rescripting. We suspect that this approach provides a gentler and more meaningful route to NM emotion processing, which typically refers to the reorganization of the dream experience into a less threatening mental structure.<sup>21</sup> By considering the values underlying painful emotions, clients are supported in a process of reconstruction of the meaning of the negative emotional content of those NMs. Additionally, the therapist's practice of orally validating, writing, and then providing to the client a written copy of their stated emotions, values, and narrative rescription likely con-

tributes to a corrective emotional experience that further alters the feared NM mental structure. Altogether, the client-, emotion-, and value-focused approach may enable this treatment to efficiently impact NM and sleep outcomes.

In addition to changes in NM frequency and intensity, we observed significant reductions in NM-related distress and in the subjective ability to cope with NMs. Published research on IRT mechanisms indicates that increased mastery,<sup>22</sup> which is intimately linked with coping,<sup>23</sup> is likely an important therapeutic mechanism in IRT. Our findings support this as a potential mechanism of clinical improvement. The clients reported statistically significant changes in their ability to cope with NMs, and narrative statements explicitly or implicitly indicated that the therapy led to an increased sense of control over their NMs. Enhancement of coping ability, as well as the improvements in NM, sleep, and overall PTSD symptoms are likely contributors to reductions in distress. Future research to systematically examine the mechanisms of IRT and N-IRT therapeutic action is warranted.

To decipher the potential neurobiological mechanisms by which NT enhances IRT in PTSD, it is helpful to consider what is known about the functional neuroanatomy of negative affect and its regulation, and to consider the role of emotion and personal salience in the consolidation of learning and memory. There is now considerable evidence that hyperactivity of the limbic system, in particular the amygdala, and hypoactivity of the frontal cortex, contribute to negative affect and difficulties regulating negative affective states in PTSD.<sup>24</sup> Furthermore, it is also well-established that affect labeling, or naming the emotional content of an emotional stimulus, is an effective strategy to regulate negative affect, and is associated with diminished limbic activity in conjunction with enhanced prefrontal cortex activity.<sup>25</sup> The initial step of the N-IRT intervention invokes this process via the naming of the most distressing emotions of the NM, which also supports the externalization principle of N-IRT. Subsequent steps focused on personal agency, meaning-making, and storytelling may invoke mechanisms similar to reappraisal, also well established as a strategy for emotion regulation<sup>24,25</sup> with similar functional neuroanatomic correlates as affect labeling. Complementing this affect regulatory process, the very personally-engaging, value-focused emphasis of the N-IRT protocol is likely to enhance therapeutic memory processes, as it is also well established that emotional and personally-salient information is recalled better than neutral information.<sup>26</sup> The rescripting practice is therefore likely to alter prior distress-inducing neural memory traces and reinforce faint positive neural memory networks (strengthening synaptic connections) that bring forth experiences of skills, mastery, values, and preferences. Furthermore, the therapist-client interactions that shift the clients' affective experiences are likely pivotal as the memory of the NM becomes infused with freshly-explored meaning and goes back into storage in an altered way. The therapeutic conversation seeks openings to reconstruct meaning, which, in turn, can strengthen the brain pathways and networks for the more valued preferred meanings and practices. The role of NT in altering neurocircuitry has not been scientifically

studied yet, but several authors<sup>27,28</sup> have speculated on the mechanisms of the therapeutic effect of NT, although not in the context of NM treatment specifically. This field is therefore ripe for investigation.

Despite the compelling findings we observed in this brief intervention, many questions remain and deserve further study. The veterans in the present study were moderately to highly symptomatic, with mean pretreatment PCL scores of 66 and mean weekly frequency of NMs of 7.3. While the decline in NM frequencies was robust and clinically meaningful, residual NMs typically remained. In the follow-up assessment, clients retrospectively reported that they rehearsed their rescripted dream on most nights, and experienced benefits after a mean of 7.6 days. Future research should be conducted to assess the frequency and duration of rehearsal and whether it impacts outcomes. Carefully-designed studies should also determine whether periodic brief check-ins would be helpful to motivate clients to rehearse or to otherwise support clients in maximizing benefits from the intervention. Some protocols,<sup>7</sup> for example, have included the practice of positive imagery in their design, as some PTSD patients may have difficulties in creating and maintaining new imagery. Other studies<sup>13</sup> have explicitly incorporated relaxation training, and some clients without prior training in relaxation techniques might benefit from prerehearsal relaxation to enhance the benefits of rehearsal.

The present study involved individual treatment provided in a single session, plus follow-up. While approaches have varied widely across IRT studies, most studies have involved more than one session, and many studies have examined IRT conducted in a group format.<sup>4,5</sup> While many advantages of group IRT have been suggested, the client-centered emphasis of this approach may limit its application in the group setting. While this might be problematic in the context of multisession interventions, the impact on dissemination is unlikely to be a problem, given how brief the intervention is. However, future research should determine whether a brief manualized protocol conducted by psychotherapists without NT expertise can be equally effective.

Several limitations of the present study should be noted. The sample was small, the study did not include a comparison group, and all treatment was provided by a single therapist. While benefits have been reported by numerous therapists conducting this therapy under the guidance of the first author over the years, empirical support for its generalizability to other therapists and treatment settings is critical. Future studies should also more systematically determine the importance of rehearsal for therapeutic benefits, and whether a single session plus assigned rehearsal is broadly sufficient and/or whether different therapy doses, such as postprescribing motivational phone calls to increase daily rehearsal, may provide additional treatment benefits.

Overall, the present retrospective chart review of veterans with frequent NMs undergoing a novel, NT-informed approach to IRT provides compelling evidence in support of this approach. Further research using gold-standard clinical trial methods with larger samples is necessary to confirm these preliminary findings and to assess benefits in nonveteran populations.

### Conflict of Interests

The authors have no conflict of interests to declare.

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