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## Article

# A Pilot Observational Study of the Development and Utilization of a Psychotherapy Incorporating Horses Program at a Veterans Health Administration Medical Center

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**Abstract:** Psychotherapy incorporating horses (PIH) is often provided for veterans, though research is limited. Investigations are needed to explore how these services might be implemented and utilized. This study evaluated the safety, implementation and utilization of an PIH program. In addition to the overall program, data were collected for a specific PIH intervention, Whispers with Horses (WwH). This was a retrospective study of the first 46 months of implementation. Three hundred and forty veterans were referred to the program and 230 (68%) were enrolled. Seven hundred and nine sessions of PIH (637 individual and 74 group) were provided to veterans without any adverse effects to participants, staff or equines. Regarding WwH, 125 veterans were enrolled. The mean number of sessions attended was 3.64 (out of 6) and 66% were considered completers (attended  $\geq 50\%$  of sessions). Additionally, 26% attended all sessions and the no show rate was 11%. These results indicate that it is feasible and safe to implement an EAS program within a VHA medical center. Treatment engagement was superior to VHA conventional mental health services with no-show and completion rates of 40% and 9.1% respectively. Thus, these results also suggest that a RCT of WwH is warranted.

**Keywords:** veterans; equine-assisted services; psychotherapy incorporating horses; posttraumatic stress disorder; equine-assisted psychotherapy; complementary and integrative health; trauma

## 1. Introduction

Equine-assisted services (EAS) are a category of Animal-assisted Interventions that utilize horses to provide benefits for humans [1]. EAS interventions include Hippotherapy, equine-assisted learning, therapeutic riding and psychotherapy incorporating horses (PIH) [1]. As we have previously reviewed [2], EAS are being increasingly used as complementary interventions for veterans. While numerous studies [3–27] suggest potential benefit, rigorous research is lacking [2]. To move the field forward, several research approaches are needed, including studies of potential models of service provision. Furthermore, it is necessary to develop and evaluate structured and manualized PIH models that can support fidelity across implementation sites and therefore facilitate

multi-site outcome and replication studies as well as support dissemination to the field as manualized and evidence-based interventions if rigorous studies demonstrate benefit.

The first aim of this study was to evaluate the feasibility of implementing one model of EAS service provision, a program embedded in a large urban Veterans Health Administration (VHA) medical center. The program, Horses Helping Veterans [28], was developed as a partnership between the VA facility Whole Health and Mental Health services in collaboration with community equine facilities.

The second aim of the study was to evaluate the same variables as well as treatment engagement for a specific PIH intervention, Whispers with Horses to determine if further research is warranted. This intervention [8] was developed to move the EAS field forward by providing a structured and manualized intervention that could be provided with fidelity across sites and thus, facilitate controlled multi-site and replication studies, and if shown to be effective, ultimately disseminated to the field. Also, as described in a previous publication [8], WwH is provided as group and individual PIH and consists of two six-session levels. It is groundwork only and there are no mounted activities. WwH is aimed to help participants with trauma histories develop, or enhance existing, mindfulness and self-compassion practice skills in the context of a developing horse-human relationship. This model was developed based on evidence previously reviewed [29,30], that mindfulness and self-compassion-based interventions are beneficial for veteran trauma survivors. Further, it was developed to address one of the challenges to the treatment of veteran trauma survivors, limited therapeutic engagement [2].

## 2. Materials and Methods

This study was a retrospective review of data collected from the electronic health record (EHR) at a large VHA health care system. Subjects were included if they had been referred, or self-referred, to the outpatient EAS program during the period of December 6, 2019, until September 30, 2023. Thus, the inclusion criterion was a referral or self-referral to the program. There were no exclusion criteria. These study criteria are different from the programmatic criteria described in the introduction as the goal of the study was to evaluate utilization by all potential participants regardless of whether they were enrolled in the EAS program.

The overarching EAS program, Horses Helping Veterans, was created in December of 2019 and structured such that it was provided as a complementary VA intervention by licensed VA mental health professionals (MHP) in collaboration with community partners. The program was funded primarily by the VA facility by of contracts executed with local equine facilities to provide the use of the facility, horses and an equine specialist (ES). The EAS interventions were provided in both group (90 minute) and individual (60 minute) therapy formats. Each session was groundwork only and facilitated by at least one VA MHP and at least one ES. To ensure safety of participants and equines, at least one facilitator was always a Professional Association of Therapeutic Horsemanship, Intl. (PATH, Intl.) [31] certified Equine Specialist in Mental Health and Learning (ESMHL). Veterans were referred by other VA clinicians by way of a consult in the EHR or they could self-refer. A VA MHP conducted a phone assessment and if appropriate for the program, veterans were enrolled and scheduled for a session. Veterans were considered appropriate, if they desired to participate after being informed of the program curriculum, could transport themselves to the equine facility, and did not have serious cognitive or psychiatric impairment.

Three types of PIH interventions were provided to veteran participants in the overall program. The primary intervention was the Whispers with Horses (WwH) class, previously described [8]. Only Level One is evaluated in this study due to the limited number of Level Two sessions provided. Additionally, Equine Assisted Growth and Learning Association (Eagala) [32] model interventions were offered. Lastly, in the early stages of program development, a few hybrid sessions were offered, which combined elements of the two models described above. Eagala and hybrid sessions are referred to as “other” sessions in the remainder of the manuscript.

Subject data was manually extracted from the EHR. Demographic (gender, age, race, ethnicity, religious preference and service connection) and diagnostic data were extracted for each subject. Additionally, program referral and utilization data were extracted.

Four variables were assessed to evaluate the feasibility and utilization of implementing an EAS program within a large VHA health care system. For the overall program, these were the number of referrals to the program, the percentage of referrals enrolled, number of sessions provided, program attendance and safety. The same variables were evaluated for the Whispers with Horses intervention as well as a calculation of the number of completers. This evaluation was narrowed to those who only attended one series of Level One sessions, as some participants attended more than one series. These data were extracted from the EHR except safety, which was assessed by staff members observing each session and recorded any adverse events or close calls.

Regarding data analyses, the Poisson Regression model was used to determine whether enrollment in group versus individual therapy sessions predicted no shows. Next, Poisson Generalized Linear Mixed Effects Models were used to determine whether demographic, diagnostic, or other pre-intervention variables (inpatient psychiatric admissions, residential substance abuse treatment admissions, emergency department visits or history of suicidal behaviors) predicted enrollment status (enrolled versus non-enrolled), total number of sessions (of any model) attended, and/or the number of Level One sessions attended (p-values were Holm adjusted). Lastly, in a preliminary assessment of outcomes, subjects were assigned to a treatment group (enrolled subjects) or a control group (non-enrolled subjects). Poisson Regression and Poisson Generalized Linear Mixed Models were used to evaluate whether there were significant pre- to post-study differences in inpatient psychiatric admissions, residential substance abuse treatment admissions, emergency department visits or history of suicidal behaviors in the for the subset of subjects that had at least one of these variables documented in the EHR pre-study.

This study was approved by the University of Utah Institutional Review Board and the local VA facility Research and Development Committee.

### 3. Results

#### 3.1. Participants

Participants were 340 veterans who had been referred, or self-referred, to the EAS program. Subjects were predominately male (61%), white (91%) and most (94%) had a military related disability and at least one mental health diagnosis (96%). Demographic and diagnostic characteristics of the subjects are outlined in Table 1.

**Table 1.** Sample Characteristics of Veterans Referred to Program (n=340).

Category	Number	Percentage	Range	Mean (SD)
<b>Age</b>	-	-	19 – 86	46.3(14.561)
<b>Gender</b>	-	-	-	-
Female	134	39%	-	-
Male	206	61%	-	-
<b>Religion<sup>1</sup></b>	-	-	-	-
Christianity	158	82%	-	-
None	8	4%	-	-
Paganism	5	3%	-	-
Other	21	11%	-	-
<b>Race<sup>1</sup></b>	-	-	-	-
Black or African American	14	5%	-	-

American	Indian/Alaska	7	2%	-	-
<b>Native</b>					
Native	Hawaiian/Pacific	5	2%	-	-
<b>Islander</b>					
Asian		3	1%	-	-
White		275	91%	-	-
<b>Military-related disability</b>		320	94%	-	-
<b>Percent disabled<sup>1</sup></b>		-	-	0 -100	81.97 (25.49)
<b>Mental Health Diagnoses</b>					
Any mental health diagnosis		327	96%	-	-
Substance Use Disorder		109	32%	-	-
Psychotic Disorder		12	4%	-	-
Mood Disorder		207	61%	-	-
Post-traumatic stress disorder		231	68%	-	-
Other Mental Health Disorders		215	63%	-	-
<b>Pain Diagnosis</b>		244	72%	-	-
<b>Military Sexual Trauma</b>		86	25%	-	-
<b>Number of Medical Diagnoses</b>		-	-	0 - 49	8.991 (7.253)
History of inpatient mental health treatment		36	11%	-	-
History of residential substance abuse treatment		11	3%	-	-
<b>History of suicidal ideation</b>		56	16%	-	-

<sup>1</sup>Excludes unknown observations.

### 3.2. Feasibility of the Overall Program

#### 3.2.1. Referrals and Program Enrollment

During the timeframe of the study, the program received 340 referrals. The majority were clinician referred (84%) and most referrals came from the mental health (47%) and whole health (42%) services. Of the total referrals, EAS program clinicians were able to contact 94% and conduct an evaluation. Of those contacted, 60% were enrolled and scheduled to start the program. Reasons for non-enrollment were available for a subset (n = 92) of subjects not enrolled and the most common reasons potential participants did not enroll were scheduling conflicts (35%) and transportation or travel distance issues (36%). Table 2 lists referral and enrollment information.

**Table 2.** Referrals and Enrollment (n = 340).

Category	Number	Percentage
<b>Referring Service</b>	-	-
Primary Care Service	23	7%
Whole Health Service	138	41%
Chronic Pain Service	7	2%

Other	12	4%
Any mental health program	160	47%
<b>Referrals from Mental Health Service by program</b>	-	-
General Mental Health Service	148	44%
Residential Substance Abuse Treatment Program	5	1%
Inpatient Treatment Unit	7	2%
<b>Type of referral</b>		
Self-referral	54	16%
Clinician referral	286	84%
<b>Contact and enrollment</b>	-	-
Successfully contacted	318	94%
Enrolled	203	60%
<b>Reasons Not Enrolled<sup>1</sup> (n = 92)</b>	-	-
Scheduling conflict	32	35%
Transportation issues/distance to facility	33	36%
Wanted other intervention	11	12%
Other	16	17%

<sup>1</sup>Excludes unknown observations.

### 3.2.2. Services Provided

During the initial 46 months of EAS program implementation, 709 sessions of PIH were provided to veterans. Details of services provided are outlined in Table 3.

**Table 3.** PIH provided over 46 months of program implementation<sup>1</sup>.

	Number	Percentage of total
<b>Total number of sessions</b>	709	100%
<b>Modality</b>		
Individual therapy	637	90%
Group therapy	74	10%
<b>Therapy model</b>		
WwH Level 1	532	75%
WwH Level 2	56	8%
Other	121	17%

WwH = Whispers with Horses; Other = Eagala or hybrid EAS interventions. <sup>1</sup>Does not include no shows or cancellations.

### 3.2.3. Safety, Program Utilization and Treatment Engagement

First, regarding safety, no adverse events were observed for participants, staff or equines. There was one close call early in implementation in which a participant was at risk of being nipped by an equine but was not injured.

Table 4 outlines overall utilization and treatment engagement results. Of the 230 potential participants enrolled, 167 (73%) attended at least one session. The mean number of sessions attended was 5.042 and the no-show rate 11 %.

### 3.3. Feasibility of the Whispers with Horses Intervention

#### 3.3.1. Participants

There were 130 individuals in the subset that participated in the WwH intervention, most were male (73, 56%) with an age range of 24 -77 (mean 48, SD 13.5)

#### 3.3.1. Services Provided

A total of 588 sessions were provided, of these, 514 sessions were individual therapy and 74 were group therapy, most (532, 75%) were Level One, however, 8% were Level Two.

#### 3.3.2. Safety, Program Utilization and Treatment Engagement

There were no adverse events or close calls associated with the WwH intervention. Overall, the number of sessions attended per person ranged from 1 – 34 (mean 4, SD 3.5). For the subgroup who attended Level One, the mean number of sessions attended was 3.64. Thus, 66% of participants were defined as completers (attending > 50% of sessions, [33]) and 26% attended all six sessions.

**Table 4.** Utilization by enrolled participants (n = 230)\*.

Overall attendance (n = 230)	Number	Percentage
Enrolled but did not attend any sessions	63	27%
Enrolled and attended at least one session of any type <sup>1</sup>	167	73%
<b>Attendance by therapeutic model of those who attended at least one session (n = 167)</b>		
Attended one or more WwH <sup>2</sup> Level 1 session(s) <sup>1</sup>	130	78%
Attended one or more WwH Level 2 session(s)	13	08%
Attended one or more Other sessions <sup>1</sup>	24	14%
<b>Number of sessions attended by therapeutic model</b>		
<b>Range</b>		
Number of WwH Level 1 sessions attended <sup>3</sup>	1-34	4.092 (3.501)
Number of WwH Level 1 sessions attended (one series, n = 125) <sup>4</sup>	1-6	3.64 (1.87)
Number of WwH Level 2 sessions attended	1-6	4.308 (1.974)
Number of Other sessions attended <sup>5</sup>	1-16	5.042 (4.309)
<b>WwH Level 1 completion and attrition (n = 125)<sup>4</sup></b>		
Completers (attended three or more sessions)	82	66%
Dropouts (attended less than three sessions)	43	34%
Attended all six sessions	32	26%
<b>Missed opportunities (no shows) by therapeutic model and total number of sessions scheduled</b>		
Total no shows - WwH Level 1 (n = 599)	67	11%
Total no shows - WwH Level 2 (n = 60)	4	07%
Total no shows - Other (n = 123)	2	02%
Total no shows - all models (n = 782)	73	11%

\* Does not include cancelled appointments. <sup>1</sup> Some participants attended one or more of both Level 1 and Other sessions. Therefore, the attendance by of at least one session numbers exceeds the total number who attended at least one session. <sup>2</sup>WwH = Whispers with Horses. <sup>3</sup>Some participants attended more than one series of Level 1

sessions. <sup>4</sup>Participants who only attended one series of level 1 sessions. <sup>5</sup>Other = Eagala or hybrid EAS interventions.

### 3.4. Results of Statistical Analyses

The Poisson Regression model revealed that enrollment in individual therapy sessions significantly reduced ( $p<0.001$ ) the number of no shows by a factor of 0.35 (95% CI from 0.191 to 0.619) compared to enrollment in group sessions.

For predictors of overall program utilization, the Poisson Generalized Linear Mixed Effects Models analyses revealed that demographic, diagnostic, and selected pre-intervention variables (inpatient psychiatric admissions, residential substance abuse treatment admissions, emergency department visits or history of suicidal behaviors) did not predict enrollment choice (enrolled versus non-enrolled), total number of sessions attended, or the number of WwH Level One sessions attended.

Lastly, the Poisson Regression and Poisson Generalized Linear Mixed Models found no significant pre- to post-study differences in inpatient psychiatric admissions, residential substance abuse treatment admissions, emergency department visits or history of suicidal behaviors in the treatment versus the control group for the subset of subjects that had experienced any of these variables pre-study.

## 4. Discussion

The first aim of this study was to evaluate the feasibility of developing and implementing an EAS program, Horses Helping Veterans, within a large urban VHA health care system. To our knowledge, this is the first paper to report on this model of providing EAS for veterans. Many veteran EAS programs are provided by community equine facilities with or without collaboration with VHA. While these programs may be beneficial for veterans, there are several possible specific advantages from this service delivery model. First, an internal VA referral process was utilized. This process facilitates VA clinicians making referrals and thus ensuring that veterans referred are appropriate for the programming and are likely to benefit. Also, the fact that all services were co-facilitated by a VHA MHP supported both seamless integration of EAS into veteran's treatment plans and care coordination. Since services were provided as a VHA complementary intervention, session progress notes were entered into the EHR allowing other clinicians to review progress in the program. Lastly, since the intervention was provided as a VHA intervention, services were provided in most cases at no cost to participants. Despite potential benefits of this model, no previous studies have evaluated the feasibility of developing and implementing such a VHA based EAS program. For the overall program, Horses Helping Veterans, four variables were assessed to evaluate the feasibility of the program. These were the number of referrals to the program, the percentage of referrals enrolled, number of sessions provided, program attendance and safety. Additionally, the demographic and diagnostic characteristics of referred veterans was reviewed.

Over the first 46 months of implementation, a total of 340 referrals were received, of these 94% were successfully contacted and 60% (203) were enrolled in the program. These results suggest that VHA clinicians believe the program is beneficial and are willing to make referrals. Additionally, over half of those referred were enrolled in the program. There was limited data on reasons for non-enrollment, but the most common reasons were transportation or distance to the facility issues (36%) and scheduling conflicts (35%). Potential solutions could include providing transportation for veterans, more locations of care and/or more availability of appointment times.

Regarding services provided, 709 therapy sessions (637 individual and 74 group) were provided. The mean number of sessions attended was 5.042 and the no-show rate 11 %. While data collection for this study concluded on September 30, 2023, it is worth noting that the program has continued to provide services up to the present time (spring 2025) and services are expected to continue indefinitely. Demographic and diagnostic data of veterans referred to the program was also assessed. Most referrals were male (61%), White (91%) and had a military-related disability (94%).

Additionally, 96% had at least one mental health diagnosis, with the most common being PTSD (68%). Further, 72% had a pain diagnosis, 25% had a history of MST and 16% had a history of suicidal behaviors.

Lastly, regarding safety, there were no adverse outcomes for participants, staff or equines during 748 total therapy hours.

These results indicate that a VHA-based EAS program is feasible to implement given evidence that: 1) clinicians will make referrals; 2) over one-half of referrals were enrolled; 3) 709 therapy sessions were provided; 4) the mean number of sessions attended was 5.042 with a no-show rate of only 11 %; 5) referrals predominately include the target population of veterans with psychiatric and medical disability and 6) the intervention is safe. While these results are promising, it is unknown whether these results are generalizable to other VHA EAS programs. A key implementation variable is likely to be program funding. The program described herein was successful in large part due to financial support from local VHA facility leadership enabling contracts with local equine facilities for use of the facility, horses and an ES. Nonetheless, future studies will need to rigorously assess outcomes as well as compare EAS programs embedded in a VHA facility to community-based programs in terms of outcomes, utilization, cost and safety.

The second aim of the study was to further evaluate the Whispers with Horses PIH intervention to determine if further research is warranted. As stated in the introduction, this intervention [8] was developed to move the EAS field forward by providing a structured and manualized intervention that could be provided with fidelity across sites and thus, facilitate controlled multi-site and replication studies, and if shown to be effective, ultimately disseminated to the field. Further, it was developed to address one of the major challenges to the conventional treatments for veteran trauma survivors, limited therapeutic engagement [2]. A pilot study [8] of Whispers with Horses previously provided preliminary evidence of feasibility, safety and benefit. However, to determine whether further studies, such as randomized controlled trials, are warranted, a necessary step was to further evaluate feasibility, safety and utilization.

In this study, the Whispers with Horses intervention comprised most sessions (83%) offered as part of the larger Horses Helping Veterans program. Thus, the results reported above suggest WwH was feasible to implement. Additionally, for Level One participants, the mean number of sessions attended was 3.64. Thus, 66% of participants were defined as completers (attending > 50% of sessions, [33]) and 26% attended all six sessions. Regarding safety, there were no adverse outcomes associated with the 569 hours of WwH therapy provided.

Regarding treatment engagement, the results for the overall program and WwH compare very favorably with both mindfulness-based interventions and conventional psychotherapy for this population. For example, in our previous study of an evidence-based mindfulness intervention, Mindfulness-based Cognitive Therapy for veterans [34], we found a similar completion rate (67%) but only 16% attended all sessions. Compared to conventional evidence-based psychotherapies for veterans with PTSD in VHA, a large recent study of 265,566 individuals over a 15-year period [35] reported a completion rate of only 9.1%. Another important metric is the rate of no-shows. No-shows at VHA outpatient clinics in general have been reported to be 40% in mental health clinics [36] compared to our no-show rate of 11% for both the overall program and WwH Level One. Thus, EAS interventions in general, and the WwH intervention in particular, may have the potential to enhance treatment engagement with the population studies as no show rates are significantly lower than generally found in VHA outpatient mental health programs and treatment completion rates are much higher than with conventional EBPs for trauma survivors.

Lastly, analyses revealed that demographic, diagnostic, and selected pre-intervention variables did not predict enrollment choice or number of sessions attended. This suggests that the EAS interventions studied are likely appropriate for a wide range of the veteran population.

In addition to addressing the research question of this study, to our knowledge this is the largest EAS safety study ever reported and thus provides important safety information to the entire EAS field. Our finding that groundwork-based EAS can be provided safely is consistent with our previous

research [8,25,37–39], but risk cannot be entirely mitigated, and standard equine industry safety protocols should always be utilized. Importantly, these findings will not generalize to programs with mounted activities, which have greater risk than those with groundwork alone.

Also, enrollment in individual therapy sessions significantly reduced the number of no shows compared to group sessions. If replicated, these findings may further inform the development of the Whispers with Horses and other EAS interventions.

There are several limitations of this study that must be considered. First, it was not randomized and therefore selection bias is a concern. Further, results are from only one VHA medical center and subjects were predominately white and male. Therefore, results may not generalize to other veteran and/or non-veteran populations. Finally, this study focused on implementation and utilization of an EAS program with specific attention to the WwH [8] Level One intervention. It is unknown whether these results will generalize to other EAS interventions. However, with these limitations in mind, the aims of the study were met and results further the scientific development of the field of EAS for veterans.

## 5. Conclusions

Results reported herein suggest that it is possible to implement an EAS program within, at least one, VHA medical center and to safely provide services across a span of multiple years. Further, the program was well-utilized in terms of both referrals and veteran participation. Thus, this is one EAS provision model that may warrant further studies, such as rigorous outcome studies and comparisons with other models, such as services provided in the community.

Regarding the Whispers with Horses intervention, findings from this study indicate that it can be safely implemented on a large scale within a VHA environment and that it is associated with greater treatment engagement than conventional mental health interventions. These data support the continued evaluation of this intervention, including a randomized controlled trial.

**Author Contributions:** WM, EN, RL, AR and AM designed the study. WM, AH and LF conducted the intervention. WM, EN, RL, AR, AM and DT extracted data from the electronic health record. EN analyzed the data and EN and WM drafted the original manuscript. All authors read and approved the final manuscript.

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**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of University of Utah IRB and VA Salt Lake City Health Care System Research and Development Committee and determined to meet exemption category 2 (IRB\_00141391, 06.21.2021). This was a retrospective study of data collected from an equine-assisted services program provided as a clinical service (not research). The equines were utilized as part of this clinical service not research and no animal-related research data was collected, thus IACUC approval was not required.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** Dataset available on request from the authors.

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**Conflicts of Interest:** The authors declare no conflicts of interest.

## Abbreviations

The following abbreviations are used in this manuscript:

Eagala	Equine Assisted Growth and Learning Association
EAS	Equine-assisted Services
EHR	Electronic Health Record
ES	Equine Specialist
ESMHL	Equine Specialist in Mental Health and Learning
MHP	Mental Health Professional
MBCT	Mindfulness-based Cognitive Therapy
MST	Military Sexual Trauma
PATH, Intl.	Professional Association of Therapeutic Horsemanship, Intl.
PIH	Psychotherapy Incorporating Horses
PTSD	Posttraumatic Stress Disorder
RCTs	Randomized Controlled Trials
VHA	Veterans Health Administration
WwH	Whispers with Horses

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