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**Battlefield Acupuncture in the Treatment of Low Back Pain at a Military Treatment
Facility**

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Abstract

Phase II Site: 10th Medical Group, U.S. Air Force Academy, Colorado Springs, CO

Project Title: Battlefield Acupuncture in the Treatment of Low Back Pain at a Military Treatment Facility

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Background: Low back pain (LBP) is a major reason servicemembers seek medical care, significantly impacting mission readiness and deployability. Battlefield Acupuncture (BFA) is an effective, non-pharmacological alternative endorsed by the Department of Defense/Veterans Affairs (DOD/VA) Clinical Practice Guideline (CPG) for LBP, safely administered in the outpatient clinic.

Clinical Question: In active-duty service members with low back pain not caused by trauma, does Battlefield Acupuncture, compared to CPG Module B local standard practices, improve medical readiness?

Project Design: In an active-duty primary care clinic, investigators conducted a retroactive chart review to determine LBP's impact on profiles and repeat and emergency department visits. Investigators completed a baseline assessment of provider knowledge regarding the DOD/VA CPG for LBP. Investigators conducted training detailing CPG evidence and Module B recommendations to include LBP's readiness impact, then established a walk-in clinic to administer BFA. The investigators assessed the participant's pain and disability pre and post-intervention. The investigators will assess profile rates after data collection.

Analysis of Results: A single session of BFA reduced pain scores from an average of 3.57 to 2.24 immediately following BFA (N=21). Sixty-seven percent of participants saw an average pain reduction was 40.6%. Two participants' profiles were scheduled to expire during the intervention; both returned to full status after BFA. However, we cannot definitively say BFA reduced the profile rate. There was not a measurable increase in functional capability. Though a number of members were prescribed CNS depressants in the chronic phase, providers are following CPG recommendations.

Organizational Impact: In providing BFA to active-duty patients, the Medical Group stands to improve patient and provider satisfaction by offering an effective pain control alternative for LBP with implications in austere environments. This inexpensive and mobile modality may lower costs by reducing the number of unnecessary emergency department visits, repeat primary care visits, and CNS depressant prescriptions.

Battlefield Acupuncture in the Treatment of Low Back Pain at a Military Treatment Facility

Low back pain (LBP) is one of the top three reasons a person seeks outpatient care in the U.S. (“Ambulatory visits,” 2020; Armed Forces Health Surveillance Center, 2015). It is responsible for 800,000 outpatient visits and \$100 billion per year (“Ambulatory visits,” 2020; “The Back-Breaking,” 2018; Walker et al., 2016). The burden of LBP comes at a cost to military readiness (Gizzi, 2014). Its prevalence negatively impacts duty restrictions and retention across all branches and career fields (“Ambulatory visits,” 2020; Kelley et al., 2017; Reif et al., 2018). If military medicine can find a safe and effective way to avoid unnecessary emergency department (ED) visits and reduce work absences, services stand to save hundreds of thousands per year.

The Department of Defense (DOD)/Veterans Affairs (VA) Clinical Practice Guideline (CPG) for the Diagnosis and Treatment of Low Back Pain offers providers several modalities that are safe and effective. Battlefield Acupuncture (BFA) is one of these evidence-based modalities shown to reduce pain intensity, disability, stress, and opioid medication use. BFA implementation may enable *lower costs* and *better health* by offering a safe, inexpensive, and effective alternative for pain control, allowing continued training and mission execution.

Problem Synthesis

LBP is one of the most common work-related injuries resulting in 2.6 million ED visits for LBP per year, costing the U.S. \$100 billion annually (Rosenberg et al., 2015; “The Back-Breaking,” 2018). In the military, *Other back problems* account for 1.2 million medical encounters, a top reason for seeking care, affecting 240,533 troops annually (“Absolute and relative,” 2020; “Ambulatory visits,” 2020; Armed Forces Health Surveillance Center, 2015;

Clark & Hu, 2015). One-third of all service members (SM) will have *clinically significant* back pain episodes while on active duty, with over half of those experiencing a recurrence and two-thirds of those experiencing a second recurrence (Brundage et al., 2016). Members with chronic LBP are 3.65 times more likely to be discharged (Benedict et al., 2019). These numbers and their impact on the force run counter to the Defense Health Agency's Quadruple Aim: *Better Health* and *Lower Cost* (Defense Health Agency, 2019).

Injury reviews revealed that LBP represents a significant contribution to duty restrictions, grounding 15% of fliers, with repeated back pain increasing the likelihood of mobility restrictions ("Ambulatory visits," 2020; Cosio-Lima et al., 2013; Granado et al., 2016; Kelley et al., 2017; Knox et al., 2014). These numbers represent a threat to mission success, taking essential personnel away from training and vital operations.

Though the DOD/VA CPG for LBP warns about the extended use of non-steroidal anti-inflammatory drugs/opioids due to their impact on renal and gastrointestinal health, providers continue to prescribe them for chronic pain control, impacting duty restrictions (Adams et al., 2019; Essex et al., 2013; Foster et al., 2018; Rahman & Malcoun, 2014; The Diagnosis and Treatment of Low Back Pain Work Group [LBPWG], 2017). LBP increases psychological distress, reducing pain tolerance, resulting in duty restrictions and additional healthcare costs (Brooks et al., 2013; Reif et al., 2018; Wippert & Weibking, 2018).

Because of the strain on troops and readiness, the Military Health System (MHS) must harness emerging modalities to reduce pain intensity and reliance on pharmacological therapy to ensure SMs are operating at their greatest potential; training and executing operational orders.

Relevance to Military Nursing

One of the most concerning issues LBP presents is its impact on readiness (Reif et al., 2018). Pain, range of motion limitations, and traditional pharmacological interventions take members out of the fight and away from training. Additionally, unresolved LBP increases the rates of unnecessary ED and clinic visits, impacting productivity (Miller, 2013; Walker et al., 2016). LBP also increases the likelihood of separation, impacting the human economy, removing experienced SMs from essential positions (Gubata et al., 2013).

The strain LBP places on the member, unit, and MHS does not support the DHA Quadruple Aim of *better health, better care, lower cost, and improved readiness* (Defense Health Agency, 2019). BFA addresses all four of these categories. It offers *better health* and *better care* through evidence-based treatment that decreases pain intensity and increases functional mobility, enhancing quality of life. BFA affords *lower costs* by offering a non-pharmacological therapy at \$6.50 per patient per treatment. It can reduce costly comorbidities, time lost to absenteeism, and unnecessary emergency room and outpatient appointments (Brooks et al., 2013). Since LBP is one of two reasons for half of all medical discharges, its amelioration will help reduce the number of medical separations (Gubata et al., 2013). Finally, reducing pain intensities and opioid prescriptions allow troops to return to full duty and mobility status; *improved readiness*.

As a supplementary benefit, investigators hope implementing this evidenced-based project will impact practice, education, and management via peer education, engaging with supporters and skeptics of BFA, encouraging them to review the evidence available in CPGs.

Clinical Question

In active-duty service members with low back pain not caused by trauma, does battlefield acupuncture, compared to CPG Module B local standard practices, improve medical readiness?

Search Strategy/Results

Our PICOT question asked, “In active-duty service members with LBP not caused by trauma (P), does BFA (I), compared to CPG Module B local standard practices (C), improve medical readiness (O)?” Investigators searched PubMed, Google Scholar, and CINAHL for literature using key terms *auricular acupuncture*, *battlefield acupuncture*, *stress*, and *low back pain*, with the modifiers: *ear acupuncture*, *program*, *chronic back pain*, *lumbago*, *dorsalgia*, *pain*, *morbidity*, *prevalence*, *burden*, and *military*. This search strategy resulted in 406 studies. Eighty-one were removed due to duplication. After abstract/title review, 280 were determined to be irrelevant, leaving 35 for a full text review. After a full-text review, 13 studies were used to develop a solution synthesis (See Appendix A). Studies meeting inclusion criteria included studies published in English from 2013 to 2020, in which battlefield or auricular acupuncture (AA) was performed on patients with chronic or acute LBP not caused by trauma. Investigators included AA and all age groups, since there are few large-scale randomized controlled trials evaluating BFA. Studies were excluded if the intervention was not acupuncture of the ear for LBP treatment or if the patient population was pregnant. Investigators turned to the Johns Hopkins Nursing Evidence-Based Practice - Evidence Level and Quality Guide to appraise the literature and then the Hierarchy of Evidence to rate study strength and bias (Dang & Dearholt, 2017; Melnyk-Fineout-Overholt, 2019). The evidence for a solution consists of four systematic reviews, four randomized controlled trials, four non-randomized controlled trials, and two case studies (See Appendix B).

Solution Synthesis

BFA is easy to learn and produces rapid pain relief in a few minutes with almost no side effects, especially compared to traditional medications (Bart-Knauer & Friedl, 2013; Bell & Falconi, 2016; Nahin et al., 2016; Niemtzow et al., 2015; Qaseem et al., 2017). BFA training can be conducted effectively in a one-time, four-hour didactic and hands-on session, making it useful in deployed locations (Bart-Knauer & Friedl, 2013; Haywood et al., 2019; Niemtzow et al., 2018). Needles placed in somatotopic areas of the auricle influence pain processing in the brain, demonstrated on functional MRI (Levy et al., 2018; Romoli et al., 2016; Yeh et al., 2014). Five weekly sessions of AA are effective in decreasing pain, enhancing ADLs, and reducing anxiety (Buchanan et al., 2018; Kligler et al., 2018; Moura et al., 2019b; Moura et al., 2019c). Single and multi-session BFA and AA, can reduce pain intensity in up to 80% of participants, enhance mobility, and reduce psychological distress (Buchanan et al., 2018; Moura et al., 2019a). AA or BFA, alone or as an adjunct, can effectively reduce acute and chronic pain from 25 to 50%, even in a single session (Federman et al., 2018; Fox et al., 2018; Jan et al., 2017; Kligler et al., 2018; Tsai et al., 2016; Ushinohama et al., 2016; Yeh et al., 2014; Zhao et al., 2015). Early intervention with BFA can reduce pain intensity and increase mobility and range of motion that would otherwise result in duty restrictions, even within hours of application (Fox et al., 2018; Jan et al., 2017; Larson et al., 2018; Tsai et al., 2016). Early intervention with non-pharmacological therapies like BFA can reduce opioid prescriptions, removing narcotic medications as a cause for duty limitation (Larson et al., 2018). By reducing opioid medication use and physical debility, service members can continue to perform their duty at maximum capacity (Niemtzow et al., 2015).

Focus Areas

LBP places an undue strain on medical readiness. Pain intensity, physical disability, stress, and opioid prescription result in duty restrictions. The DOD has developed CPGs to present providers with up-to-date, evidence-based treatment options. The CPG for LBP recommends BFA as a non-pharmacological alternative, shown to decrease pain, disability, and narcotic use (LBPWG, 2017). The goal of this project is to determine if the BFA protocol can impact duty restrictions by reducing pain intensity, disability, and opioid use.

Investigators presented educational visual aids via in-service training to providers. In those meetings, investigators discussed CPG recommendations and the evidence supporting BFA to mitigate common barriers to CPG adherence, then identify providers certified in BFA who could supplement the primary investigators in providing BFA (Slade et al., 2016). To facilitate a shared vision and enhance productivity, clinical and organizational leadership received a briefing on the benefits of BFA and local issues regarding CPG use metrics and duty limitations (Kiwanuka et al., 2020).

Investigators established a walk-in BFA clinic to increase access to BFA and allow non-certified providers to refer patients for BFA treatment. The walk-in clinic mitigated time issues that would hinder the application of BFA, present with routine 15-20-minute appointments. Investigators provided educational handouts to providers and clinic staff to facilitate discussion with patients (Birkle et al., 2020). Investigators used visual aids to remind providers and patients of hours and availability continually.

Business Case Analysis

Investigators analyzed three courses of action (COA) available to leadership: BFA as an adjunct to non-pharmacological interventions, BFA alone, and “traditional” treatment and pharmacological interventions. Based on an analysis using value-based care, investigators determined that COA #1, BFA as an adjunct, has the potential to save the Military Treatment Facility (MTF) \$260,000 per year.

Using the number of service members served by the 10th Medical Group, 7300, and the prevalence of LBP in the military, 12%, as a starting point, investigators determined that, of the 7300, 876 service members are likely to experience LBP in a year. BFA has the potential to reduce pain in 80% of participants, 23% of whom rate their pain as persistent and 37% as severe (Moura et al., 2019a; Reif et al., 2018). If BFA can reduce pain by 25-50% and duty restrictions by 25% in those rating their pain as severe and persistent, the MTF can avoid unnecessary repeat primary care and ED visits; helping the wing avoid \$283,000 in lost productivity (Cosio-Lima et al., 2013; Tsai et al., 2016). Based on calculated potential reimbursement, subtracting variables (training supplies, certification, and training time) and fixed costs (labor to run the BFA clinic for a year, overhead, and 10 ASP needles per patient), the MTF stands to save \$267,000 by the end of the first year (See Appendix D).

This cost analysis shows that BFA supports the DHA Quad Aim of “*lower costs*” while simultaneously supporting the value-based care model, in which quality and outcomes (pain, disability, and stress reduction) matter more than the quantity of billable encounters.

Organizing Framework

After evaluating available EBP models, investigators determined that the *Model for Evidence-Based Practice Change* was the most useful in guiding project organization, implementation, and sustainability. This model entails: 1) assessing the need for change, 2) searching for evidence, 3) analyzing the evidence, 4) designing a project, 5) implementing the project and evaluating outcomes, and 6) integrating and maintaining the change (Larrabee, 2009; Melnyk & Fineout-Overholt, 2019). This model fits the project objectives because it requires the evaluation of internal and external data against external benchmarks. Above all, the model calls for planning that ensures outcome dissemination and sustainment. The project implementation plan was lined up with each step of the model to ensure no step was missed. Subcategories in each step will act as questions to ensure the project plan has covered said subcategory in detail, e.g., comparing external data with internal data; evaluating prevalence rates of LBP and accompanying costs across the U.S., MHS, and the 10th Medical Group.

Project Design

General Approach

This project implements a protocol to establish a walk-in BFA clinic offered to active-duty service members with non-traumatic LBP at the Air Force Academy (See Appendix E). The goal of this project was to determine if BFA can increase medical readiness rates through a non-pharmacological intervention. Investigators provided educational in-services to increase awareness and adherence to evidence-based CPGs and offered barrier mitigation to previously identified obstacles to CPG use. Then, investigators established a walk-in clinic to offer BFA as a non-pharmacological adjunct to other pharmacological and non-pharmacological treatments of LBP.

Setting and Population

This project was implemented at the 10th Medical Group (MDG), the primary medical facility supporting the U.S. Air Force Academy active-duty staff, completing 12,000 encounters per year. The 10th MDG serves a 4,000-member cadet wing, 1,300 active-duty members, and 19,000 dependents, retirees, and family members (10th Medical Group-U.S. Air Force Academy Clinic, n.d.). The facility offers primary care, flight medicine, women's health, dental, mental health, and ancillary services: pharmacy and radiology. (10th Medical Group-Air Force Academy, n.d.). The Operational Medical Readiness Squadron (OMRS) primary care clinic boasts a nurse, a physician, a nurse practitioner, a physician assistant, medical technicians, and medical administrators. Investigators targeted active-duty support, staff, and instructors stationed at the Academy. Active-duty members include personnel, medical, security, and base maintenance, all of whom are expected to perform physical training to maintain fitness standards.

Procedural Steps

To address focus areas, investigators ensured the task list for implementation and evaluation aligned with the chosen model, EBP Model for Change. The purpose of this project was to implement an evidenced-base intervention focused on reducing LBP comorbidity to increase readiness (White et al., 2021). The aim is two-fold: 1) increase adherence to evidence-based recommendations and 2) reduce comorbidities associated with LBP to improve readiness (White et al., 2021). To assess the need for change, investigators coordinated meetings with stakeholders to discuss areas of concern. Stakeholders indicated that adherence to the LBP CPG was lacking. After reviewing the CPG and the impact LBP has on the force, investigators determined that CPG training and non-pharmacological approaches to treatment were potentially

advantageous. After relocating to Colorado, investigators conducted a three-month retroactive chart review to determine the local LBP burden, cross-referenced with Aeromedical Services Information Management System (ASIMS) to ascertain profile rates. A literature review supported LBP as a threat to readiness and retention (Cosio-Lima et al., 2013; Gubata et al., 2013; Kelley et al., 2017). Solution searches spotlighted BFA and AA as effective in reducing pain and improving quality of life. Studies supporting the solution were transcribed into a table (Appendix B) to analyze the evidence, which was graded using the Johns Hopkins Nursing Quality of Evidence Appraisal Tool, and appraised using the hierarchy of evidence scale (Melnik & Fineout-Overholt, 2019). The project design is defined by the implementation of an evidence-based protocol (Melnik & Fineout-Overholt, 2019).

Stakeholders, organizational and clinical leadership, were presented with data detailing the local challenges LBP places on their organization, the solution, and the planned pilot. With leadership approval, investigators called upon certified BFA providers to help administer BFA and act as sustainment champions. These providers were educated on the problem, solution, and implementation plan. Clinicians within OMRS were gathered for CPG training. The training discussed walk-in clinic details, hours of operation, the referral process, and exclusion criteria (pregnant, trauma, red flags). Investigators required accessed to patient records via Genesis and utilized local technology to present training and print visual aids. They also acquired a location to administer BFA. Funds were secured through the 10th Medical Group. Visual aids were used to remind providers and patients of BFA availability to facilitate communication and mitigate barriers. Project implementation and outcome evaluation were initiated following provider training. BFA was offered twice a week for four hours a day for five weeks. Patients were referred for acute or chronic LBP during this period. After consent for BFA, participants filled

out the Defense and Veteran's Pain rating scale and the Quebec Back Pain Disability Scale before and 1-2 days after each BFA session (See Appendix F, G, & H). Investigators reviewed MHS Genesis charts of participants to determine rates of ED and repeat primary care visits; ASIMS highlighted the interventions effect on fitness/duty/mobility restrictions. Local leadership and staff were briefed on project outcomes to integrate and maintain the change. Investigators linked leadership with BFA trainers to facilitate comprehensive organizational certification. BFA certified providers will perform the intervention within their clinical schedule, reporting quarterly measurements of impact on readiness to leadership for continuous program evaluation.

Data Analysis Plan

The evaluation of this project included a population-based analysis of BFA, the independent variable, and its influence on duty restrictions, the dependent variable. BFA was a process measure, wherein a five-week BFA protocol was conducted on active-duty patients from February to March 2022. Outcome measures utilized the number of patients with LBP requiring profile restrictions divided by the number of patients with LBP before and after the intervention, using an interval level of measurement, 0 to 100%. Investigators accessed data collected in the walk-in clinic, and documentation programs Genesis and ASIMS. An Independent t-test was considered for statistical analysis with normal distribution; Mann-Whitney U for non-normal distribution. The decision rule was based on evidence gathered in the literature that demonstrated BFA's effect on pain intensity, disability, and opioid use; hypothesized to reduce duty restrictions by 25% (See Appendix C). Our intention was to use this analysis, however a small number of profile rates made in untenable, so differences in the percent of profiles was evaluated.

Potential Barriers

Establishing a walk-in clinic increases access and removes the time constraint a 20-minute appointment slot poses. Chart reviews conducted before project implementation helped investigators detail local challenges to facilitate leadership buy-in and project approval. CPG training, evidence review, and educational pamphlets helped increase provider and patient participation. Non-certified providers were able to refer their patients for BFA to increase access. Investigators used CDC guidelines to mitigate COVID e.g., mask-wearing, hand washing, social distancing, and signs reminding patients of symptoms that exclude entry.

Sustainment and Dissemination Plan

Following data analysis, investigators briefed leadership on metrics and outcomes, with recommendations to either continue or discontinue the BFA clinic. If outcomes pointed towards the continuation of the BFA clinic, BFA champions would be identified to leadership, with a recommendation to continue the walk-in clinic. Investigators synthesized a presentation regarding outcomes for dissemination of MTF wide, including placing posters around MTF for patient knowledge. Providers not certified but interested in BFA were be linked with trainers at Andrews AFB. Following Phase II completion, investigators briefed their peers and instructors on project outcomes before graduation. Investigators then sought out opportunities for publication in *Medical Acupuncture* and with the Tri-service Nursing Research Program.

HIPAA Concerns

Investigators most significant concern was the release of and/or inappropriate storage of PII. The encounter list used for initial chart reviews was deidentified by removing the patient names and DOD ID and was stored in a locked drawer accessible only to investigators, then shredded after use. Patients receiving BFA were issued a number specific to them for tracking

outcome metrics. This number was kept on an outcome metrics list and a master list containing their DOD identification number. The master list was maintained in a locked file. This reduced confusion for repeat patients and helped to avoid retaining large amounts of PII. Following encounters, data was locked in a drawer, then transferred to the non-PII spreadsheet, then shredded. All documents were shredded after project completion.

Project Results

Pre-Intervention Review

Before the BFA walk-in clinic began, an analysis of the prior three months of clinical encounters was conducted. From November 2021 to January 2022, 38 patients had an encounter for LBP, 21 of whom required a repeat appointment with their primary care provider (PCM) for LBP. The US Air Force Academy LBP encounter rate was 2.9% (# of patients seeking care for LBP/average empanelment of 1,319). The mean age for those encounters was 35.6 years old; 65.1% male and 34.8% female, as presented in Figure 1. Sixty-three percent had been treated with oral NSAIDs, 7.8% with topical medications, and 31.5% were not taking NSAIDs. About twenty-nine percent were utilizing muscle relaxers and no patients received narcotics for non-traumatic LBP, as presented in Table 1. There were two emergency department visits for LBP, but no urgent care visits during the three-month period. Every patient seen in the three-month period received some type of specialty care. The 38 patients received an accumulation of: 53 physical therapy encounters, 25 pain management encounters, 96 chiropractic encounters, and four orthopedic encounters. One patient received a single session of BFA in primary care. Of the 38 patients seen for LBP, 11 (28.9%) had a fitness restriction for LBP, five of which included a mobility restriction, as presented in Table 1. There were no duty restrictions for LBP during the

review timeframe. One patient received a radiograph within the recommended 30 days for acute non-traumatic LBP, although this was not done at the 10th MDG.

Figure 1

Pre-intervention Demographics

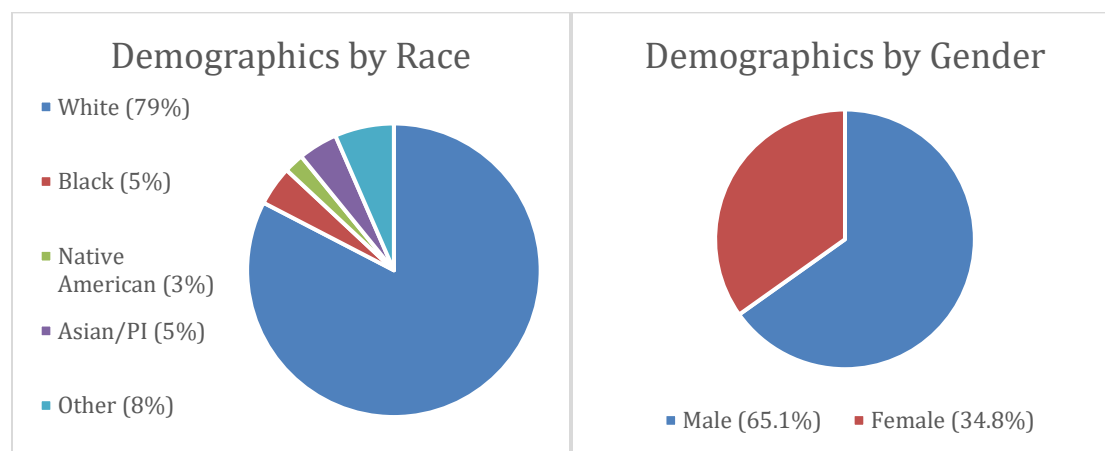


Table 1

Pre-intervention statistics

NSAID Use	Muscle Relaxer Use	Emergency Room visits	Repeat PCM visits	Fitness restriction	Duty restriction	Mobility restriction
24 (63.1%) Oral	11 (28.9%)	2 (5.2%)	2 virtual visits	11 (28.9%)	0 (0%)	5 (13.1%)
3 (7.8%) Topical			19 face-to-face visits			

OMRS at the 10th MDG is typically staffed with two providers, one of which is a physician. During the pre-intervention phase, one of the providers, a physician assistant, changed stations and was replaced by a nurse practitioner. Only the physician was certified and credentialed to perform BFA. According to this certified provider, obstacles to performing BFA were: 1) lack of time allotted to preform BFA in their schedule and 2) lack of high-level evidence to consider BFA as a reliable modality for pain reduction. The non-certified providers' perceived obstacles were lack of access to certification and lack of clinical time to perform BFA.

Post-Intervention Review

During the five-week clinic, 21 active-duty members volunteered for BFA. Three out of the 21 were for acute pain (less than three months). A provider referred two patients; the others heard of the clinic through word of mouth. Fifty-two percent of participants were male, and about 48% were female, as presented in Figure 1. Two participants were taking muscle relaxers for something other than LBP, with another two taking relaxers for LBP. No participants went to the emergency room or urgent care, nor was a new fitness profile issued during the intervention phase, as presented in Table 2. Pain scores before and after BFA averaged 3.57 and 2.24, respectively. Sixty-seven percent of participants saw pain reduction. Forty-eight percent saw at least a 50% reduction, with 28.5% seeing a reduction of 75% or more; the average pain reduction was 40.6%. Using a paired-t test, the mean difference between the pain scores is 1.333 (95% CI, 0.734 to 1.933; p value <0.001), as presented in Table 3.

The average disability score was 20.57 (range 5-59). Nine participants failed to follow-up in the 1-2 days after BFA for disability reevaluation. Of those who provided feedback after BFA, 10 patients had some reduction in disability after BFA, two participants had no change, as presented in Table 4. Analyzing the data with the Wilcoxon signed-rank test, BFA appears to have had a statistically significant change in LBP ($Z = -2.18$; $p = 0.005$). However, a minimally detectable change in disability score is defined by the disability scale as a reduction of at least 15 points, a definition met by only one participant.

Fourteen percent of participants had a profile with a fitness/mobility restriction placed before the intervention. Two of the three profiles expired during the intervention. There were no new profiles written for participants after receiving BFA. One participant had a duty restriction for LBP, along with an Assignment Limiting Code.

Figure 2

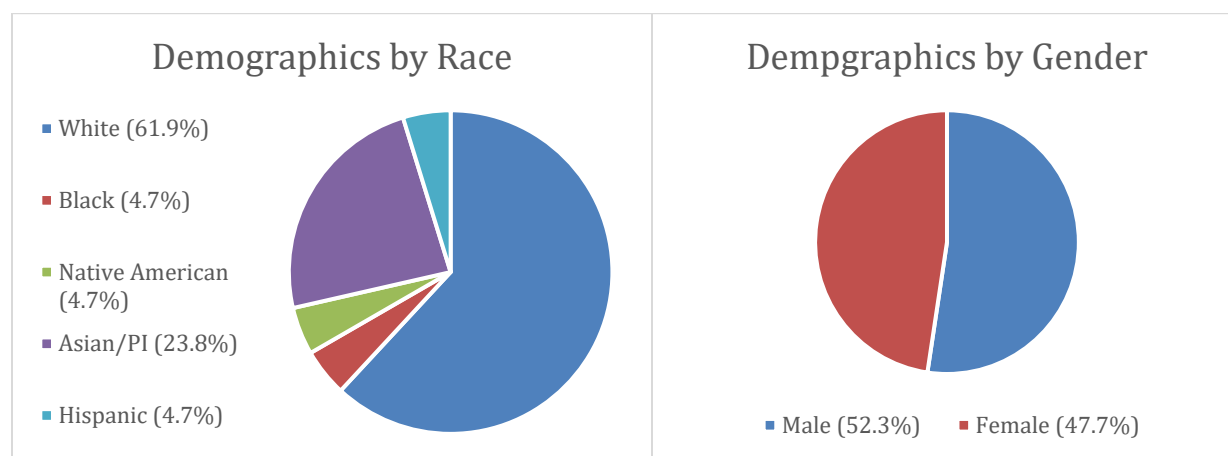
Post-intervention demographics

Table 2

Post-intervention statistics

Muscle Relaxer Use	Emergency Room visits	Repeat PCM visits	Fitness restriction	Duty restriction	Mobility restriction
4 (19%)	0 (0%)	No PCM follow up visits after BFA	3 (14.2%) had a profile during the intervention No new profiles following BFA	1 (4.7%) had DR for LBP, along with an ALC-C2	3 (14.2%)

Table 3

Paired samples statistics (Pain)

	Mean	N	Std. Deviation	Std. Error Mean
Pain Before	3.57	21	1.535	.335
Pain After	2.238	21	1.8549	.4048

Mean	Std. Deviation	Std. Error Mean	95% CI Upper	95% CI Lower	t	One-Sided p	Two-Sided p
1.3333	1.3166	.2873	.7340	1.9326	4.641	<.001	<.001

Table 4

Descriptive statistics (Disability)

	N	Mean	Std. Deviation	Minimum	Maximum	25th Percentile	50th Percentile	75th Percentile
Pain Before	21	20.57	14.320	5	59	12.50	18.00	24.00
Pain After	12	14.25	13.975	1	51	5.00	10.00	18.75

Analysis of Results

Only two of the 21 participants were service members not assigned to the MDG. DOD-wide, healthcare providers account for over 16% of the annual encounters for LBP (LBPWG, 2017). Service members in the pre intervention group were 14.7% more likely to have a profile than those who participated in the walk-in clinic. These members were 9.9% more likely to be treated with muscle relaxers and 55% more likely to require a follow up with their PCM. The pain scores are statistically significant, indicating that the difference between the pain values following the administration of BFA, is unlikely related to chance. No new profiles were issued to those who received BFA during the implementation phase. Three members previously had a profile for LBP. Two participants were scheduled to come off of their fitness/mobility restriction during the intervention, both of whom returned to full status after BFA administration. While the two groups analyzed, three months pre-intervention and during the 5-week walk-in clinic, are two separate groups, the findings of this project still suggest that those with a profile for LBP may be able to return to full status with BFA as an adjunct to care; we cannot say BFA reduced profile rates due to the differences between the two groups and time constraints on our intervention. There does appear to be a correlation between those with chronic back pain - who were willing to try BFA - and a reduced profile rate. The findings support early intervention with BFA to improve recovery times.

The minimum detectable change in disability score for the Quebec Disability Scale is 15 points. Only one of the participants saw a detectable change in disability following BFA.

Although there was a statistically significant reduction in pain scores, we cannot say BFA had a discernable impact on disability secondary to LBP. This may be due to our sample size and loss to follow-up. Of note, one participant did endorse the resolution of a migraine headache and another a reduction in anxiety levels immediately following BFA.

Only one of three providers in OMRS was certified and credentialed to perform BFA. All of the providers in OMRS were aware of the VA/DOD CPG for LBP to include the non-pharmacological and non-narcotic pain control options. None of these providers ordered narcotics or a radiograph within 30 days of non-traumatic LBP without neurological deficits. BFA was only performed in the walk-in clinic for patients empaneled to OMRS; no provider administered BFA in their clinical schedule. Following the implementation phase, our only certified provider expressed interest in opening up appointments in his schedule specifically for BFA to treat migraines, LBP, neck pain, and anxiety. The non-certified provider endorsed interest in becoming certified. Both providers pointed to the walk-in clinic results regarding pain control as a reason to include BFA in their pain control toolkit.

The main obstacle to maintaining the BFA clinic is staffing. While our pilot was small, it did indicate that there is an interest in BFA. Opening BFA up to the entire cadet wing and aggressive advertising may increase overall local interest in BFA, making the walk-in clinic necessary. There are barriers involved in keeping this clinic open. Only two OMRS providers to cover the DHA benchmark of 100 bookable appointments per provider. A likely alternative - and solution to our secondary obstacle, a lack of certified providers - is to have BFA trainers from

Andrews Air Force Base conduct certification training during a group training day to include an immediate credentialing process.

Organizational Impact

BFA reduces pain and offers patients an alternative and adjunct modality for pain control. Supplies are lightweight, making them easy to carry into the field and stock in the clinic. There is an interest at the U.S. Air Force Academy for this complementary alternative medicine. Improving access to this modality can increase patient satisfaction regarding pain management. Certification requires a short four-hour class that can be taught at the MTF. Access to this modality can be augmented with certification of BFA extenders i.e., medical technicians and registered nurses. This is supported by an Air Force approved Clinical Support Staff Protocol that is not currently employed in Family Health or OMRS. With leadership approval, investigators can link certifiers with MDG personnel to provide training and certification.

Our project found that multiple Family Health providers were certified but not credentialed in BFA. The project's findings regarding pain and satisfaction should encourage leaders to adopt a policy of encouraging credentialing, with the help of certified providers to verify the skill.

The DOD CPG for LBP recommends against using muscle relaxers outside of the acute phase of LBP, however evidence suggests that 24% of patients with chronic LBP that were seen from November 2021 to January 2022 were prescribed and using muscle relaxers. Adopting a culture of encouraging alternatives like BFA, including a review of the evidence, may increase compliance with CPG recommendations and reduce the rate of non-evidence-based medicine. BFA reduces pain rates and may decrease reliance on CNS depressants. Our project suggests that its use can help maintain or re-attain full individual medical readiness.

Future Directions of Research and Practice

There is growing evidence that supports the use of AA for neck pain, anxiety, and migraine (Kurebayashi et al., 2017; Silva et al., 2015; Yang et al., 2012). Future investigations should consider expanding BFA use to these patients. Evaluation should include a pain assessment before BFA administration and immediately following BFA protocol completion.

For LBP specifically, future research should consider performing a pre-intervention chart review as was done in this project, then contact those same patients to determine interest in BFA. After administration, profile resolution rates for LBP should be analyzed to determine if BFA has a direct impact on readiness.

The Quebec Disability Scale is cumbersome and not a good measure of immediate functional change. To assess immediate changes in functional ability, future investigators should consider using an inclinometer. This device measures the maximum angle of forward flexion in a patient. An inclinometer can help investigators determine whether improved functional ability is present and immediate.

Finally, the U.S. Air Force Academy does not have a typical Air Force mission. It is primarily a support base for cadets attending the Academy and therefore has no operational flying mission. Future endeavors should consider implementing BFA at an operational airbase complete with a munitions squadron, aircraft maintenance, and a large security forces squadron. Rates of chronic and acute LBP are sure to be higher in these units.

Conclusion

Low back pain is a top reason service members seek primary care. LBP places a burden on readiness, impacting duty restrictions and retention across the DOD. BFA is shown to reduce

pain rates and dependence on CNS depressants. BFA addresses all four areas of the DHA Quad Aim by offering a proven non-pharmacological pain reducing option to *better health* and *better care*. It is *lower cost* at \$6.50 per patient per treatment and reduces LBP associated comorbidities and absenteeism. Finally, reduced pain intensities and depressant prescription allow troops to return to full fitness/duty status, *improving readiness*. While this project does support the use of BFA to reduce pain levels and possibly a reduced number of long-term profiles, future large-scale studies are needed to realize its full potential.

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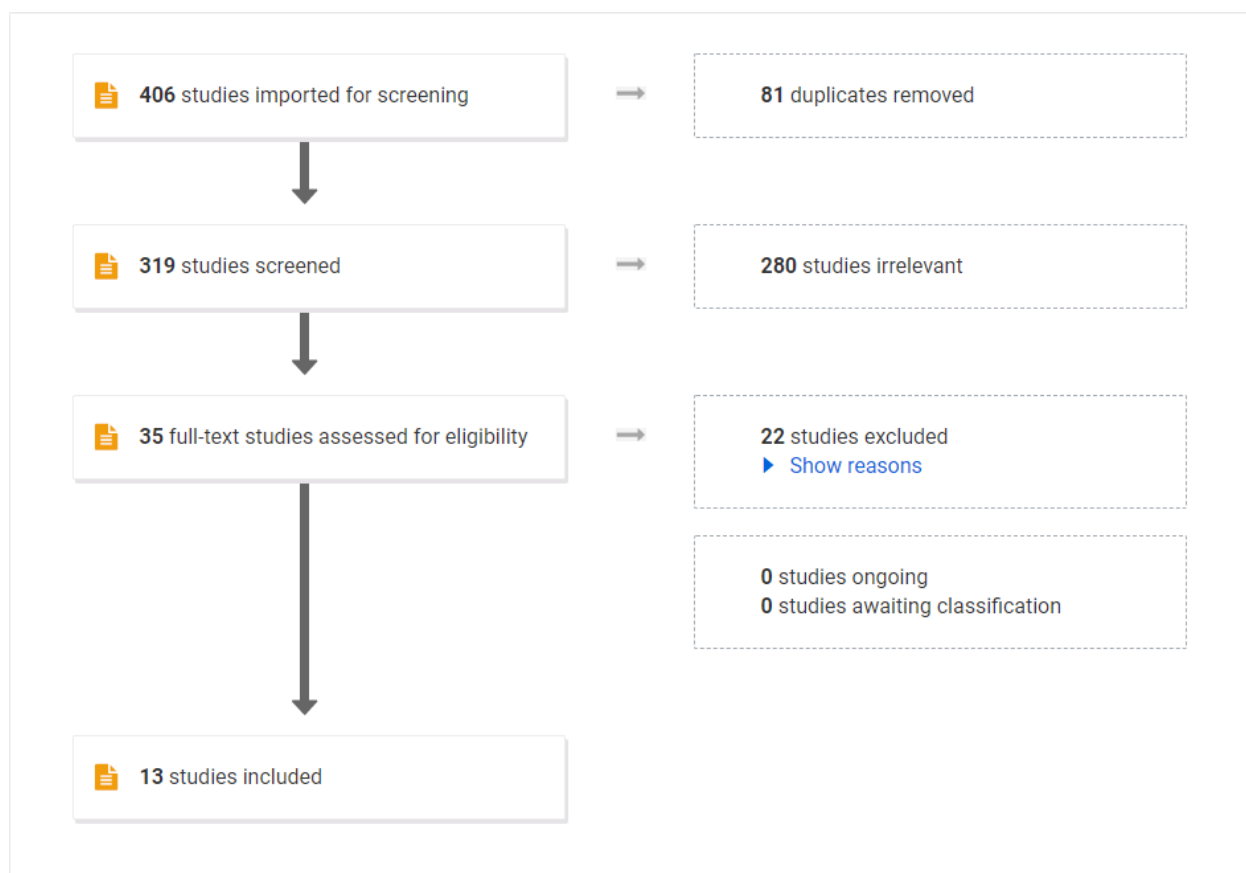
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Appendix A



NOTE: Exported from Covidence, <https://app.covidence.org/reviews/115295>

Appendix B

Year	Project Name	Project Description	Project Location	Project Type	Project Status	Project Lead	Project Team	Project Budget	Project Results	Project Impact	Project Evaluation
2020	Project A	Project A description	Project A location	Project A type	Project A status	Project A lead	Project A team	Project A budget	Project A results	Project A impact	Project A evaluation
2021	Project B	Project B description	Project B location	Project B type	Project B status	Project B lead	Project B team	Project B budget	Project B results	Project B impact	Project B evaluation
2022	Project C	Project C description	Project C location	Project C type	Project C status	Project C lead	Project C team	Project C budget	Project C results	Project C impact	Project C evaluation
2023	Project D	Project D description	Project D location	Project D type	Project D status	Project D lead	Project D team	Project D budget	Project D results	Project D impact	Project D evaluation
2024	Project E	Project E description	Project E location	Project E type	Project E status	Project E lead	Project E team	Project E budget	Project E results	Project E impact	Project E evaluation
2025	Project F	Project F description	Project F location	Project F type	Project F status	Project F lead	Project F team	Project F budget	Project F results	Project F impact	Project F evaluation
2026	Project G	Project G description	Project G location	Project G type	Project G status	Project G lead	Project G team	Project G budget	Project G results	Project G impact	Project G evaluation
2027	Project H	Project H description	Project H location	Project H type	Project H status	Project H lead	Project H team	Project H budget	Project H results	Project H impact	Project H evaluation
2028	Project I	Project I description	Project I location	Project I type	Project I status	Project I lead	Project I team	Project I budget	Project I results	Project I impact	Project I evaluation
2029	Project J	Project J description	Project J location	Project J type	Project J status	Project J lead	Project J team	Project J budget	Project J results	Project J impact	Project J evaluation
2030	Project K	Project K description	Project K location	Project K type	Project K status	Project K lead	Project K team	Project K budget	Project K results	Project K impact	Project K evaluation
2031	Project L	Project L description	Project L location	Project L type	Project L status	Project L lead	Project L team	Project L budget	Project L results	Project L impact	Project L evaluation
2032	Project M	Project M description	Project M location	Project M type	Project M status	Project M lead	Project M team	Project M budget	Project M results	Project M impact	Project M evaluation
2033	Project N	Project N description	Project N location	Project N type	Project N status	Project N lead	Project N team	Project N budget	Project N results	Project N impact	Project N evaluation
2034	Project O	Project O description	Project O location	Project O type	Project O status	Project O lead	Project O team	Project O budget	Project O results	Project O impact	Project O evaluation
2035	Project P	Project P description	Project P location	Project P type	Project P status	Project P lead	Project P team	Project P budget	Project P results	Project P impact	Project P evaluation
2036	Project Q	Project Q description	Project Q location	Project Q type	Project Q status	Project Q lead	Project Q team	Project Q budget	Project Q results	Project Q impact	Project Q evaluation
2037	Project R	Project R description	Project R location	Project R type	Project R status	Project R lead	Project R team	Project R budget	Project R results	Project R impact	Project R evaluation
2038	Project S	Project S description	Project S location	Project S type	Project S status	Project S lead	Project S team	Project S budget	Project S results	Project S impact	Project S evaluation
2039	Project T	Project T description	Project T location	Project T type	Project T status	Project T lead	Project T team	Project T budget	Project T results	Project T impact	Project T evaluation
2040	Project U	Project U description	Project U location	Project U type	Project U status	Project U lead	Project U team	Project U budget	Project U results	Project U impact	Project U evaluation
2041	Project V	Project V description	Project V location	Project V type	Project V status	Project V lead	Project V team	Project V budget	Project V results	Project V impact	Project V evaluation
2042	Project W	Project W description	Project W location	Project W type	Project W status	Project W lead	Project W team	Project W budget	Project W results	Project W impact	Project W evaluation
2043	Project X	Project X description	Project X location	Project X type	Project X status	Project X lead	Project X team	Project X budget	Project X results	Project X impact	Project X evaluation
2044	Project Y	Project Y description	Project Y location	Project Y type	Project Y status	Project Y lead	Project Y team	Project Y budget	Project Y results	Project Y impact	Project Y evaluation
2045	Project Z	Project Z description	Project Z location	Project Z type	Project Z status	Project Z lead	Project Z team	Project Z budget	Project Z results	Project Z impact	Project Z evaluation



Microsoft Excel
Worksheet

Appendix C

NURSS131 DATA ANALYSIS TABLE

Project Title: Evidence Based Project: Battlefield Acupuncture in the Treatment of Low Back Pain at a Military Treatment Facility

Project Site: Colorado Consortium

Project Members: James S. Fite & Daniel V. Tesch

		Variable Name	Variable Description and type of measure	Data Source	Possible Range of Values	Level of Measurement	Time Frame for Collection	Statistical Test	Decision Rule
Population or Event	IV (in book referred to as descriptive variable)	Battlefield Acupuncture	- Description: Active Duty with LBP receive a five-week BFA protocol from Feb-Mar 2022. - Type: Process Measure	BFA Walk-in Clinic/MHS Genesis	0 = Before BFA 1 = after BFA	Nominal	Nov 2021 (before BFA) and Jan 2022 (after BFA)	None	N/A
	DV (in book referred to as outcome variable)	% Pain Change	Pain level BEFORE BFA/pain level AFTER BFA	Genesis/ASIMS	0 to 100%	Interval	Feb 2022 (before BFA) and Mar 2022 (after BFA)	Paired t-test or Wilcoxon's signed rank test (if issues with normal distribution)	Based on literature, decrease in pain intensity, disability, and opioids to reduce restrictions 25% (Solution Synthesis table)
		% Disability change	- Disability BEFORE BFA/pain level AFTER BFA - Type: Outcome Measure		0 to 100%	Interval		Independent T or Mann-Whitney U (if issues with normal distribution)	
		% FR/MR/DR restrictions	#pts with LBP that required restrictions/#pts with LBP BEFORE and AFTER the intervention - Type: Outcome Measure						

Proposed Title for Project/Initiative/Opportunity to Improve

Battlefield Acupuncture (BFA) in the Treatment of Low Back Pain (LBP) at a Military Treatment Facility

Opportunity Statement

Investing in BFA to reduce pain intensity and depletion of physical ability in order to facilitate improved medical readiness.

Business Opportunity/Objectives

1. Decrease pain intensity, functional disability, and medication use (*macro*)
2. Improve readiness (*macro*)
3. Reduce repeat outpatient appointments and emergency department (ED) visits for recalcitrant pain (*macro*)
4. Reduce the use of diagnostic imaging outside of Clinical Practice Guideline (CPG) recommendations (*micro*)
5. Expand provider knowledge of low back pain clinical practice guidelines (*micro*)

Potential Impact of the Initiative/Project

1. Measuring pain intensity, on a scale from 0 to 10, and functional ability will allow investigators to determine if BFA is effective in treating LBP. Measuring these variables evaluates *better care's* impact on *better health* and accomplishes *value-based care* by improving quality and delivering outcomes over volume. Our literature review deferred to expertise and our outcome evaluation shows a preoccupation with failure.
2. Evaluate records before the intervention for the occurrence of duty and fitness profiles, then after the intervention to determine if BFA impacts physical capability and deployment availability. This objective evaluates *improved readiness* via mobility restrictions, *value-based care* outcomes via BFA's effect on fitness/duty profiles, and sensitivity to operations by evaluating our treatments effect on the organization.
3. Compare the number of repeat PCM visits and ED encounters coded for LBP, before and after the intervention to determine if BFA results in *lower cost*. This metric digs deeper into the project to avoid using simple outcome appraisal (espoused by High Reliability Organizations) and evaluates recurrent encounter prevention; *value-based care*.
4. Evaluate the number of patients sent for imaging, outside of CPG recommendations, before and after the intervention to determine if CPG discussions decrease unnecessary and costly diagnostic use. This will evaluate the medical clinic's *sensitivity to operations* and satisfy the investigators *preoccupation with failure*. Increasing use of evidenced-based CPGs, reliant on proven outcomes inherent to *value-based care*, offers *better care* and reduces unnecessary diagnostics to *lower costs*.
5. Evaluate provider knowledge and CPG use to gauge whether the intervention triggered the tertiary benefit of increasing the use of evidence-based practice (EBP). EBP exudes the better outcomes of *value-based care*, is inherent to the Quad Aim goal of *better care*, and ensures providers are more *sensitive to operations*.

Alternatives (courses of action) chosen for Analysis

1. Harnessing evidence-based literature to establish a walk-in BFA clinic resolved to reduce the pain intensity and physical disability of LBP; goals being improved readiness through reduction of the need for fitness and duty restrictions (Buchanan et al., 2018; Federman et al., 2018; Fox et al., 2018; Jan et al., 2017; Kligler et al., 2018; Taylor et al., 2018; Tsai et al., 2016; Yeh et al., 2014). The brain's response to the application of acupoint needles has been observed via functional MRI (Yeh et al., 2014). Delay in pain attenuation results in stress and other psychosocial morbidity (Brooks et al., 2013). We will use the DOD/VA CPG for LBP to educate providers

and leadership on EBP within the CPG, to include criteria for diagnostic imaging, as it remains widely overused (Foster et al., 2018; Kiwanuka et al., 2020; The Diagnosis and Treatment of Low Back Pain Work Group [LBPWG], 2017).

2. Use BFA alone, without other non-pharmacological therapies. These studies favor BFA as an alternative pain control method, however there was limited effect on analgesic medication use and the studies are concerning for bias (Jan et al., 2017). BFA tends to show better results as an adjunct to exercise and stretching programs, in addition to other forms of complementary alternative methods (Moura et al., 2019a) Follow-up evaluations showed that pain intensities had returned following intervention completion (Moura et al., 2019b).

3. “*Status Quo*”: Patients reporting to clinic for LBP are traditionally evaluated for red flags and focus on pharmacological interventions, ergonomics, insoles, and physical therapy, often including unnecessary diagnostic imaging (Adams et al., 2019; Foster et al., 2018). The pain intensity and physical disability associated with LBP, and medications used to treat this complaint, can result in duty and fitness restrictions (Adams et al., 2019; Ambulatory visits, active component, U.S. Armed Forces, 2020; Benedict et al., 2019; Cosio-Lima et al., 2013; Granado et al., 2016; Kelley et al., 2017; Reif et al., 2018).

Analysis of Alternatives

Alternative 1:	Establish a walk-in BFA clinic, as an adjunct to other non-pharmacological therapies, resolved to reduce the pain intensity, physical disability, and stress of LBP; goals being improved readiness through reduction of the need for fitness and duty restrictions (Buchanan et al., 2018; Federman et al., 2018; Foster et al., 2018; Fox et al., 2018; Jan et al., 2017; Kligler et al., 2018; Tsai et al., 2016; Yeh et al., 2014).
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Pros	Cons
Reducing pain intensities and increasing quality of life Returning members to full duty faster Increasing medical readiness Expanding use of alternative methods Reducing use of NSAIDs and opioids Improving provider trust in evidence-based CPGs	Training time/costs Provider and patient reluctance Pain with needle insertion and manipulation Ineffective treatment results in repeat visits

Alternative 2:	Use BFA alone, without other non-pharmacological therapies. These studies favor BFA as an alternative pain control method, however there was limited effect on analgesic medication use and studies are concerning for bias (Jan et al., 2017).
----------------	---

Pros	Cons
Reduces pain intensity Some effect on regaining physical ability No sedating pain medications, initially Does not require physical therapy referral Reduces duty restrictive profiles	Not as effective Does not encourage get up and move Does not offer multiple modalities (not using everything we can offer) May not fully address pain in timely manner May result in repeat visits

		May be seen as dismissive Does not use the CPG in full
Alternative 3:	“ <i>Status Quo</i> ”: Patients reporting to clinic for LBP are traditionally evaluated for red flags and focus on pharmacological interventions, ergonomics, insoles, and physical therapy, often including unnecessary diagnostic imaging (Adams et al., 2019; Foster et al., 2018).	
Pros		Cons
No policy changes required No incurred costs No training required No commentary from non-medical personalities		Non EBP medicine Not always effective Repeat outpatient and ED encounters Psychosocial comorbidities Continued impact on duty/fitness restrictions
Assumptions		
- The prevalence of LBP in primary care is conservatively 12% (LBPWG, 2017). The AFA serves 7300 cadets/active duty members (from ourmilitary.com). - Most cases of LBP will resolve within 6 weeks (National Institute of Neurological Disorders and Stroke, n.d.). - LBP is a major cause of duty/fitness restrictions in 15-35% of cases (Cosio-Lima et al., 2013). - Lost productivity costs \$514 per person per year (Miller, 2013). - ASP needles cost \$50 for 80 needles (from AustinMedical.com). A single session of BFA can use up to 10 needles (Niemtzow et al., 2015). (\$6.25/person per session) - One session of BFA per week, for five weeks, can reduce non-traumatic LBP intensity and mobility (Moura et al., 2019a; Moura et al., 2019b). - Auricular acupuncture can reduce pain in 80% of encounters (Moura et al., 2019a). - 33% of veterans with LBP report undertreatment which can result in repeat primary care encounters (LBPWG, 2017). - 37% of active duty soldiers report LBP as severe, 23% as persistent, possibly resulting in an ED visit (Reif et al., 2018). 60% of those who report to the ED for LBP are prescribed opioids (Ming-Chih et al., 2014). - The cost of ED visit for non-traumatic joint disorders is conservatively \$1,457 (Soni & Mitchell, 2016). - The median outpatient visit is \$254 (Machlin & Chowdhury, 2011).		
Recommendation and Rationale		
Recommendation		
Proposal to recommend alternative #1: Harnessing evidence-based literature to establish a walk-in BFA clinic resolved to reduce the pain intensity, physical disability, and stress of LBP; goals being improved readiness through reduction of the need for fitness and duty restrictions		
Rationale		
BFA can reduce pain intensity, improve physical ability, and reduce stress -inherent to LBP- fitness and duty restrictions to improve medical readiness (Buchanan et al., 2018; Federman et al., 2018; Fox et al., 2018; Jan et al., 2017; Kligler et al., 2018; Tsai et al., 2016; Yeh et al., 2014). Theoretically, pain is modulated through the application of acupoint needles in the auricle, activating inhibitory interneurons and chemical mediators, as		

evidenced by the brain's response observed on functional MRI (Cagnie et al., 2013; Levy et al., 2018; Moura et al., 2019; Yeh et al., 2014). BFA can also modify psychosocial morbidity by reducing stress associated with chronic pain, no matter if the pain causes stress or stress causes maladaptive pain processes (Brooks et al., 2013; Bushnell et al., 2013; Wippert & Weibking, 2018).

Value Based Care - Investment Required by the Organization and the Associated "VALUE" or \$ GAINED.

I. Volume projection based on:

The prevalence of LBP in the military is roughly 12% per year (LBPWG, 2017).
The AFA Operational Medical Readiness Squadron serves 7300 active duty and cadets (ourmilitary.com).

Potential encounters for LBP per year	876
Total	876

II. Reimbursement calculated for:

BFA can reduce pain intensity by 50%, reducing lost productivity, repeat primary care visits, and ED visits (Miller, 2013; Reif et al., 2018; Tsai et al., 2016).

LBP persists in 23% of patients (23% of 876 patients= 201). 80% of patients report pain reduction 25-50% following BFA (80% of 201 patients with pain relief = 161). BFA can reduce duty restrictions by a median of 25% (25% of patients avoiding duty restrictions is 15) - avoiding lost productivity [15*\$514 per patient in lost productivity= \$7,840] - dodging ED visits (161 patients avoiding the ED [\$1457/visit] = \$234,500) and repeat primary care encounters (161 patients avoiding repeat primary care encounters [\$254/visit] = \$41,000). (\$7,840+\$234,500+\$41,000= \$283,340/year)	\$283,340
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III. Costs:

Variable Costs:

Supplies (Power point, internet access, needles)	\$50
Certifying providers in BFA (\$98/physician, \$50/PA, and \$49/NP to be away from primary duties for 4 hours during training) (Salary.com)	\$788
CPG training cost/hr for staff (\$98/physician, \$50/PA, and \$49/NP to be away from primary duties for 1 hour) (Salary.com)	\$197
Total	\$1,035

Fixed Costs:

Labor (running the BFA clinic with a PA and NP twice a week for a year)	\$9,900
Overhead (Space to train, technology, facility utilities)	\$100 (est.)
10 ASP needles per patient (\$6.25/patient) for 5 sessions per 161 patients (5 (\$6.25*161))	\$5,031
Total	\$15,031

IV. Forecasted P&L statement:Revenues:

Avoiding the cost of absenteeism, presenteeism, and lost productivity. (15*\$514= \$7,840)	\$7,840
Avoiding additional appointments and ED visits (161*\$1457=\$234,500) (161*\$254=\$41,000)	\$275,500
Total revenues	\$283,340

Costs:

Variable costs	\$1,035
Fixed costs	\$15,031
Total costs	\$16,066

PROJECTED \$267,274**PROFIT****Risks and Mitigation Plan**

Risks	Plan
1. Provider apprehension to utilize program	1. Educate providers on the evidence and statistics regarding pain intensity, disability, readiness, and repeat visits. Discuss the EBP behind the CPG recommendations.
2. Patient apprehension to undergo BFA	2. Discuss the data and evidence regarding pain relief, functional ability, and the link to medical readiness. Review the probability of side effects based on the evidence.

3. Provider fails to refer patients to BFA clinic	3. Hand out patient and provider information in the form of pamphlets and remind providers weekly of the available service.
4. Adverse reaction to BFA needles to include infection and vasovagal response	4. Assess the technique including asepsis to determine if protocol was followed or if the patient was an inappropriate candidate.
5. Ineffective intervention does not reduce pain or disability resulting in repeat and ED visits, increases cost, or does not have an effect on readiness statistics	5. Collect data using pain scales, disability scales, and PHA-9 to evaluate the effect of the primary intervention. Perform chart review pre and post intervention to determine readiness statistics, repeat appointments, and ED visits. If not effective, we will determine why and return to the “status quo” until a resolution can be reached.

Implementation Plan *Implementation plan*

Phase 1:	Review and appraise current literature. Conduct a needs assessment.	
Milestone Description:	Conduct literature search regarding the prevalence of LBP and its economic and human costs, then review evidence for a solution. Institutional data regarding issues with referral tracking, wait times, and costs.	
Deliverables	Due Date	Accountable Person
<i>Measurable Goal:</i> Search and analyze greater than 10 level I to level III studies to support the problem and solution.	1.5 months	POC/Investigator
Resources Needed		
Access to databases via USUHS Learning Resource Center website and staff. Access to Group Practice Manager and providers at the 10 th MDG. <i>Mitigate risks</i> by contacting BFA certified staff at the 10 th MDG and running several searches with differing keywords to ensure we exhaust search options.		
Expected Level of Benefit		
Literature review forms the basis of evidence-based practice and highlights the possible solutions. Institutional data will allow us to estimate the potential savings tied to our proposed solution and highlight the MTF specific problem.		
Phase 2:	Identify key stakeholders: Group/Squadron/Flight leadership, clinics, providers. Conduct retroactive chart review to determine local statistics regarding LBP and its monetary, human, and readiness cost. Disseminate the results of the evidence review.	
Milestone Description:	Organize briefings of MDG leadership/providers regarding evidence of the problem, the human and monetary costs, and solution with intent to gain MDG leadership approval to move forward with implementation.	

Deliverables		Due Dates	Accountable Person
<i>Measurable Goal:</i> Craft a PowerPoint presentation complete with visual aids.		1 months after evidence appraisal (total 2.5 months)	POC/Investigator
Resources Needed			
Time, technology, record access, and support. Leadership and provider availability to schedule briefing. <i>Mitigate risks</i> through peer review before final presentation. Engage schedule managers to coordinate time and space for briefings. Assign numbers to charts and include non-PPI, so as to avoid HIPAA violations.			
Expected Level of Benefit			
The briefing will allow our team to engage MDG leadership in order to discuss the importance and need of our project, to gain approval and staff buy-in.			
Phase 3:	Identify BFA certified staff. Develop informational guides for patients, reviewing BFA. Develop visual aids for front desk and MDG visuals regarding walk-in clinic days/times. Potentially link BFA interested providers with certification officials at Andrews AFB.		
Milestone Description:	Identify BFA certified individuals to achieve sustainability and assist in BFA administration. Conduct a 1-hour project plan discussion and a question and answer session to ensure information sharing is complete. Link providers and BFA trainers to potentially engage an MTF wide certification.		
Deliverables		Due Dates	Accountable Person
<i>Measurable Goals:</i> Formulate written training plan and walk-in clinic hours of operation. Establish a link with trainers and engage in coordination of trainings.		1.5 months after project approval (total 4 months)	POC/Investigator
Resources Needed			
Allotted time and space to conduct training. Access to the Education & Training office and medical library. Paper and tech to print pamphlets and flyers. Leadership approval to link interested providers with BFA trainers. <i>Mitigate risks</i> by assuring certified providers are competent and motivated to participate. Route plan through specialty staff for recommendations and approval.			
Expected Level of Benefit			
BFA champions establish sustainability. Certified providers act within the organization as a familiar face to encourage staff and patient engagement. Patient handouts and flyers help to spread knowledge of the walk-in clinic, reminding patients and providers of how to access care. Certification of additional providers will allow for program and walk-in clinic sustainability.			
Phase 4:	Implement project and conduct CPG training.		
Milestone Description:	All providers will be requested to attend a single, 1-hour training regarding the CPG and our project plan where we will review the CPG. We will also discuss our project plan and the evidence, BFA walk-in hours and the referral process, as well as metrics		

	we plan to track. This will ensure staff understands their responsibilities. Staff will be encouraged by leadership buy-in and evidence review.	
Deliverables	Due Dates	Accountable Person
<i>Measurable Goal:</i> Identify providers in active duty/trainee clinics and train to 100%.	One week after project approval and certified provider training (total 4.5 months)	POC/Investigator BFA certified providers
Resources Needed		
Time and space for personnel and briefers. Flight and MDG level leadership sign off on training time to encourage staff participation. Access to technology to project training onto a large screen. Space large enough to accommodate 8-10 patients at a time in order to deliver the intervention.		
Expected Level of Benefit		
Team understanding of project purpose and compliance with program use. Adequate space allows for intervention application. Review of the CPG may have tertiary benefits of reducing non-evidence-based practice.		
Phase 5:	Evaluation of intervention. Disseminate results to key stakeholders and prepare final presentation.	
Milestone Description:	Evaluate the results of the intervention: changes in pain intensity, physical ability, perceived stress, and duty/fitness restrictions. Evaluate reductions in cost of repeat primary care and ED visits. Determine if CPG education affects inappropriate diagnostic imaging rates.	
Deliverables	Due Dates	Accountable Person
<i>Measurable Goal:</i> Evaluating written patient reported pain, disability, and stress scores after 6 weeks of the intervention. Clinic readiness statistics will review fitness/duty restrictions. Clinic specific ED and repeat primary care visit rates.	Project goal is to sustain BFA as an intervention with a report to leadership 6 weeks of intervention.	POC/Investigator
Resources Needed		
Access AHLTA, ASIMS, and Utilization Manager's data; leadership approval to collect data. <i>Mitigate risks</i> by structured information capture and interpretation. Conduct provider CPG retraining, walk-in clinic reminders, and answer questions as needed.		
Expected Level of Benefit		
Gives leaders and decision makers information needed to review program effectiveness and cost benefit.		

NOTE: Modified from Harvard Business Review Press. (2011). *Pocket mentor: Developing a business case*. Boston: Author (pp 82-85).

Appendix E

Project Year 1 (2020)												
Activity/Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Project Planning												
-Task 1: Stakeholder meetings										X		
-Task 2: Review external data										X		
-Task 3: Identify the problem and intervention										X		
-Task 4: Literature review, appraisal, and synthesis										X		
Project Implementation/Data Collection												
-Task 1: Design the project										X		
-Task 2: Identify resources										X		
-Task 3: Define outcome measures											X	
Data Analysis												
-Task 1: Identify benchmarks											X	
-Task 2: Develop data analysis plan										X		
-Task 3: Identify tools to record measures											X	
Dissemination												
-Task 1: Present to USU faculty and students											X	
-Task 2: Present to Phase II site director											X	
Project Year 2 (2021)												
Activity/Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
USUHS VPR Submission and Approval						X						
Site IRB Submission and Approval								X		X	X	X
Project Planning						X	X					
-Task 1: Stakeholder briefing												
-Task 2: Identify certified providers												
-Task 3: Provider briefing												
Project Implementation/Data Collection											X	X
-Task 1: Conduct walk-in clinic; post flyers												

Project Year 3 (2022)

Activity/Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Site IRB Submission and Approval	X											
Project Implementation/Data Collection		X	X									
-Task 1: Conduct walk-in clinic; post flyers												
Data Analysis (Pain & duty restrictions)			X									
Dissemination -Task 1: Leadership/MTF wide brief and sustainment plan -Task 2: USU graduation presentation -Task 3: Seek publishing (<i>Medical Acupuncture</i> and TSNRP)				X	X							

Appendix F

Last name: _____ Today's Date: _____ 2022

S: What would you rate your back pain on a scale of 0-10 currently? _____ On average _____?

O: When did your back pain start? If chronic, approximately how long ago did it start? No need to be precise.

L: Where is your back pain located, middle, left, right?

D: Is your back pain constant or when it flares up, how long does it last?

C: What word would you use to characterize your back pain? Circle or write in your own words. Examples include, but not limited to:

Sharp, achy, dull, throbbing. In your own word(s) _____

R: Does it radiate anywhere? Yes / No. If yes, where? _____

A: What seems to make it worse?

A: Any other symptoms with your back pain?

R: What seems to make it better? Example any medication you have been taking, ect..

T: Is there a certain time of day or night it seems to occur?

Appendix G

The Quebec Back Pain Disability Scale:

This questionnaire is about the way your back pain is affecting your daily life. People with back problems may find it difficult to perform some of their daily activities. We would like to know if you find it difficult to perform any of the activities listed below, because of your back. For each activity there is a scale of 0 to 5. Please choose one response option for each activity (do not skip any activities) and circle the corresponding number.

Today, do you find it difficult to perform the following activities because of your back?

	0. Not difficult at all	1. Minimally difficult	2. Somewhat difficult	3. Fairly difficult	4. Very difficult	5. Unable to do
1. Get out of bed	0	1	2	3	4	5
2. Sleep through the night						
3. Turn over in bed						
4. Ride in a car						
5. Stand up for 20-30 minutes						
6. Sit in a chair for several hours						
7. Climb one flight of stairs						
8. Walk a few blocks (300-400 m)						
9. Walk several kilometres						
10. Reach up to high shelves						
11. Throw a ball						
12. Run one block (about 100m)						
13. Take food out of the refrigerator						
14. Make your bed						
15. Put on socks (pantyhose)						
16. Bend over to clean the bathtub						
17. Move a chair						
18. Pull or push heavy doors						
19. Carry two bags of groceries						
20. Lift and carry a heavy suitcase						

Add the numbers for a total score: _____

Minimum detectable change (90% confidence) 15 points

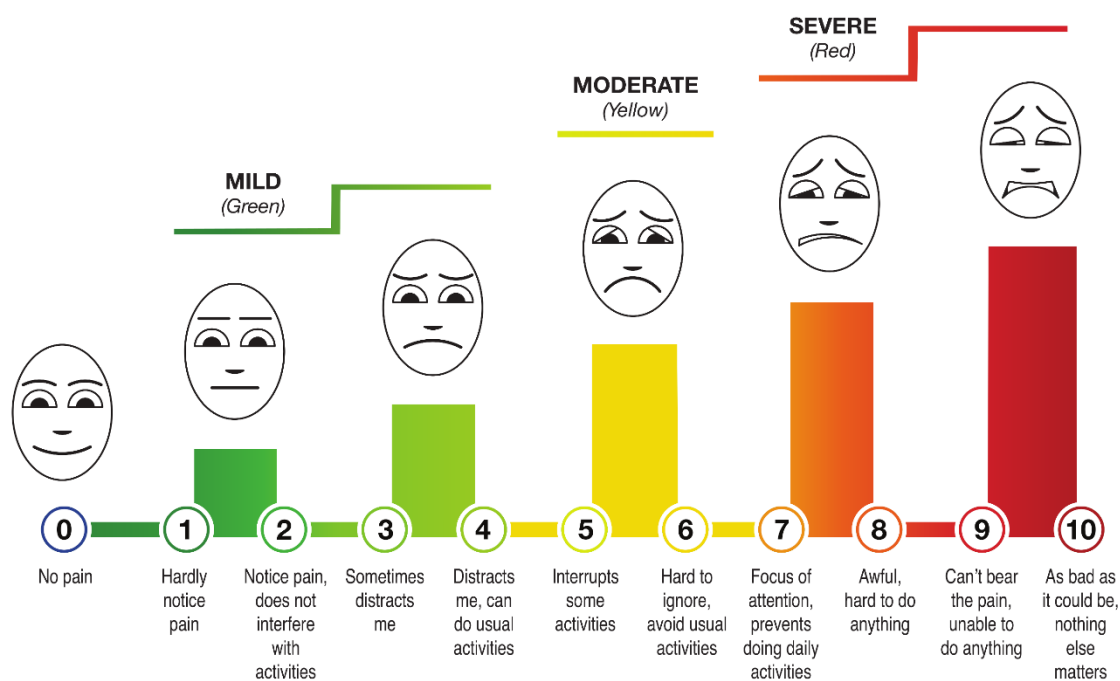
Sources:

Kopec, JA, Esdaile, JM, Abrahamowicz, M., Abenhaim, L., Wood-Dauphinee, S, Lamping, DL & Williams JL (1995). The Quebec Back Pain Disability Scale. *Spine*, 20(3): 341-352.

Davidson, M. & Keating, J.L. (2002). A comparison of five low back disability questionnaires: Reliability and responsiveness. *Physical Therapy*, 82(1): 8- 24.

Appendix H

Defense and Veterans Pain Rating Scale



v 2.0

Appendix I



Appendix C: Daniel K. Inouye Graduate School of Nursing
DNP Project Team Mentor (Committee Membership) Agreement Form

DOCTOR OF NURSING PRACTICE PROJECT DNP Project Clinical Question and Team Mentor (Committee Membership) Agreement Form

Graduation Year:

Name(s) of DNP Project Student Team:

1. James S. Fite Phase II Site: AGCNS ☐ FNP ☒ PMHNP ☐ RNA ☐ WHNP ☐
2. Daniel Tecsh Phase II Site: AGCNS ☐ FNP ☒ PMHNP ☐ RNA ☐ WHNP ☐
3. _____ Phase II Site: AGCNS ☐ FNP ☐ PMHNP ☐ RNA ☐ WHNP ☐
4. _____ Phase II Site: AGCNS ☐ FNP ☐ PMHNP ☐ RNA ☐ WHNP ☐
5. _____ Phase II Site: AGCNS ☐ FNP ☐ PMHNP ☐ RNA ☐ WHNP ☐
6. _____ Phase II Site: AGCNS ☐ FNP ☐ PMHNP ☐ RNA ☐ WHNP ☐

The tentative title of the DNP Project Proposal for this student group is:

Battlefield Acupuncture in the Treatment of Low Back Pain at a Military Treatment Facility

Committee Approved DNP Project Clinical Question:

In active duty servicemembers with low back pain not caused by trauma, does Battlefield Acupuncture, compared to CPG

Module A local standard practices, improve medical readiness?

?

Names of DNP Project Team Mentors *(type the name and obtain signatures)*:

I agree to serve as a member of the DNP Project Team (Team Mentors) for the above DNP Student Project Team. As a Project Team Mentor, I agree to the duties and responsibilities outlined within the DNP Project Manual which include but are not limited to the provision of consultation and guidance supporting the entire DNP project journey and to ensure the DNP project is of sufficient rigor and demonstrates doctoral level scholarship to meet the requirements for USUHS GSN graduation.

Form Version: 1 Jun 2016



Appendix C: Daniel K. Inouye Graduate School of Nursing
DNP Project Team Mentor (Committee Membership) Agreement Form

NOTE: You may have 3-4 DNP Team Mentors [committee members including your DNP Senior Mentor (Chair)]. The Phase II Site Director may also be a member of the group, as well as other USUHS faculty or others who may serve as content experts. All non-USUHS faculty selected as a Team Mentor must be approved by the DNP Project Director.

Senior Mentor (Chair): Dr. Jennifer Trautmann Signature: [Redacted] Date: 17 Dec 2020

Team Mentor (Committee): Kellie Bond Signature: BOND,KELLIE.DORES.1282
3466660 Date: [Redacted]

Team Mentor (Committee): _____ Signature: _____ Date: _____

Team Mentor (Committee): _____ Signature: _____ Date: _____

Appendix J



Completion Date 31-Mar-2020
Expiration Date 31-Mar-2023
Record ID 36062419

This is to certify that:

James Fite

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

GCP – Social and Behavioral Research Best Practices for Clinical Research
(Curriculum Group)
GCP – Social and Behavioral Research Best Practices for Clinical Research
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/7wa4c5a47c-7196-4678-b22c-aa9c614023ce-36062419



Completion Date 30-Mar-2020
Expiration Date 30-Mar-2023
Record ID 36062414

This is to certify that:

James Fite

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

OUSD P&R Human Research
(Curriculum Group)
Social and Behavioral Investigators and Research Study Team
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/7wb3510a1d-0d2d-4274-b04a-03498016984d-36062414



Completion Date 31-Mar-2020
Expiration Date 31-Mar-2023
Record ID 36062418

This is to certify that:

James Fite

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Responsible Conduct of Research (RCR)
(Curriculum Group)
Responsible Conduct of Research (RCR)
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/7wabb80123-5daa-4da7-99bd-a1f2141e60e4-36062418



Completion Date 27-Mar-2020
Expiration Date 27-Mar-2023
Record ID 36062417

This is to certify that:

James Fite

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Good Clinical Practice (U.S. FDA Focus)
(Curriculum Group)
GCP for Clinical Trials with Investigational Drugs and Medical Devices (U.S. FDA Focus)
(Course Learner Group)
1 - GCP
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/7w6976068d-a2b1-4b0c-981f-7bdb85f97fa5-36062417



Completion Date 27-Mar-2020
Expiration Date 27-Mar-2023
Record ID 36062415

This is to certify that:

James Fite

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

OUSD P&R Human Research
(Curriculum Group)
Biomedical Research Support Staff
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/7wd9ab3b93-c82c-4c51-b2e3-076df40c0add-36062415



Completion Date 27-Mar-2020
Expiration Date 27-Mar-2023
Record ID 36062413

This is to certify that:

James Fite

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

OUSD P&R Human Research
(Curriculum Group)
Biomedical Investigators and Research Study Team
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/7w7aa2aa70-aac0-4b57-b834-17babc7379fa-36062413



Completion Date 27-Mar-2020
Expiration Date 27-Mar-2023
Record ID 36062416

This is to certify that:

James Fite

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

OUSD P&R Human Research
(Curriculum Group)
Biomed Research Coordinators, Clinical Coordinators, Study Coordinators & Research Administrators
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?w9fb57f97-0027-4f33-b90a-ee11dc16f259-36062416



Completion Date 01-Apr-2020
Expiration Date 01-Apr-2023
Record ID 36541712

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

OUSD P&R Human Research
(Curriculum Group)
Advisors to the Institutional Official
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?w8671e9f7-f9f1-42ed-abe2-f5c7d5058890-36541712



Completion Date 01-Apr-2020
Expiration Date 01-Apr-2023
Record ID 36541713

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

OUSD P&R Human Research
(Curriculum Group)
Research Monitors, Ombudsman, Subject Advocates & DSMBs
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?wd59c24b1-d49b-4e7d-80ee-38b937e2bc71-36541713



Completion Date 01-Apr-2020
Expiration Date 01-Apr-2023
Record ID 36541714

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

OUSD P&R Human Research
(Curriculum Group)
Regulatory Oversight of Extramural Human Subject Research
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?w92d72475-44fe-4e8e-90b6-12e6ef6c5c53-36541714



Completion Date 01-Apr-2020
Expiration Date 01-Apr-2023
Record ID 36541720

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

OUSD P&R Human Research
(Curriculum Group)
DoD Component HQ Oversight Personnel
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?w9aefbef6-92ee-44f3-a98e-29aeee77d5d7-36541720



Completion Date 06-May-2020
Expiration Date 06-May-2023
Record ID 36541723

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Good Clinical Practice (U.S. FDA Focus)
(Curriculum Group)
GCP for Clinical Trials with Investigational Drugs and Medical Devices (U.S. FDA Focus)
(Course Learner Group)
1 - GCP
(Stage)

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?w60236894-fe8f-4d68-9493-687595bd7f9a-36541723



Completion Date 01-Apr-2020
Expiration Date 01-Apr-2023
Record ID 36541739

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

OUSD P&R Human Research
(Curriculum Group)
Social and Behavioral Research Support Staff
(Course Learner Group)
1 - Basic Course
(Stage)

Not valid for renewal of certification through CME.

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?w690478d4-05d1-4736-bbda-1cc2e2ce6bf3-36541739



Completion Date 01-Apr-2020
Expiration Date 01-Apr-2023
Record ID 36541741

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

OUSD P&R Human Research
(Curriculum Group)
SBE Research Coordinators, Clinical Coordinators, Study Coordinators & Research Administrators
(Course Learner Group)
1 - Basic Course
(Stage)

Not valid for renewal of certification through CME.

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?w1206251d-6478-4c81-b062-07ad9ad4d71c-36541741



Completion Date 31-Mar-2020
Expiration Date 31-Mar-2023
Record ID 36069859

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

OUSD P&R Human Research
(Curriculum Group)
Biomedical Investigators and Research Study Team
(Course Learner Group)
1 - Basic Course
(Stage)

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?wa413aac9-b1c4-490c-bce8-27de85044e40-36069859



Completion Date 31-Mar-2020
Expiration Date 31-Mar-2023
Record ID 36069862

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

OUSD P&R Human Research
(Curriculum Group)
Biomed Research Coordinators, Clinical Coordinators, Study Coordinators & Research Administrators
(Course Learner Group)
1 - Basic Course
(Stage)

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?we3524429-c51d-4e0c-9fde-9bb8e8743ab2-36069862



Completion Date 31-Mar-2020
Expiration Date 31-Mar-2023
Record ID 36069861

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

OUSD P&R Human Research
(Curriculum Group)
Biomedical Research Support Staff
(Course Learner Group)
1 - Basic Course
(Stage)

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?w3300305f-66f8-4c39-84e1-0765edcf57fa-36069861



Completion Date 03-Apr-2020
Expiration Date 03-Apr-2023
Record ID 36069863

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

Responsible Conduct of Research (RCR)
(Curriculum Group)
Responsible Conduct of Research (RCR)
(Course Learner Group)
1 - Basic Course
(Stage)

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?w543b6c2f-b391-4e89-b8c1-734018091e5d-36069863



Completion Date 01-Apr-2020
Expiration Date 01-Apr-2023
Record ID 36069860

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

**OUUSD P&R Human Research
Social and Behavioral Investigators and Research Study
Team
1 - Basic Course**

(Curriculum Group)
(Course Learner
Group)
(Stage)

Not valid for renewal of certification
through CME. Do not use for
TransCelerate mutual recognition
(see Completion Report).

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?wcd39e83e-991d-49d2-99d8-e5fdd79afe2d-36069860



Completion Date 03-Apr-2020
Expiration Date 03-Apr-2023
Record ID 36069864

This is to certify that:

Daniel Tesch

Has completed the following CITI Program course:

**GCP - Social and Behavioral Research Best Practices for
Clinical Research
GCP - Social and Behavioral Research Best Practices for
Clinical Research
1 - Basic Course**

(Curriculum Group)
(Course Learner
Group)
(Stage)

Not valid for renewal of certification
through CME. Do not use for
TransCelerate mutual recognition
(see Completion Report).

Under requirements set by:

Office of the Under Secretary of Defense (Personnel and Readiness)



Verify at www.citiprogram.org/verify/?w16753027-e6d1-4255-b076-f5709c88f532-36069864

Appendix K

USUHS FORM 3202N
DANIEL K. INOUE GRADUATE SCHOOL OF NURSING
EVIDENCE-BASED PRACTICE/PERFORMANCE IMPROVEMENT PROPOSAL

VPR Date Stamp

Project Number: _____ (VPR will assign)

Project Title: Battlefield Acupuncture in the Treatment of Low Back Pain at a Military Treatment Facility

SECTION A: STUDENT POC INFORMATION	
1. Name (Last, First, MI): Fite, James, S	Student E-mail: james.fite@usuhs.edu
2. Home Address: _____	Cell Number: _____
SECTION B: COMMITTEE CHAIR / SENIOR MENTOR INFORMATION	
3. Name (Last, First, MI): Trautmann, Jennifer	
4. Telephone: _____	Fax: _____ E-mail: _____
5. USUHS Building/ Room No.: Daniel K. Inouye Graduate School of Nursing	
SECTION C: PROJECT INFORMATION	
6. Attach the Abstract for the proposal, including the following sections: Site Location of the Project, Title, Authors, Background or Problem/Issue, Clinical Question/Purpose, Project Design, Anticipated Organizational Impact/Implications for Practice and also include the Proposed Timeline. Single space the abstract and use Times New Roman font, size 12.	
7. Is this proposal related to an active research project of the Chair/Senior Mentor identified in Section B? ☐ Yes ☒ No If yes, complete below; if no, proceed to Part 8. Project Number: _____ Project Title: _____ Project Start Date: _____ Project End Date: _____	
8. Anticipated period of performance: Project Start Date: 1/1/2021 Project End Date: 4/1/2022	
9. Performance Site(s): Air Force Academy, Colorado Springs, CO	
10. Does this project involve any classified information? (Contact the USUHS Security Office for guidance) ☐ Yes ☒ No	
11. Do you have a funding source for this project? ☐ Yes ☒ No ☐ NA If yes, specify the funding agency and the amount provided: _____	
SECTION D: SIGNATURES	
The following signatures attest to the validity of the above information:	
FITE.JAMES.SCOT.1104254817 Digitally signed by FITE.JAMES.SCOT.1104254817 Date: 2020.12.18 06:39:47 -05'00' _____ Student (Project Point of Contact for the Group) (Signature and Date)	Jennifer Trautmann Digitally signed by Jennifer Trautmann Date: 2021.07.07 09:49:51 -04'00' _____ Chair/Senior Mentor (Signature and Date)
_____ Chair/Program Director (Signature and Date)	_____ Chair/Program Director (Signature and Date)
_____ DNP Project Director or PhD Director (Signature and Date)	_____ Associate Dean for Academic Affairs, GSN (Signature and Date)
_____ Associate Dean for Research, GSN (Signature and Date)	_____ Dean, DKI Graduate School of Nursing (Signature and Date)
In light of the above signatures, the project is approved.	
_____ USUHS Vice President for Research	_____ Date

Appendix L



DEFENSE HEALTH AGENCY
7700 ARLINGTON BOULEVARD, SUITE 5101
FALLS CHURCH, VIRGINIA 22042-5101

2 February 2022

MEMORANDUM FOR: LTC Kelli Bond, DNP, USAF, NC,

SUBJECT: Protocol Determination – Not Research

DHQ#: DHQ-22-2013 EIRB # for Current Action: 942313

Title: Battlefield Acupuncture in the Treatment of Low Back Pain at a Military Treatment Facility

Principal Investigator (PI): LTC Kelli Bond

This is to advise that as the Component Office for Human Research Protections (COHRP), the Defense Health Agency (DHA) Office of Research Protections (ORP) has determined that the proposed activity does not constitute research as defined at 32 CFR 219.102(l) and as implemented through Department of Defense Instruction DoDI 3216.02.

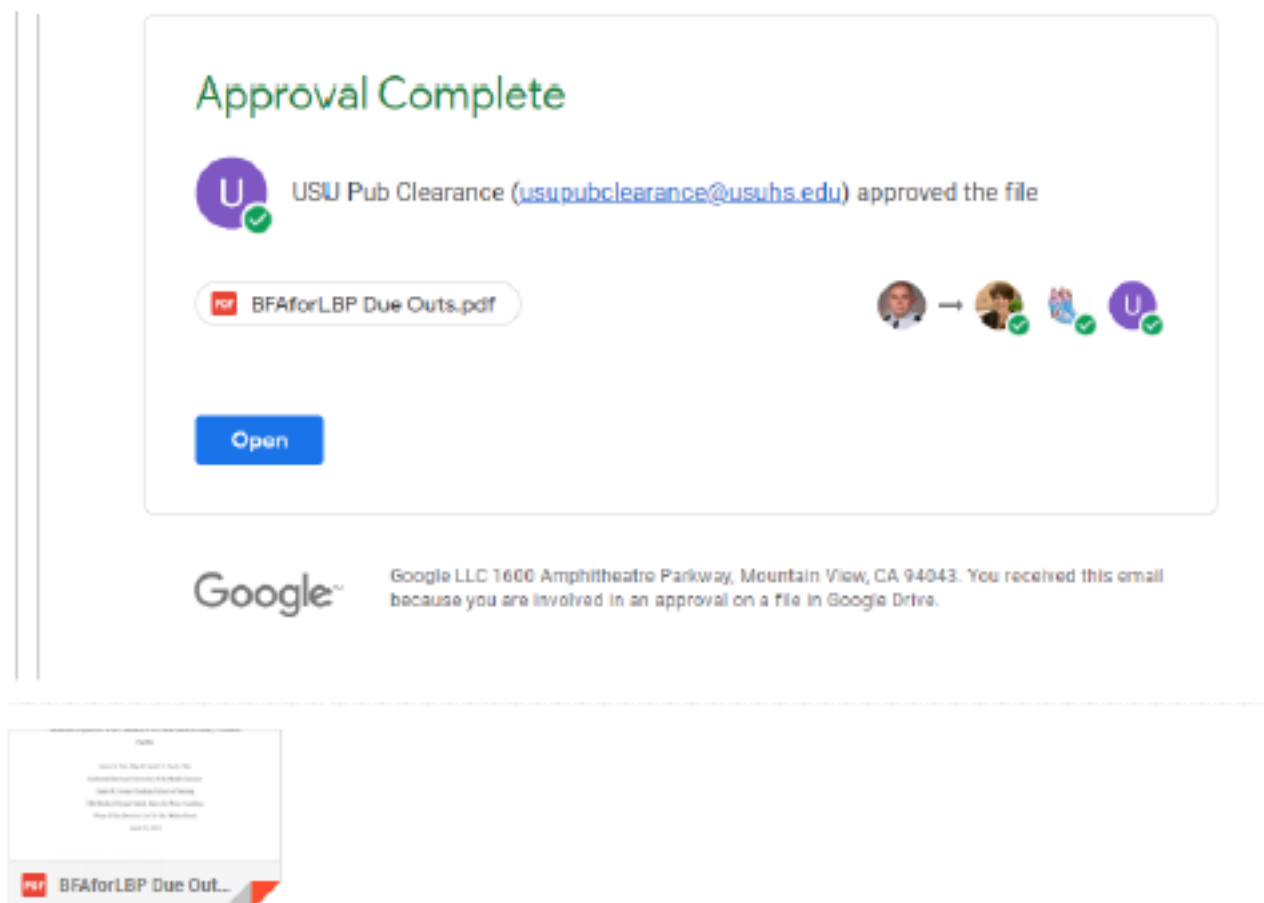
You are reminded that you must notify this office if the project is altered in any way (*e.g.*, changes in location, investigators, sample size, age of subjects, changes to the consent form or methodology, etc.), as the modification(s) might impact this status. You are further advised that it is your responsibility to ensure you and your associate investigators adhere to the guidelines of the protocol.

Please note if the project involves a survey or focus group, then you may still need to submit your survey to Washington Headquarters Services (WHS) for approval and licensing under DoDI 8910.01 and/or to another agency (*e.g.*, Office of Management and Budget) for approval. You should contact these agencies for additional information or clarification prior to starting your study.

Should you have any questions, please feel free to contact the undersigned at DHA.HRPP@mail.mil.

WEINA.PETER.JO Digitally signed by
SEPH.10996093 WEINA.PETER.JOSEPH.1099
609385
85 Date: 2022.02.10 15:55:08
-05'00'
Weina, Peter J.
COL, MC, USA
Director, Office of Research Protections, DHA

Appendix M



The above indicates that the USU Public Affairs Office (PAO) has granted approval to disseminate project results for all 4 of the following: (1) Final Report to be uploaded in the USU Archives, (2) Abstract/Impact Statement for USU Research Days, (3) Oral presentation during USU Research Days, and (4) Poster presentation during USU Research Days.

The USU Archives preserves and provides access to the USU theses, dissertations, and Doctor of Nurse Practice (DNP) projects on its web site. The public can discover these full text materials through search engines like Google or by visiting the web site directly at: <http://cdm16005.contentdm.oclc.org/cdm/landingpage/collection/p15459coll1>. Questions about this collection can be sent directly to the University Archives at lrc.archives@usuhs.edu.

Appendix N



Appendix G: Daniel K. Inouye Graduate School of Nursing
DNP Project Completion Verification Form

DOCTOR OF NURSING PRACTICE PROJECT Completion Verification Form

The DNP Project titled: Battlefield Acupuncture in the Treatment of Low Back Pain at a Military Treatment Facility

was completed at 10th Medical Group, USAFA, CO by the following student(s):

<i>(Student Name)</i>	<i>(Digital Signature)</i>
<u>James Fite</u>	FITE.JAMES.SC OT.1104254817 Digitally signed by FITE.JAMES.SCOT.1104254817 Date: 2022.03.23 16:40:25 -0800
<u>Daniel Tesch</u>	TESCH.DANIEL.VIN CENT.1170729451 Digitally signed by TESCH.DANIEL.VINCENT.1170729451 Date: 2022.03.23 16:00:57 -0800
<u> </u>	
<u> </u>	
<u> </u>	

The DNP Practice Project Team verifies that the following components of the DNP project, accomplished by the above students, is of sufficient rigor and demonstrates doctoral level scholarship to meet the requirements for USUHS GSN graduation:

- Presentation of DNP project to the leadership/stakeholders at the Phase II Site,
- Abstract/Impact Statement (*Appendix F*), and
- DNP Project written report (*Appendix E*).

Verified by:

<i>(type name)</i>	<i>(Digital Signature)</i>	
<u>Dr. Jennifer Trautmann</u>	TRAUTMANN.JENNI FER.L.1074795443 Digitally signed by TRAUTMANN.JENNIFER.L.1074795443 Date: 2022.03.21 13:48:19 -0800	Senior Mentor
<u> </u>		Team Mentor
<u> </u>		Team Mentor
<u>Lt Col. (Dr.) Kellie Bond</u>	BOND.KELLIE.D ORIS.1282346660 Digitally signed by BOND.KELLIE.DORIS.1282346660 Date: 2022.04.01 14:43:35 -0800	Team Mentor & Phase II Site Director

For RNA Students only - add the following additional signature for final verification of project completion:

<u> </u>	<u> </u>
RNA Project Director <i>(type name)</i>	<i>(Digital Signature)</i>

Form Version: 4 December 2020

Bertelsmann Acupuncture (BFA) Clinical Support Staff Protocol (CSSP)	CRAFT AUL	11 Feb 2020
Phase 3 - Use in Clinic Clinic will: - Designate a BFA Certified Provider that can provide oversight of individual BFA practice by support staff personnel and who is readily available to serve as a resource when needed. - Ensure clinic processes are yielding results along with CSSP requirements. - Provide adequate training and resources for support staff to safely administer BFA. - Ensure BFA trained support staff are normally scheduled to monitor clinical currency with a goal of administering BFA at least monthly. - Ensure a BFA Certified Provider regularly evaluates BFA applied by support staff members through virtual confirmation. Team member(s) will: - Ensure they use the most current version of this CSSP and validate via the CSSP Resource page: https://www.bfaandherbs.com/A-FULL-ANATOMY-Nutrition-Protection-Care-Pages/faq-and-resources.aspx - Verify at least 1 identifies with the patient (i.e. verify Full Name and DOB) - Verify appropriate diagnosis, a valid order for BFA follow up treatment (can be placed by a non-BFA certified provider), and the patient meets BFA CSSP inclusion criteria. - Use the TSWF template to document case of the BFA CSSP - Explain the BFA CSSP and procedure to the patient - Screen the patient and accomplish required vital sign (pain assessment) formula on visit and document all care provided appropriately within the EHR. Team member(s) have effectively used the algorithm/BFA CSSP when they can: - Determine the correct course of action for the patient - Completely execute the BFA procedure - Deliver BFA educational materials and affix appropriate instructions handouts to the patient - Provide instructions and appropriately advise the patient regarding their BFA treatment plan - Properly document the patient encounter in the EHR (see page 6)		

Bartfield Health Association (BHA) Clinical Support Staff Protocol (CSSP) (EUSP)

PAGES: 23

11 July 2020

Attachment 1 – BFA Procedure

BFA CSSP Algorithm

(All non-pregnant patients 18 years of age and older)

BATTLEFIELD ACUPUNCTURE IN THE TREATMENT OF LOW BACK PAIN AT A MILITARY TREATMENT FACILITY

James S. Fite & Daniel V. Tesch

Senior Mentor: Dr. Jennifer Trautmann

Phase II Site Director: Lt Col. (Dr.) Kellie Bond

10th Medical Group, USAFA, CO

The Daniel K. Inouye Graduate School of Nursing

Doctor of Nursing Practice Project

DISCLAIMER

The views expressed in the presentation are those of the authors and do not necessarily reflect the official policy or position of the Uniformed Services University, the Department of Defense, or the United States Government.

There are no financial relationships that exist between the speakers and a commercial entity.

INTRODUCTION

LBP: top three reasons to seek care in the U.S. and military

\$100 billion/yr in costs and productivity

250,000 troops; 1.2 million encounters

Impacts duty restrictions, retention, and healthcare costs

Clinical Practice Guideline (CPG) for the Diagnosis and Treatment of Low Back Pain (LBP)

Battlefield Acupuncture (BFA) is safe, cost conscious, and evidence-based

Reduces pain intensity, disability, and opioid use

Lower costs and better health

Keep servicemembers training and executing the mission

SIGNIFICANCE

- 33% ALL service members (SM) will have an episode of “*clinically significant*” back pain while active duty
- Service members with chronic LBP are 3.65 times more likely to be discharged
- Significant contribution to duty restrictions; repeated LBP increases mobility restrictions
 - Pain, reduced mobility, and duty restricting med use
- Providers don’t follow CPG guidelines for imaging and treatment
- Duty restrictions and productivity
 - LBP comorbidities and pharmacological interventions take members out of the fight and away from the work site
- DHA Quadruple Aim: *better health, better care, lower cost, improved readiness*
 - *Better health and better care* using evidence-based treatment for pain control/functional mobility; impacting QoL
 - *Lower costs* reducing lost time, comorbidities, emergency room visits, and recurrent appointments
 - *Improved readiness* reducing pain, disability, opioids to impact duty/mobility restrictions

(Absolute and relative morbidity burdens attributable to various illnesses and injuries, active component, U.S. Armed Forces, 2020; Adams et al., 2019; Ambulatory visits, active component, U.S. Armed Forces, 2020; Armed Forces Health Surveillance Center, 2015; Benedict et al., 2019; Brooks et al., 2013; Brundage et al., 2016; Clark & Hu, 2015; Cosio-Lima et al., 2013; Foster et al., 2018; Granado et al., 2016; Gubata et al., 2013; Keller, 2018; Kelley et al., 2017; Reif et al., 2018; Rosenberg et al., 2015; Slade et al., 2016; The Diagnosis and Treatment of Low Back Pain Work Group, 2017; Wippert & Weibking, 2018)

CLINICAL QUESTION

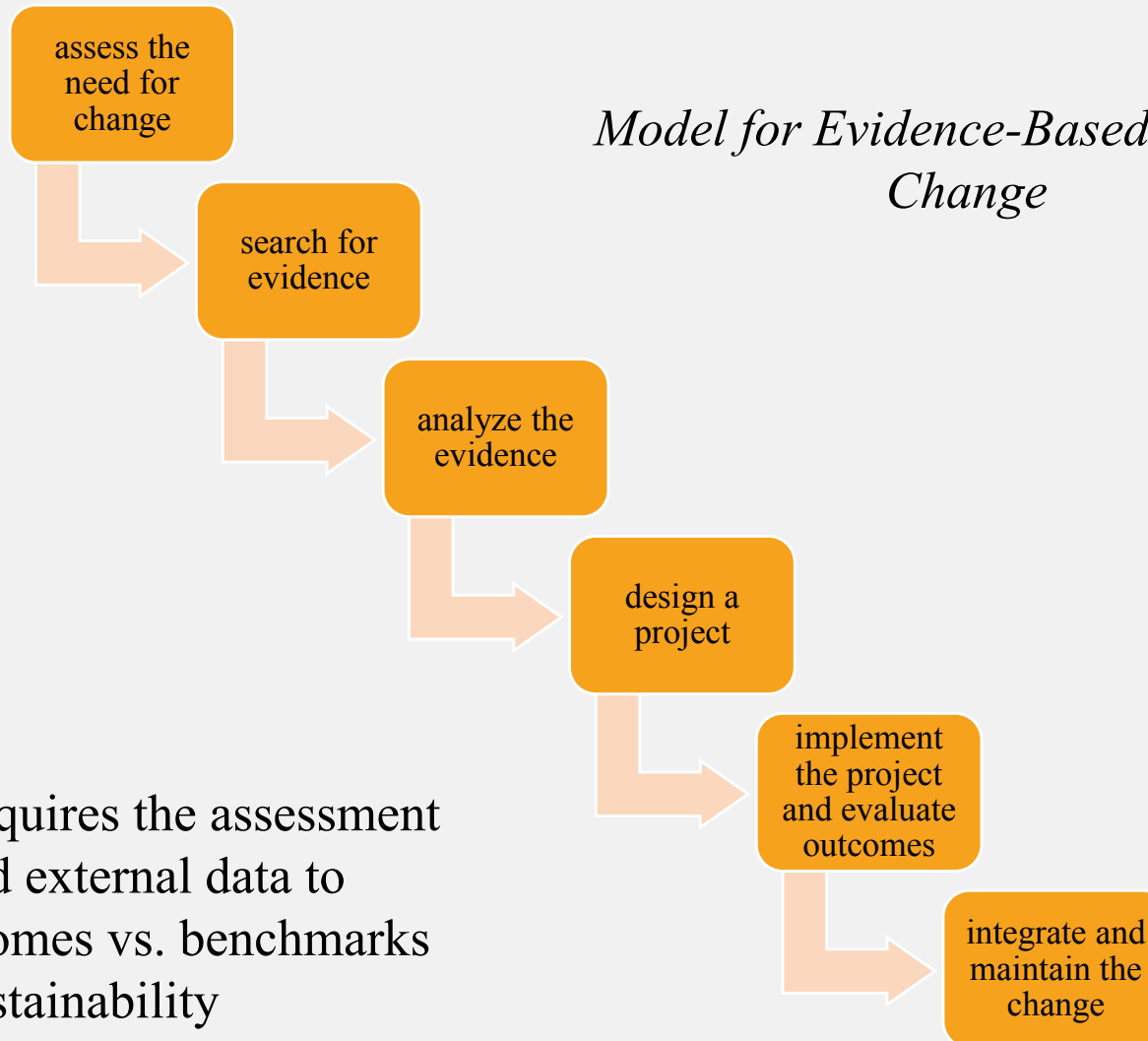
In active duty service members with low back pain not caused by trauma, does battlefield acupuncture, compared to CPG Module B local standard practices, improve medical readiness?

FOCUS AREAS

- Provider CPG education discussing CPG recommendations, local challenges, and BFA evidence
- Establish/Execute a walk-in BFA clinic
- Brief clinical and organizational leadership on the efficacy of BFA/walk-in clinic
- Goal: to determine if BFA can impact duty restrictions through reduction of pain intensity, disability, and duty restricting med use

ORGANIZING FRAMEWORK

Model for Evidence-Based Practice Change



Rationale: Requires the assessment of internal and external data to evaluate outcomes vs. benchmarks
→ ensures sustainability

(Larrabee, 2009)

PROJECT DESIGN

Implementing a protocol utilizing a walk-in BFA clinic to address Module B CPG recommendations

Goal: Establish a walk-in clinic offering BFA to determine its impact on medical readiness

Educational in-services → awareness and adherence CPGs

10th Medical Group, U.S. Air Force Academy, Colorado Springs, CO

- 12K encounters/year
- 4,000 cadets, 1,300 AD, 19,000 retirees and family members

Healthcare Ops: Dep & Retirees/ Operational Med: AD and Flight Med

- Specialty: PT/OT, Ortho, Chiropractic

Operational Medical Readiness Squadron (OMRS)

- nurses, physicians, nurse practitioner, physician assistants, medical technicians, and medical administrators

PROCEDURAL STEPS

Assess the need for change	Link problem intervention and outcome	Synthesize the best evidence	Design a practice change	Implement and evaluate the change	Integrate and maintain the change
Stakeholder meetings	ID intervention	Search literature	Define change	Pilot study	Communicate change
Chart reviews for internal data	Select outcome indicators	Critique and weight evidence	Identify resources	Evaluate process and outcomes	Staff in-service
Internal vs. external data		Synthesize best evidence	Plan implementation	Adopt or reject practice change	Integrate into practice
ID problem			Define outcomes		Monitor outcomes

(Cosio-Lima et al., 2013; Gubata et al., 2013; Kelley et al., 2017; Melnyk & Fineout-Overholt, 2019; White et al., 2021)

RESULTS

Overall

- 21 active duty participants; 3/21 for acute pain
- No ED or UC visits
- No new activity-limiting profiles

Pain

- Average pain score before BFA: 3.57; After BFA 2.24
- 67% saw pain reduction
- Average pain reduction was 40.6%

Disability

- Average disability score was 20.57 on Quebec Disability Scale
- 9 failed to follow-up
- 1/12 had a minimally detectable change (15pts)

Readiness

- 14% had a profile with a fitness/mobility restriction placed before the intervention
- 2/3 return to full status (10% reduction)
- No new profiles written for participants after receiving BFA.

ANALYSIS

Pain

- BFA is effective in reducing pain immediately in 40% of patients
- Preintervention SMs 9.9% more likely to be treated with muscle relaxers
- 55% more likely to require a follow up with their PCM

Disability

- We cannot say BFA had a discernable impact on disability → n, disability scale, duration

Profiles

- Preintervention SMs 14.7% more likely to have a profile
- We cannot say BFA reduced profile rates
 - SMs interested in BFA were less likely to have a profile
- BFA as an adjunct may be able to help SMs return to full status

Providers

- Certified/credential providers are lacking
- Providers are familiar with LBP CPG recs for CAM → No provider ordered radiographs w/in 30 days
- CNS depressants used in 24% of chronic LBP
- BFA certified DO was interested in opening appointments for BFA
- Non-certified provider interested in certification
- Providers pointed to project results as reasons to include BFA in their practice

IMPACT/IMPLICATIONS

DHA

Better health
Better care
Lower cost
Improved readiness

Facility

Provider satisfaction
Developing extenders
Increase Pt satisfaction

Provider

Extend pain control toolkit
Reduce CNS depressant
prescription
Supplies are mobile

Member

Alternative pain control
Reduce stress
Return to full duty status

BARRIERS AND LIMITATIONS

Lack of certified and credentialed providers

Lack of patient interest

Lack of high level evidence

Lack of access

Inability to staff walk-in BFA clinic

FUTURE DIRECTIONS

Evidence supports the use of AA for neck pain, anxiety, and migraine

Expand sample size

Investigate BFA applicability

Pre intervention chart review → BFA for the same patients

Determine effect on profile resolution rates

Develop readiness impact

Consider using an inclinometer

Investigate immediate functional ability change

Consider implementing BFA at an operational airbase

MUNS, OSS, SFS

Suspect higher rates of acute LBP

CONCLUSION

- LBP > 10% of outpatient appts
- Burden on readiness
- BFA addresses all four areas of the DHA Quad Aim
- BFA reduced pain in 67% of patients; possibly CNS depressant use
- Reduced pain and depressant prescription allow troops to return to full fitness/duty status
- Findings support the use of BFA to reduce pain levels and possibly a reduced number of long-term profiles
- Future large scale, longer duration studies at operational facilities are needed

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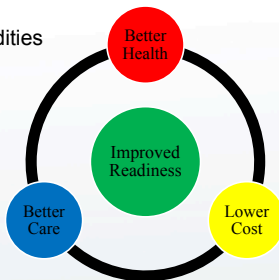
Battlefield Acupuncture in the Treatment of Low Back Pain at a Military Treatment Facility

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Daniel K. Inouye Graduate School of Nursing, Uniformed Services University of the Health Sciences, Bethesda, MD

Significance of the Problem

- 33% of ALL active duty service members (SM)
- SMs with chronic LBP are 3.65x more likely to be discharged
- Activity limitation
 - Pain, mobility, profiles, comorbidities



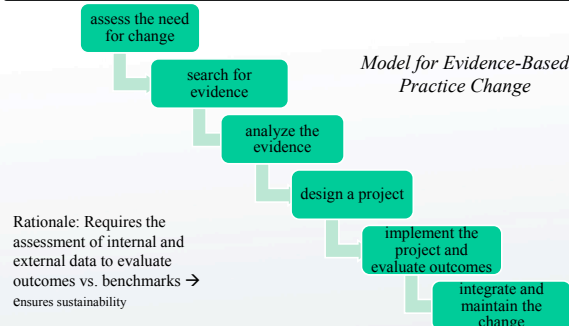
Purpose

Population	In active duty service members with low back pain not caused by trauma
Intervention	Does battlefield acupuncture
Comparator	Compared to CPG Module B local standard practices
Outcome	Improve medical readiness?

Project Design

Procedural Steps	- Protocol: Implementing walk-in BFA clinic - Goal: Determine if BFA has an impact on readiness - Aims: CPG adherence & reduce LBP comorbidities - Purpose: Use EBP interventions to improve readiness
Setting	10th Medical Group, U.S. Air Force Academy 4,000 cadets & 1,300 AD - Operational Medical Readiness Squadron (OMRS) - PT, Ortho, Chiropractic

Organizing Framework



Project Results

Overall	21 active duty participants; 3/21 for acute pain - No ED or UC visits - No new activity-limiting profiles
Pain	- Average pain score before BFA: 3.57; After BFA 2.24 67% saw pain reduction - Average pain reduction was 40.6%
Disability	- Average disability score was 20.57 (range 5-59) on Quebec Disability Scale 9 failed to follow-up in the 1-2 days after BFA for disability reevaluation - Out of 12 that did follow up, 1 had a minimally detectable change (15pts)
Readiness	14% had a profile with a fitness/mobility restriction placed before the intervention 2/3 return to full status - No new profiles written for participants after receiving BFA.

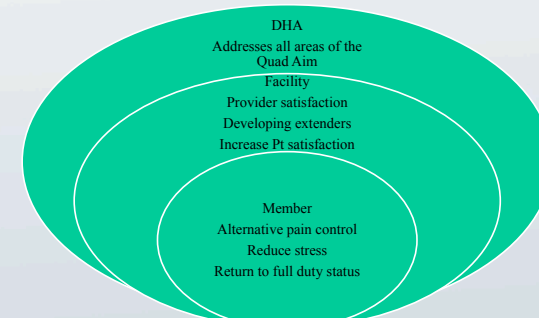
Analysis of the Results

Pain	- BFA is effective in reducing pain 40% in most patients, immediately - Preintervention SMs 9.9% more likely to be treated with muscle relaxers 55% more likely to require a follow up with their PCM	Disability	- We cannot say BFA had a discernable impact on disability - n, disability scale, duration	Profiles	- Preintervention SMs 14.7% more likely to have a profile - We cannot say BFA reduced profile rates - SMs interested in BFA were less likely to have a profile - BFA as an adjunct may be able to help SMs return to full status	Providers	- Certified and credential providers are lacking - Providers are familiar with LBP CPG recs for CAM -> No provider ordered radiographs w/in 30 days - CNS depressants used in 24% of chronic LBP - Providers pointed to project results as reasons to include BFA in their practice
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Recommendations for Improvement

- Develop relationship with trainers at Andrews AFB to certify providers; RN, and techs as extenders
- Encourage credentialing after certification
- Encourage a culture of evidence-based research
- Integrate CPG training programs into Training Days

Organizational Impact



Future Directions for Research and Practice

Evidence supports the use of AA for neck pain, anxiety, and migraine	- Expand sample size - Investigate BFA applicability
Pre intervention chart review -> BFA for the same patients	- Determine effect on profile resolution rates - Develop readiness impact
Consider using an inclinometer	Investigate immediate functional ability change
Consider implementing BFA at an operational airbase	- MUNS, OSS, SFS - Likely higher rates of acute LBP