Battlefield Acupuncture (Niemtzow Technique) and No Needle Battlefield Acupressure (Marcucci Technique) for Pain Control in Acute Traumatic Injury in Haiti

by L Marcucci, MD – trauma surgeon and medical acupuncturist

One of the more distressing items being reported out of the developing medical catastrophe in Haiti is the lack of even rudimentary anesthesia and analgesia for the treatment of amputations and severe acute traumatic injuries.

One possible strategy for treating patients in pain that is rapidly effective and has little mortality or serious morbidity risk is the use of battlefield acupuncture, a technique pioneered by Air Force Col Richard Niemtzow, MD, PhD in 2001.

Because Dr. Niemtzow's battlefield acupuncture technique is most effective when using specialized small, gold-plated needles that are not always readily available, I have adapted his work to a technique I call battlefield acupressure.

But, before I describe these techniques of battlefield acupuncture and battlefield acupressure I must make a nod to the current acupuncture discourse.

Despite the fact that acupuncture has been in use for the treatment of pain for 3000 years and there is emerging literature supporting its efficacy, it currently still remains somewhat controversial and it has attracted establishment critics in the medical profession who stridently denounce it.

These clinicians point out the lack of compelling, unimpeachable level 1 evidence to support its' use (as is similar with many other medical treatments practiced today such as the almost entire treatment rational in traumatic brain injury) and cite existing studies concluding the effect of acupuncture is no better than placebo. Some go so far as to deem it as outright quackery.

What remains inconvertible, however, is that there is emerging literature supporting its use that is apparently unread and unknown to its naysays.

Acupuncture is widely sought by the public and is provided in part by the approximately 10,000 United States physicians who have been trained in CME-approved courses to perform it.

There are dedicated CPT codes, it is judged a reimbursable procedure by many insurance companies, and is a health treatment modality that is recognized and licensed by all 50 states. The NIH has declared that it is probably of benefit in treating some conditions.

In addition, the use of acupuncture has now been adopted by major academic medical centers such as Harvard University, Johns Hopkins University, Stanford University, UCLA Medical Center, University of Pennsylvania, and the University of Maryland (where it is used in the oncology and trauma units).

It is also widely used in the Veterans Administration and throughout the United States Military, where it is now being taught to special operations forces, medics, nurses, and physicians alike for use literally on the battlefield as well as in fixed medical facilities.

And, finally, in judging whether this would be an acceptable treatment modality for Haitian patients, what is also irrefutable is the complete absence in many situations of any modern, level 1-evidenced care currently being practiced in Haiti.

As an example, some practitioners report being forced to amputate limbs on awake patients placed on bare wood tables under dirty bedsheets (i.e., Civil War era medicine), hardly the definition of level 1, evidenced-based care.

In this situation, perhaps the lack of a wide body of level 1 evidence for acupuncture use and the ongoing sometimes vitriolic charges about its' efficacy is a nicety that the medical community and Haiti can not now afford.

In other words, to boil it down to surgeonspeak – it may work, likely won't hurt, but maybe you gotta try something because patients are getting their legs cut off without narcotics or anesthesia.

So, to simplify the basics tenets of what battlefield acupuncture is, how it is performed, and I how I have adapted it to an acupressure technique:

Battlefield Acupuncture (Niemtzow technique)

1. As delineateed by functional MRI studies, for many people, pain signals in the body as processed by the brain seem to somehow interact with specific points on one or both of the earlobes.

2. In these patients, there are 5 main points that can be stimulated through needles or pressure on each earlobe that will partly or totally block this reflex, thus diminishing or eliminating patients awareness/experience of pain.

3. These points vary slightly in people but are close to the positions numbered in the photo below.

4. Stimulation of the points should be done sequentially as numbered below on each ear lobe. That is, point 1 on each earlobe is stimulated, then points 2 on each ear lobe, etc. (**not** 1-5 on one lobe, then 1-5 on the other lobe.

5. Pain control often begins within seconds after point 1 on each ear is manipulated and very likely will occur after the first two points on each ear are stimulated.

6. Stimulation is best done by using small, gold-plated, self-retaining needles that remain in place for a day or so and are left to fall out on their own.

7. Because these gold-plated needles are almost certainly not available in Haiti, conventional open-bore IV/venopuncture needles can be used – the smaller the better.

8. There are two possible techniques to stimulate the points if conventional medical needles are used.

9. Perferred method – the needles should puncture the epidermis, inserted approximately 1 mm and then left in place. Because they are not self-retaining they may fall out when the patient moves.

10. Alternately, the points can be manipulated using the 1-1, 2-2, etc. placement protocol by placing the needle 1 mm into the tissue and rapidly moving it in and out in the tissue without completely withdrawing it as in a “pecking” type motion. This should be done for 2-3 minutes at each point.

11. After both point 1′s have been stimulated, the patient should walk briskly about 15 paces away and then back towards the practitioner. By some unknown mechanism, this contributes an additive effect to the pain control by needle stimulation.

12. The patient should be queried after each point stimulation as to whether pain is diminishing. If stimulation of points 1-3 does not diminish pain, the procedure should be retried with slightly offset points from the ones listed below.

13. The effect of stimulating these points can cause a partial diminition in pain for hours to days after the treatment.

Battlefield Acupressure (Marcucci technique)

14. This is a commonsense adaption of the Niemtzow (needle requiring technique) described above. I have used it to great affect in situations where needles were not readily available. It is free, can be done in seconds, and has no significant risk for the patient associated with it.

15. It is known to all acupuncturists that stimulation of acupuncture points by pressure or heat can have profound physiological effects in some patients.

16. The points listed below can be readily stimulated to produce effective pain control in many patients by direct, sharp pressure on the point without piercing the skin.

17. Using a sharp tipped object such as a fingernail, tip of a ballpoint pen, sharped-pointed small stone, or even a wood splinter the corresponding points on both ear lobes should be simultaneously manipulated by placing and holding firm pressure on the points.

18. For instance, the practitioner stands behind the bed of the patient and uses the edge of their forefinger fingernails on point one and gives very firm pressure for 30 seconds. If this produces good pain control, very firm pressure is held for several minutes.

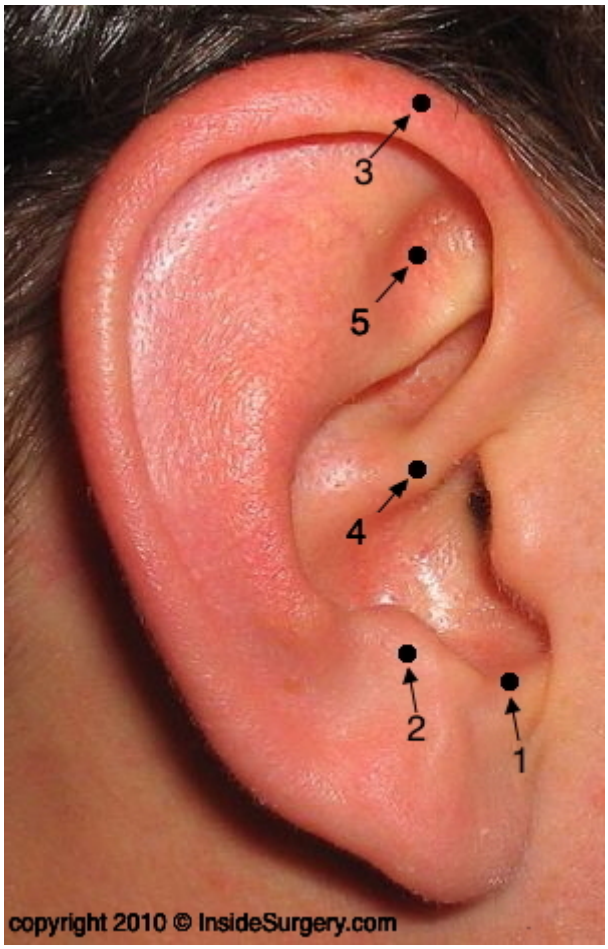
19. For points 1, the pressure should be placed such that it is “pointing towards the feet” and not in the direction of the skull (or stimulation of points 2-5, the pressure is placed in the direction towards the skull.)

21. If pain control continues, the practitioner then simultaneously places firm pressure on points 2 and so.

22. Because it is clumsy to ambulate the patient while keeping external pressure on these points, the patient can remain seated or in bed and instead can pump their legs as in a bicycle motion to potentiate the pain control effect of the acupressure.

23. If any degree of pain control is achieved by acupressure of points 1 and the bicycle motion, the patient should be shown how to self-administer this technique by using their fingernails to stimulate points 1, simultaneously if possible.

24. Anecdotally, it is believed that a slowly accruing analgesia effect may occur with repeated acupressure ear treatments.



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Original Paper

Battlefield Acupuncture

Richard C. Niemtzow, MD

INTRODUCTION

BATTLEFIELD ACUPUNCTURE WAS DEVELOPED by the author in 2001 in the course of researching a more efficient auriculotherapy system for the rapid relief of pain. The name "Battlefield Acupuncture," coined by the author, was probably influenced by the events of 9/11 with the destruction of the World Trade Center Towers in New York City by terrorists, and the assumption that this novel system could be eventually used on the military battlefield. The technique has grown in popularity and we are aware of many civilian and military acupuncturists who utilize this technique daily in the "battlefield" of medical practice. Most recently, the author introduced this technique in Gottingen, Germany while teaching at a workshop at the European Society for Biological Lasertherapy and Acupuncture 2007. Reports from clinicians in Europe and in the Middle East were favorable and exciting.

This methodology is also taught by Niemtzow at the Helms Medical Institute acupuncture course and likewise receives laudatory comments. This technique delivers significant attenuation of pain in just a few minutes. The length of the pain-free period does vary from minutes, hours, days, weeks, and months depending on the presenting pathology and the duration of the stimulate: needles, electric, and laser excitation of the auricular acupoints.

MECHANISM OF ACTION

Traditionally, pain being treated by auriculotherapy utilizes known anatomic areas in the ear corresponding to body morphology. For example, if a patient experiences acute back pain, needles are placed in the ear into the points corresponding to the "back."[1] If the pain is of a chronic nature, one considers Nogiers Phase techniques to position the needle stimulation.[2] Other therapeutic stimulants may be employed such as electrical and laser devices. For example, the author successfully used the "Battlefield Acupuncture" concept with the Laser Needle apparatus (red and green lasers), as developed by Dr Michael Weber, to treat pain.[3]

Most likely, the Battlefield methodology favors the processing and the modulation of pain in the central nervous system involving the hypothalamus, thalamus, cingulate gyrus, and cerebral cortex structures. fMRI research studies from Dr Z.H. Cho suggest involvement of these structures.[4]

TECHNIQUE

Typically, ASP gold needles (Sedatelac, Chemin des Muriers F-68540, Irigny, France, obtainable from www.omsmedical.com), which are semi-permanent needles, have the characteristics of remaining in the ear acupoints for up to 3–4 days or longer before being pushed out to the surface by the previous flattened epidermis.

The following acupoints (Figure 1) are sequentially administrated: Cingulate Gyrus, Thalamus point, Omega 2, Point Zero, and Shenmen.[5] The clinician, after performing a proper history and physical evaluation of the patient complaining of pain, initiates the "Battlefield Acupuncture" technique. Note that the Thalamic and Omega 2 points are located in the hidden areas of the ear. However, you have the choice of placing the needles as indicated in the appropriate figures below but usually, I place the needles in the visible areas.

Malcolm Grow Medical Center, Andrews AFB, MD.

The opinions and assertions contained herein are the private views of the author and are not to be construed as official or as reflecting the views of the United States Air Force medical departments or the Air Force at large. The author indicates that he does not have any conflicts of interest. Sources of funding: none reported.

SEQUENCE OF NEEDLES (BOTH EARS)

- 1. Cingulate Gyrus
- 2. Thalamus
- 3. Omega 2
- 4. Point Zero
- 5. Shenmen

FIG. 1. Sequence of Needles

1. Either the left or right ear is chosen for the placement of the needles.
2. An ASP needle is inserted into the Cingulate Gyrus (Figures 2, 3).
3. The patient is allowed to ambulate for about 2 minutes to determine whether pain attenuation has occurred. If no pain attenuation has occurred, an ASP needle is inserted into the Cingulate Gyrus of the opposite ear, and the patient ambulates to determine the new pain level.
4. If pain attenuation has been achieved via the Cingulate Gyrus, another ASP needle is placed in the Thalamus point in the ear that has produced the most pain attenuation (Figures 4, 5). The patient ambulates and the new pain level is determined.
5. Whichever ear insertion produces pain attenuation, ASP needles are placed in a similar sequential manner into Omega 2 (Figures 6, 7), Point Zero (Figure 8), and Shenmen (Figure 9).
6. After the dominant ear has received ASP needles in all the "Battlefield Acupuncture" points, the pain level is evaluated. If the pain level is 0-1/10, the therapeutic goal is achieved. In the case where the pain level is above 1/10, the contra-lateral ear is needled in a similar manner.
7. The maximum number of ASP needles in each ear is 5.

FIG. 3.

RESULTS

Nine patients taken at random and depicted below (Figures 10, 11) are listed by age and duration of pain. The results of the ASP needles are depicted by the initial attenuation of pain followed by pain evaluation at the follow-up. For most patients, there is a period of pain attenuation; for others, there is not (failure). All of these patients did not respond to Western medications for pain control.

DISCUSSION

Military use of this technique centers about the pain-free period when a narcotic cannot be used that would produce

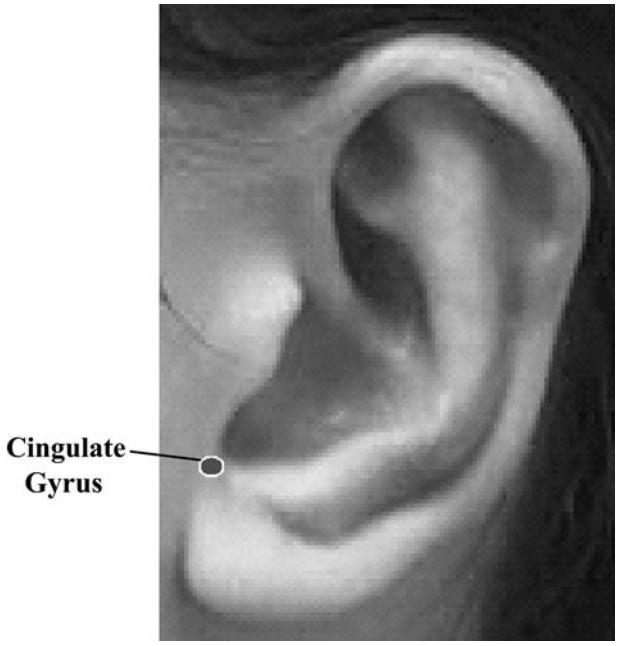

FIG. 2.

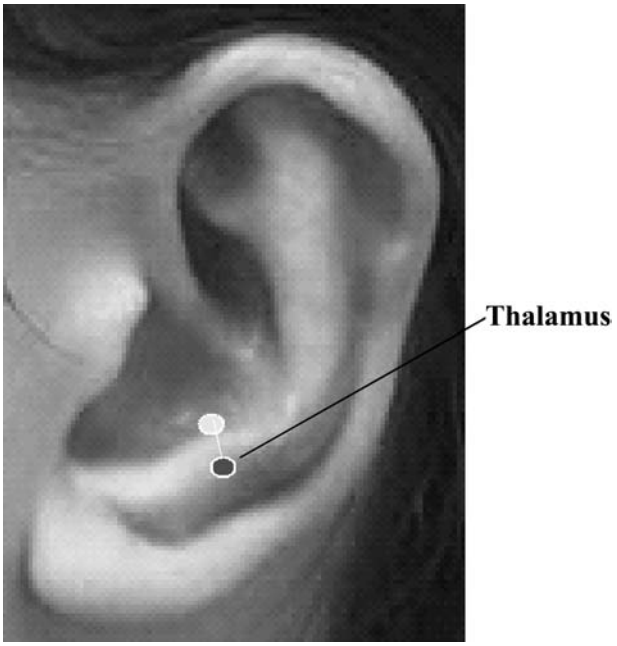

FIG. 4.

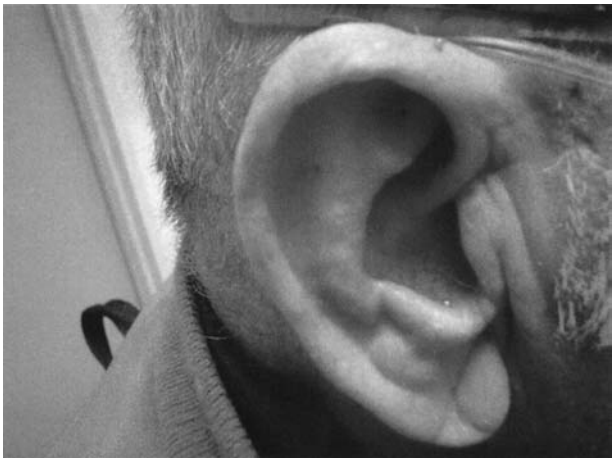

FIG. 5.

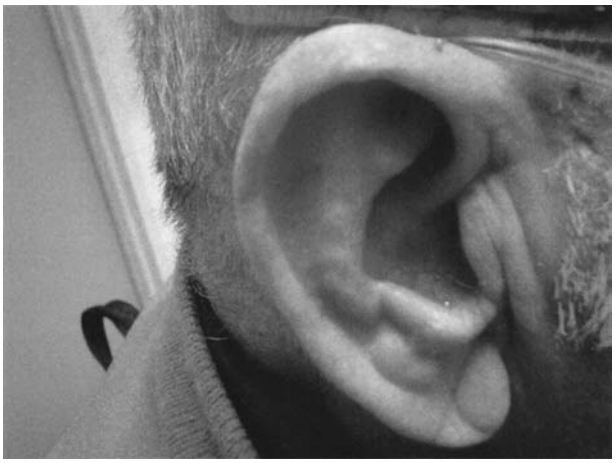

FIG. 7. Note the placement of the ASP Omega 2 needle on the Helix Root.

lethargy and as a result, would cancel a critical mission. Because these points are most likely dealing with pain processing at the central nervous system level, a general quick response to all pain patterns occurs; simple and complex etiologies. Because the ears are almost always accessible, this method is very convenient and simple to practice without undressing the patient, especially during combat situations.

The patient should experience a reduced pain period ranging from minutes, hours, days, weeks, or months depending on the pathology treated. The "Battlefield Acupuncture" may be repeated many times. The clinician should observe the ear for irritation or infection. The author has not experienced any infections in the ear. In some cases, the patient will experience healing and will achieve a long lasting pain-free period. Other patients who usually are older and have more complicated pathology will not experience healing. The needles will serve to take the place of pain medication. The author has found that treating a patient with ASP needles biweekly is sufficient in most cases.

Generally speaking, I find that the specific combination of Omega 2, Shenmen, and Zero Point, bilaterally, without walking the patient, but with fast insertion of the needles, appears extremely beneficial for resolving most migraine headaches. This should be first accomplished, bilaterally, with regular acupuncture needles and then after the termi-

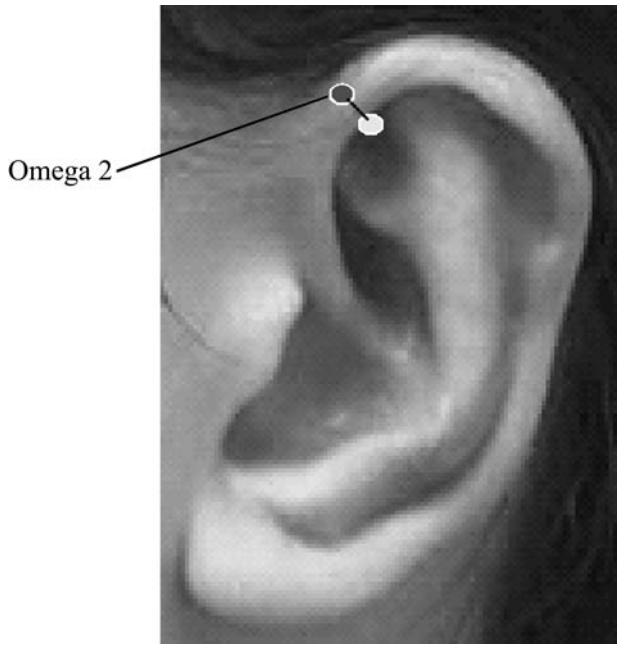

FIG. 6.

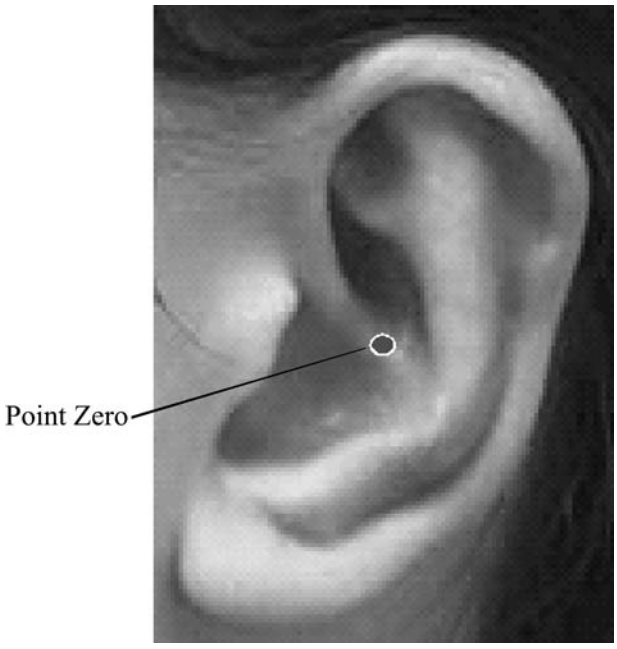

FIG. 8.

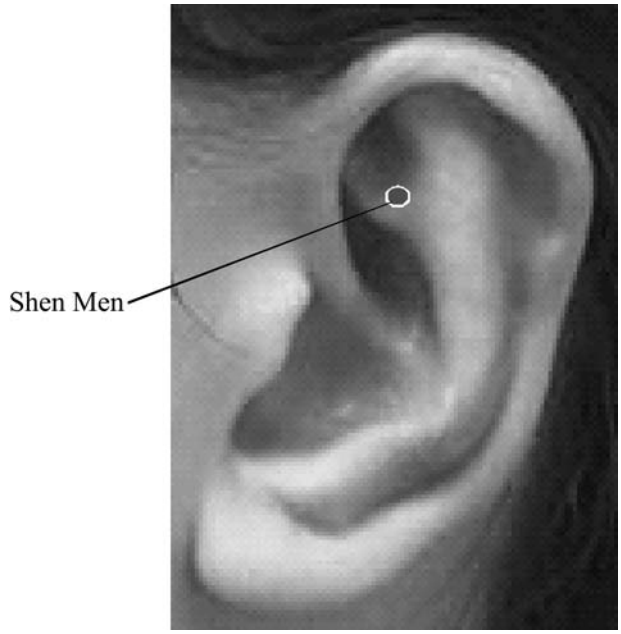

FIG. 9.

nation of the migraine, the needles are withdrawn and the gold ASP needles are inserted without walking the patient.

CONCLUSIONS

This technique has been successfully taught to many physicians. The majority of my colleagues report immediate results. In my quest to even better the performance of the "Battlefield Acupuncture," 2 major modifications have been developed and remain very simple to apply. A third modification involves stimulating the ASP needles with fluorescent dyes plus ultraviolet light that most likely agitates the electrons in the ASP needles to stimulate the acupoint. As with all modifications, it is best to test these concepts with a clinical trial to make sure that the concept really works. Future research should determine the mechanism of action of this technique. A study involving fMRI and PET scan would be appropriate. In any case, this technique is presented to you, the clinician, to serve your everyday pain challenges and aspire more development and research.

PATIENTS

All Failed Western Pain Medications
(Data Developed by Niemtzow)

A. 40 y/o M Sciatic LBP 10/10 4 weeks TX: 1/10 F/U: 3 days 9/10
B. 52 y/o M Lt Shoulder Pain Bursitis 7/10 1 month TX: 0/10 F/U: 10 days: 2-3/10
C. 36 y/o F 5 years Elbow and Leg Pain 7/10 TX: 1/10 F/U: 8 days: 3/10
D. 43 y/o F 9 years TMJ 4/10 TX: 0/10 F/U: 2 days 5/10
E. 77 y/o F 10 months Fibromyalgia 6/10 pain TS: 2/10 F/U: 2 days: 3/10
F. 24 y/o F 5 years Carpal Tunnel bilat 4-5/10 TX: 0/10 F/U: 4 days: 4/10
G. 21 y/o F 2 years TMJ 4/10 TX: 1/10 F/U: 2 days: 2/10
H. 78 y/o F 7-8 years Left Hip/DJD pain 8/10 TX: 2/10 F/U: 3 days: 1/10
I. 50 y/o F 17 years Fibromyalgia Pain 9/10 TX: 0/10 F/U: 5 days: 6.5/10

FIG. 10. Remark: TX = Treatment and resultant pain level on a scale of 1–10.
FU = Follow-up

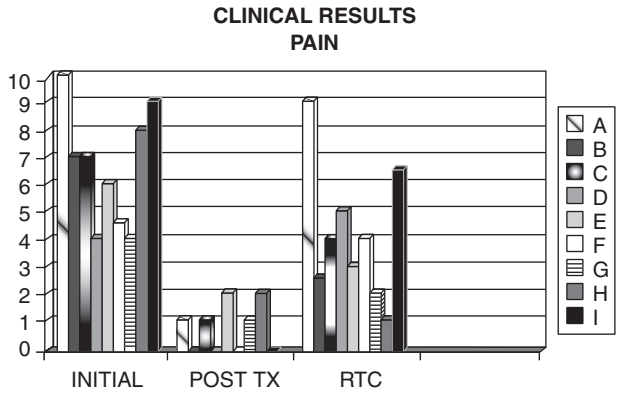

FIG. 11. Same patients as Figure 10, but presented as a histogram
Initial = Pain level on a scale of 1–10
Post TX = Pain level after treatment
Pain level at the return to clinic for follow-up.

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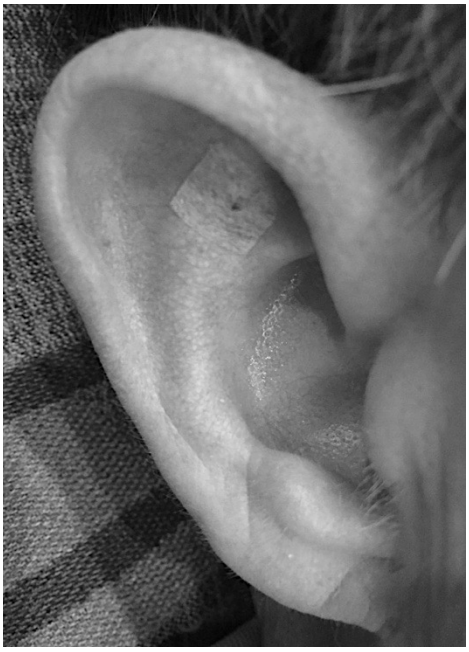


Ear Acupoints for Trauma Recovery and Healing

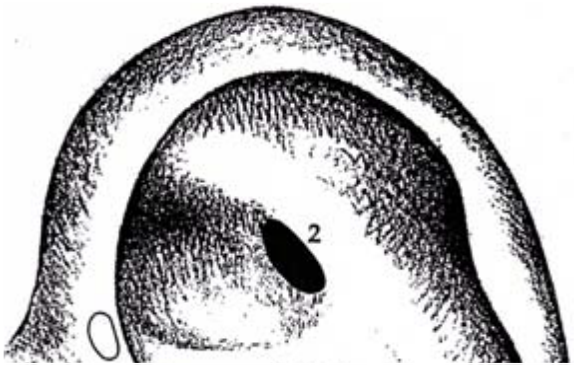
National Acupuncture Detoxification Association (NADA) in collaboration with the Medical Reserve Corps (MRC)

A simple ear point stimulation technique can offer support for hard times. Based upon our experience as NADA providers, small magnetic beads or seeds can be taped to points on the external ear by any volunteer with brief training yielding surprisingly powerful effects.

The location

When looking at the ear, you will see an oval-shaped depression at the top of the ear. Near and slightly above the tip of that shaded area, lies a point called Shen Men, "Spirit Gate." If you put your thumb on the front and your forefinger on the back of your own ear, near the top, you will be holding Shen Men and behind it, Reverse Shen Men. Veins or color changes can be additional landmarks for Reverse Shen Men.

2. Ear Shen Men



Choosing the placement

Both locations have been successfully used in post-disaster/trauma responses. Practitioners and recipients may have a preference. Reverse Shen Men is discrete and has less contact when sleeping or using the phone. The Shen Men placement requires less moving of the ear.

The materials

We recommend using gold magnetic beads or Vaccaria/black radish seeds. They are secured to the ear by a small piece of tape and have tonifying, supportive properties.

The method

The most important instruction is to put the bead/seed where it seems like it should go, and then repeat with the other ear. Trust your instinct and your intention. Make sure the tape is securely pressed down. (It is not necessary to clean the ear first, but the tape may stick better if you do.) You can also put the beads/seeds on yourself.
After the beads/seeds are in place, the recipient can gently press on them or simply let them be. They can stay on until they fall off, which can be a week or longer, or the wearer can remove them and discard in the trash. Repeat as often as wanted varying the location if the ear looks irritated.

Note: This is a specific and limited protocol and does not imply competency in auricular therapy, acudetox, acupressure or acupuncture. This is a support, not a substitute, for medical and psychosocial care.

Testimonials Gathered From NADA Practitioners in the Field

A displaced woman who got beads post Super Storm Sandy reported "a warm sensation" in her body, and "a sense of relief." Others said that after several days with the beads, "the light was back in her eyes, the vacant stare had disappeared. Hope had replaced despair."

A NADA responder to the 2015 Nepal earthquake attests, "Most of the 112 children, ranging from infants to about age 14, treated with beads this day would have likely gone untreated if the beads were not an option," and "When I asked one boy how he felt after yesterday's bead treatment he said, 'very good, very happy.' He confirmed that he slept well. When I asked him if he felt like his old self, he surprised me with: 'No, I feel new'."

A NADA provider observed, "Marissa liked the beads so much she asked to learn how to put them on her son who has ADHD. A week later, she said her son had calmed down so much it seemed like he was on medication."

A social service worker noted, "The kinds of conversations I'm able to have with our students after a treatment are wildly different from the conversations I would have had without them [the beads]. The youth are more open, less afraid and more ready to embrace change."

From a Medical Reserve Corps (MRC) responder in Colorado: "I believe anyone can be trained to apply the beads and educate the recipient – why, where, how long, etc."

Frequently Asked Questions

What have ear acupoints been used for?
Ear points have been used for supporting health for many years. Since the late 1990s, ear acupoint stimulation has become a common intervention in the wake of community trauma/disasters as part of the relief services provided. In addition, NADA members have found great benefit in supporting addiction and mental health recovery, infant withdrawal syndromes, and ADD/ADHD (primarily with Reverse Shen Men).

What is NADA?
The National Acupuncture Detoxification Association (NADA) is a nonprofit training and advocacy organization that encourages community wellness through the use of a standardized auricular acupuncture/acupressure protocol for behavioral health, including addictions, mental health, and disaster & emotional trauma.

What are the advantages of ear acupoints?
Ear Acupoints for Trauma Recovery and Healing with ear seeds/beads is safe, non-invasive, easy, and cheap. Recipients like it and report that it is helpful in terms of symptoms and overall well-being. It can be applied in any disaster response or community wellness initiative. Any volunteer can apply the beads/seeds with brief training. Local community members can also learn and continue using beads/seeds after the MRC response ends. Effects are both immediate and sustained. The beads/seeds do not interfere with movement or activity and are therefore ideal for first responders and trauma-affected populations.

Are there any reported side effects?
In NADA's experience, there have been few reported side effects. Sometimes the site is tender or gets irritated. On rare occasion, a person may experience discomfort, like flushing or a mild headache. Encourage recipients to remove the beads/seeds if they find the experience uncomfortable. Do not put beads/seeds on an open wound.

What is the difference between beads and seeds?
According to NADA's founder, Michael Smith, "Seeds have an energy of life, and last only a couple of days whereas beads can last much longer." Practitioners have used both effectively. We usually put on new ones weekly.

During an MRC response, how should the area where ear acupoints are provided be identified?
It could be called a "Stress Relief Station." Recipients can get beads/seeds while standing. When possible, have people sit for a few minutes together after getting their beads/seeds to augment the effect.

What research supports using ear acupoints for trauma?
Some literature supports the use of ear acupressure (with this and similar protocols) integrated with appropriate interventions. A study of post-caesarian section women using seeds on the Shen Men point found reduced anxiety, fatigue and cortisol levels compared to usual care.

Kuo, S.-Y., Tsai, S.-H., Chen, S.-L., Tzeng, Y.-L. (2016) Auricular acupressure relieves anxiety and fatigue and reduces cortisol levels in post-caesarean section women: A single-blind, randomised controlled study. *International Journal of Nursing Studies, 53, 17-26.*
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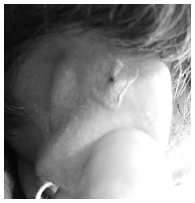

What happens if a person is allergic to the tape?
You can purchase beads on non-latex tape. They are a little more expensive but available. Intolerances to the beads and tape are very rare.

How do I purchase ear beads/seeds?
Ear beads/seeds are available from vendors such as ACP Medical Supplies, Acurea, Helio, Lhasa OMS and other online companies. There are many brands and names (acupoint plasters, ear massage beads, ear seeds, magnetic pellets, etc.). Products vary by packaging, adhesive, material and price but are generally equally effective. Be sure to get a product that is designated "ear" or "auricular". Suppliers usually offer quantity discounts.

Do I need other equipment/tools?
Some people like to use tweezers, but they are not necessary. Some MRC responses prefer or require that all physical contact involves gloves. Otherwise, gloves are cumbersome and unnecessary.

By choosing to use this protocol, I agree to the following statement about responsible, ethical use: I understand that learning this does not make me an acupuncturist or auriculotherapist and I will not present myself in that way. I will not make inappropriate claims about expected outcomes. I offer ear acupoints as a specific and limited protocol to support, not substitute, medical and psychosocial care. I will not use, or withhold, this protocol punitively or for financial gain. I will comply with all local laws and regulations.

medicines

MDPI

Article

NADA Protocol for Behavioral Health. Putting Tools in the Hands of Behavioral Health Providers: The Case for Auricular Detoxification Specialists

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Abstract: Background: The National Acupuncture Detoxification Association (NADA) protocol, a simple standardized auricular treatment has the potential to provide vast public health relief on issues currently challenging our world. This includes but is not limited to addiction, such as the opioid epidemic, but also encompasses mental health, trauma, PTSD, chronic stress, and the symptoms associated with these conditions. Simple accessible tools that improve outcomes can make profound differences. We assert that the NADA protocol can have greatest impact when broadly applied by behavioral health professionals, Auricular Detoxification Specialists (ADSes). **Methods:** The concept of ADS is described and how current laws vary from state to state. Using available national data, a survey of practitioners in three selected states with vastly different laws regarding ADSes, and interviews of publicly funded programs which are successfully incorporating the NADA protocol, we consider possible effects of ADS-friendly conditions. **Results:** Data presented supports the idea that conditions conducive to ADS practice lead to greater implementation. Program interviews reflect settings in which adding ADSes can in turn lead to improved outcomes. **Discussion:** The primary purpose of non-acupuncturist ADSes is to expand the access of this simple but effective treatment to all who are suffering from addictions, stress, or trauma and to allow programs to incorporate acupuncture in the form of the NADA protocol at minimal cost, when and where it is needed. States that have changed laws to allow ADS practice for this standardized ear acupuncture protocol have seen increased access to this treatment, benefiting both patients and the programs.

Keywords: NADA: National Acupuncture Detoxification Association; NADA protocol; acudetox; ADS: Auricular (or Acupuncture) Detoxification Specialist

1. Introduction

The National Acupuncture Detoxification Association (NADA) protocol, also known as acudetox, originally designed for use in acute heroin withdrawal, has become a remarkably effective tool applied to many populations receiving behavioral healthcare and primary healthcare [1]. Not a replacement for other modalities, the NADA protocol is always understood to be best utilized in an integrated setting with the right match of bio/psycho/social/spiritual supports and interventions. Nor is the NADA protocol a replacement for Chinese medical care which excels at diagnosis and individualized treatment, including a broader range of auricular interventions (see Figure 1).

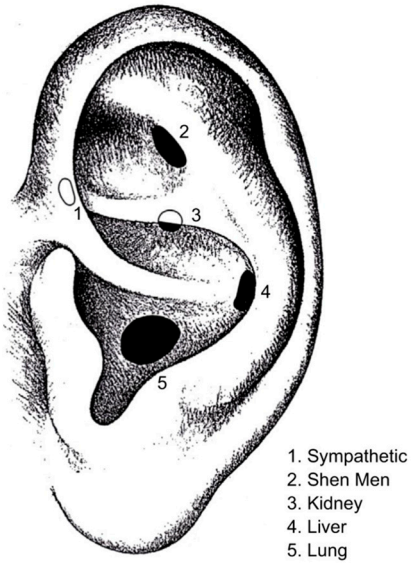

Figure 1. National Acupuncture Detoxification Association (NADA) Protocol. The points: 1 Sympathetic; 2 Shen Men; 3 Kidney; 4 Liver; and 5 Lung provide balance and yin nourishment with the presumptive diagnosis of yin deficiency, "empty fire", and the conventional medicine diagnoses of behavioral health. The NADA protocol includes bilateral manual needling of one to five points typically delivered frequently (often daily) with participants sitting quietly in groups for 30–45 min, or the application of seeds/beads, often just on Shen Men or Reverse Shen Men (opposite Shen Men on the back of the ear).

Integrated Behavioral Health Care is where behavioral health and medical providers work together to help address the emotional, mental, and spiritual side of any medical condition in order to improve outcomes [2]. The factors we call stress or stressors contribute to worse outcomes in healthcare whether in primary care, or in illnesses more traditionally understood as behavioral health disorders: mental illness, stress, grief and loss, addiction, trauma, and disaster responses.

The NADA protocol is a tool that can be broadly, efficiently applied by behavioral health professionals in a myriad of settings. What prevents or limits that happening has to do with access and availability of trained healthcare providers who can incorporate the protocol into existing systems with existing staff rather than relying on outside acupuncturists or medical acupuncturists. The ability of trained healthcare specialists to practice the protocol, as Auricular Detoxification Specialists (ADS), depends upon legislation, regulation, and scope definition. This paper makes the case for ADS provision of acudetox, reviewing the historical background and development of the NADA protocol and related legislation, exploring how legislation affects application and availability and offering examples of how the NADA protocol can flourish when appropriate measures allow that growth.

History and Background

The NADA protocol was developed in the mid-1970s at Lincoln Detox through a community process of experimentation and feedback [3]. From the research of Chinese neuro-surgeon, H.L. Wen, the Lincoln Detox group had learned about the effects of the ear lung point (with electrostimulation) in relieving acute opium withdrawal symptoms [4]. From there, the protocol developed into what is now known as the NADA protocol.

The people administering the NADA protocol at Lincoln Detox were a variety of frontline staff members—counselors, nurses, and peer recovery workers. Although formal acupuncture education was in its early stages, it was still not legal practice to have acupuncture needles inserted into the body by non-physicians [3]. The grassroots application of the NADA protocol at Lincoln even caused several brief closures of the program.

Considering the benefit that clients experienced with the ear acupuncture treatment, advocates formed the NADA organization in 1985 to facilitate its growth. In 1989, Lincoln Detox's medical director, Michael O. Smith, helped petition for the first law in the United States allowing non-acupuncture personnel to provide this standardized and limited protocol. The new law stipulated that individuals could be Acupuncture Detoxification Specialists (ADSes) as long as they worked in a setting that also provided comprehensive addiction treatment services. It also required them to be supervised by a licensed acupuncturist or a physician with acupuncture training.

Lincoln Detox, renamed Lincoln Recovery Center in the early 1990s, became a thriving training center for ADSes, both from within and outside of the United States. The two-week training program was apprenticeship-based and would welcome a new group of trainees each week. By always having a group of trainees in the clinic room, Smith did not need to hire additional staff to provide the treatment. In this manner they were able to keep the training free of charge, and thus very accessible to many New York-based programs.

When those trainees returned to their programs, they provided the treatment as an addition to the existing array of services. Word spread about the innovative training and clinical services pioneered by Lincoln Recovery Center, through published research, congressional hearings, national conferences, and invited talks given by Michael Smith around the country. Gradually the practice of acudetox spread. The NADA organization estimates that some twenty-five thousand persons have been trained in this method worldwide [5].

The intervention is inexpensive and easily adopted especially when it can be provided by behavioral health treatment professionals either individually or within an integrated system of care. The practice of training behavioral health providers as ADSes is allowed by some but not all of the states in the U.S., and some but not all of the countries in the world [5]. To date there are twenty-one (21) states that have a statute giving a diverse group of healthcare workers the ability to be trained in the NADA protocol [6]. U.S. state laws vary in terms of who can perform the protocol, whether their scope is behavioral health or just addiction, where they can practice, and the kind of training, supervision, and oversight required.

The preponderance of clinical/anecdotal and evidence-based experience indicates that the NADA model of care improves treatment and health outcomes. The model includes the following components: (1) integration within other interventions; (2) barrier-free; (3) regular treatments; (4) a communal setting; and (5) local personnel and/or cross-trained health providers offer the therapy [7].

In 1993, according to a government survey of public and private substance abuse treatment facilities, there were 57 New York state programs reporting the use of acupuncture [8]. By 2000, that number had more than quadrupled, growing to 234. (The Substance Abuse, Mental Health Services Administration (SAMHSA) conducts an annual survey of addiction treatment programs and since 1992, that survey has included acupuncture amongst the "ancillary services". Note that the survey question is about "acupuncture", not auricular acupuncture or acudetox, and therefore does not distinguish the type of needling provided.).

One of these reporting sites was the SISTERS program—Sustained Interpersonal Strategies for Treatment and Empowerment of Recovering Substance Abusers—located within the Lincoln Recovery Center's Maternal Substance Abuse Services (MSAS) [9]. A peer counseling model, SISTERS operated from 1991 until 1996 with grant funding from the Center for Substance Abuse Prevention. In addition to other services, SISTERS staff would administer daily NADA treatments until the client could provide ten consecutive days of negative urine toxicologies. Women who participated in the SISTERS program had babies born with higher birth weights as compared to the national birth weight average for babies born to women in recovery, and 78% of the babies were born with negative toxicology tests at the time of delivery. Program participants also had greater rates of family reunification with children either not living with them or in the foster care system.

The key takeaway from this program profile is that the services were run by peers who had themselves been successful graduates of the MSAS program. They coordinated services for SISTERS

clients as well as provided the daily NADA acupuncture treatments. MSAS and the SISTERS program received national attention in the 1994 National Public Health and Hospital Institute publication, Vulnerable Women and Visionary Programs, which provided a review of programs that successfully helped drug-involved women and their children [10]. The publication notes that the effectiveness of peer counselors in improving outcomes was a key component.

A comparative study between two inpatient treatment programs, the Kent-Sussex Detoxification Center in Delaware which employed trained nurses as ADSes and an acudetox program at a Maryland hospital which hired acupuncturists, demonstrated a stark contrast in NADA service delivery. Study outcomes showed the use of ADSes in the Delaware program resulted in: (1) greater trust and rapport with clients; (2) treatment on demand—"with retention as the primary goal, the value of this service is inestimable"; (3) no additional cost to the program, save for the supplies—"Fees were incurred for consulting and the training of the nurses, but those fees were the equivalent of three weeks of acupuncture provided by licensed acupuncturists at the mental health hospital", (4) administrative simplicity—"Organizing a group of acupuncturists and developing a schedule which takes time out of from their busy practices can be complex ... only one face-to-face meeting with the five acupuncturists has been arranged in the six months"; (5) availability of acupuncturists—"Established acupuncturists are often unwilling or reluctant to interrupt their daily treatment schedules to travel fifteen to thirty minutes to a site where they earn considerably less"; (6) improved morale for the staff—"The improvement in the quality and efficacy of the program has come from internal resources"; and (7) staff become more potent agents for change—"The gift that acupuncturists can give to the field is the transfer of their knowledge and skills to those already working in the field [11] (pp. 11–12)".

A Texas-based NADA trainer conducted a survey in 1996 to find out how willing and able full-body acupuncturists would be to provide their services, specifically the NADA protocol, in the public health sector [12]. The survey was administered to 233 licensed acupuncturists, and 60 expressed an interest. However, the majority of the interested acupuncturists had limited availability (one to two days per week) and expected to receive compensation. According to a program administrator quoted in the Guidepoints report at the time, "Our patients really look forward to the acupuncture and they are accustomed to having it available every day from their regular counselors. It doesn't work well otherwise [12] (pp. 2–3)".

A similar survey was administered to acupuncturists in Maine in 2017, although its scope was more general to public health, including addiction and mental health [13]. The survey results showed trends similar to the responses in the Texas study. A majority of acupuncturists responded that they did not want to join the new Maine Acupuncture Public Health and Wellness Committee to address the opioid epidemic in their state and would not be interested in volunteering either weekly, once a month or as a fill-in at one of four free acupuncture veterans clinics due to time constraints and travel distance. 53% responded that they offer pro bono acupuncture, but mostly out of their own clinic setting. Interestingly, 69% reported past experience working with clients and in programs treating addiction. However, most provided fairly limited timeframes that they could offer treatment to that demographic at present.

The west coast of the United States, primarily Oregon and California, have historically had many programs with hired acupuncturists providing the NADA protocol. A 2012 report revealed that due to budget cuts in the addiction treatment field, paid positions for acupuncturists in those states utilizing the NADA protocol sharply declined [14]. Neither of these states currently permits non-acupuncture ADSes.

While the research base for the NADA protocol has been mixed and does not include large scale replicated RCT trials, there is a growing body of positive small usual-care controlled studies and a large base of anecdotal reports [1]. One such study of NADA added to usual care in a residential substance abuse treatment program demonstrated statistically significant decreases in symptom severity [15]. Carter and his co-authors studied common symptoms associated with behavioral health disorders: mental/emotional (depression, anxiety, anger, concentration), and physical (cravings, decreased energy,

and pain in the form of head and body aches). Two systematic reviews/meta-analysis studies address the benefits of auricular acupuncture and acupressure for pain [16,17]. The latter, which focused on emergency settings, includes studies of "battlefield acupuncture", a standardized five-point protocol and style of auriculotherapy for treating acute pain widely adopted in military settings and applied by trained, non-acupuncturist, medical providers.

A Kaiser Permanente HMO-based study demonstrates not only benefits of adding NADA-style treatment to usual addiction care, but also the cost effectiveness. In their evaluation of 44 patients, those who received NADA supported treatment were more successful. Usual care with acudetox added was both more effective and less expensive to deliver [18]. Looking more deeply into the text, the authors show that the first year start-up costs were inflated by the necessary training fees which would not be required in subsequent years, indicating that the cost savings would be even more pronounced over time. Furthermore, the program was in California and the needling providers were licensed acupuncturists, not the agency's clinical staff. Using ADSes (which California law does not currently support) would render the cost savings even more significant.

Treatment administrators have long known that even if they are not able to get direct reimbursement for the treatment itself, implementing the NADA protocol results in better outcomes, decreases clients leaving against advice, improves staff/client relationships and satisfaction, can be offered as staff wellness benefit, and improves marketing and competitive edge thereby paying for itself many times over.

While initially the NADA protocol was used as a supportive component in addiction treatment programs, after the 11 September 2001 attacks in New York City the protocol was discovered to be useful for people experiencing a severe traumatic event [19]. Its non-verbal nature helped people relax and sleep better which ultimately helped them feel better able to cope with the traumatic experience. The protocol was again used effectively in 2005 after hurricanes Katrina and Rita. That experience resulted in the passage of an ADS law in Louisiana—to increase access to this treatment tool for both addiction treatment and future disaster response capability. Another outgrowth of this NADA response was the founding of the nonprofit, Acupuncturists Without Borders [20]. This group now primarily relies on the NADA protocol to aid in disaster situations throughout the world.

When laws and conditions in a given state are supportive of ADS practice, the availability of the NADA protocol will increase. However, when the state law is not supportive of non-acupuncturist ADS practice, there is less provision of the NADA protocol and therefore less public benefit. We have described some historical evidence of that and present the current situation in the United States.

2. Materials and Methods

In order to compare states with varying legislative landscapes, we employed several qualitative methods: (1) conducted a survey of NADA providers within three representative states; (2) compiled information from available databases and sources; and (3) conducted brief interviews of providers in a sample of programs in Colorado.

(1) Survey: A simple two-question email survey was sent to all NADA-trained persons (740) in the following states: California (CA), Colorado (CO), and Georgia (GA), chosen as representative of the range of ADS practice. 1-CA, a state with many licensed acupuncturists and no ADS statute, 2-CO, a state with a recent and more flexible ADS law with no supervision requirement, 3-GA, a state that has an ADS law but requires direct supervision by an acupuncturist.

(2) Search and compilation of state data: The U.S. government, through SAMHSA, conducts the annual National Survey of Substance Abuse Treatment Services (N-SSATS) as mentioned above. This information provides a snapshot of the substance abuse services being used in the public/private addiction treatment sector. Specifically, we looked at SAMHSA's 2016 data which we combined with the NADA database of trained NADA providers who are active members of NADA, and state-reported data about licensed acupuncturists.

In addition, we ranked states based upon their ADS legislation, taking into account scope and supervision factors. While state laws vary significantly, we have grouped all 50 states into three categories. Category 1 indicates "ADS-friendly" states where a statute allows various groups to perform the NADA protocol either without supervision or under general supervision and with broad behavioral health applications/scope of practice. Category 2 is also states with statutory privileges for some groups to perform the NADA protocol. These states, however, have more restrictive supervision requirements or significant limits on the setting or population. Category 3 includes three types of states: those where only acupuncturists and/or physicians can perform the protocol and those in which the ADS regulations are restrictive to the degree that they deter any real practice of the NADA protocol. Lastly, this group includes states with no acupuncture regulation.

(3) To illustrate the type of implementation that can occur with supportive legislative changes, we conducted brief interviews with programs which have added acudetox into integrated health settings.

3. Results

3.1. Three-State Survey

We emailed 740 surveys to all NADA-trained persons in the organization's database, with the following response rate: California 33/295, 11.2%; Georgia 10/47, 21.3%; Colorado 92/398, 23.1%. The respondents reported on their knowledge of acudetox-using programs in their state as follows: California 34; Georgia 5; and Colorado 70.

See Figure 2.

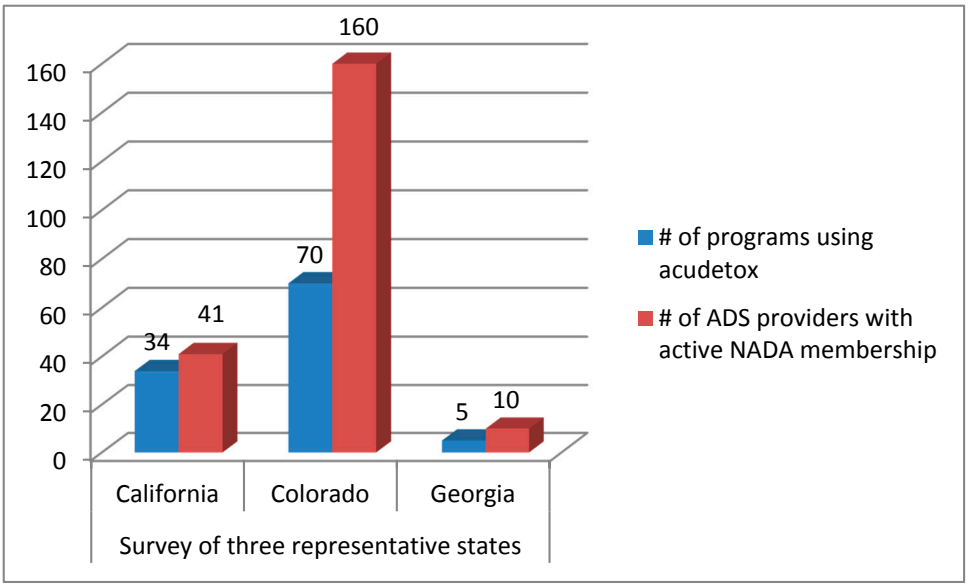

Figure 2. Survey of Programs Using Acudetox in Representative States.

3.2. Compilation of State-by-State Data

Using the SAMHSA data and information from each state regarding the number of licensed acupuncturists and ADSes, a state-by-state comparison was made including the number of licensed acupuncturists as reported by state-based regulatory authorities, the number of substance abuse treatment programs, the percent of treatment programs reporting the use of acupuncture and the number of ADSes with an active membership in NADA. States reporting the highest number of acupuncture services within substance abuse programs also have ADS-friendly laws. (By this ranking system, there are five states in category one, 19 in two, and 26 in three). See Table 1.

Table 1. State-by-State Compilation of Data Ranked by Auricular Detoxification Specialist (ADS)-friendly Legislation and Ordered by Percentage of Acupuncture-reporting Substance Abuse Programs.

State	% Acu [1]	SA Programs	ADS [2]	LAc [3]	ADS Rank	Limitations to ADS
Virginia	17	229	94	507	1	
Connecticut	13.8	224	91	400	1	
Michigan	12.7	479	178	171	1	
Wyoming	10.3	58	17	Unavailable [4]	1	
Colorado	**9.8**	**399**	**160**	**1513**	**1**	
New Mexico	16.2	154	32	737	2	Supervision & Training
Rhode Island	11.5	52	5	166	2	Addiction only
Maryland	11.2	402	54	1138	2	Addiction only
Vermont	8.7	34	9	192	2	Addiction only
Arizona	8.1	46	51	35	2	Board-approved programs only
Tennessee	6.6	1430	48	217	2	Addiction only, Supervision
Washington	5.6	227	47	1550	2	Nurses, Physician Delegation
New Hampshire	4.7	60	5	133	2	New legislation
Texas	4.7	64	82	1265	2	Addiction only
Louisiana	4.5	488	13	55	2	Supervision
Missouri	3.5	80	9	132	2	Supervision
Indiana	3.4	268	36	115	2	Addiction only
New York	2.5	229	78	4398	2	Addiction only
Ohio	1.5	64	15	249	2	Nurses, Physician Delegation
Wisconsin	1.4	136	8	545	2	Physician Delegation
North Carolina	1.2	280	17	586	2	NP and PA, Physician Delegation
Arkansas	0.9	489	1	32	2	Addiction only
Delaware	0	201	18	7	2	High fees
Florida	11.2	716	22	2452	3	LAcs and Physicians Only
Oregon	10.3	223	38	1481	3	LAcs and Physicians Only
California	**8**	**358**	**41**	**17,959**	**3**	**LAcs and Physicians Only**
North Dakota	5	428	9	See note [5]	3	LAcs and Physicians Only
Minnesota	4.1	157	7	606	3	LAcs and Physicians Only
Hawaii	4	370	17	702	3	LAcs Only
Nevada	3.8	174	1	61	3	LAcs and Physicians Only
Massachusetts	3.1	265	13	1095	3	LAcs and Physicians Only
New Jersey	3	355	11	1000	3	LAcs and Physicians Only
Utah	3	371	2	167	3	LAcs and Physicians Only
Illinois	2.8	235	20	813	3	LAcs and Physicians Only
Pennsylvania	2.7	675	15	711	3	LAcs and Physicians Only
Maine	2.6	528	17	171	3	LAcs and Physicians Only
Iowa	2.5	922	0	66	3	LAcs and Physicians Only
Alaska	2.1	163	2	118	3	LAcs and Physicians Only
South Carolina	1.8	84	7	158	3	Direct Supervision
South Dakota	1.6	114	18	Unavailable [4]	3	Not regulated
Georgia	**1.6**	**62**	**10**	**No response [4]**	**3**	**Direct Supervision**
Montana	1.6	314	2	160	3	LAcs and Physicians Only
Nebraska	1.5	406	4	32	3	LAcs and Physicians Only
West Virginia	0.9	113	7	43	3	LAcs and Physicians Only
Kentucky	0.8	106	2	87	3	LAcs and Physicians Only
Alabama	0.7	363	8	N/A	3	Physician only
Idaho	0.7	136	1	157	3	LAcs and Physicians Only
Oklahoma	0.5	143	7	Unavailable [4]	3	Not regulated
Kansas	0.5	204	2	Unavailable [4]	3	New legislation
Mississippi	0	47	2	11	3	LAcs and Physicians Only

[1] Percentage of Substance Abuse (SA) programs that reported offering acupuncture; [2] NADA-trained persons who are current members; [3] licensed acupuncturists as reported by individual state boards; [4] "Unavailable" indicates states which due to having no regulation or new regulation do not have numbers available and "No response" indicates state boards which did not respond despite numerous requests for information; [5] the board said it was unable to provide numbers.

Comparing the results obtained from the survey of providers in the three representative states and the data obtained from SAMHSA there are some evident discrepancies. While the numbers for Georgia are consistent for both surveys—only five programs in that state and only 1.6% of the total programs report using acupuncture, practitioners in Colorado report more programs using acudetox, 70, than obtained in the SAMHSA survey, 39, which may reflect the broader inclusion in behavioral health and integrated health programs and not just substance abuse treatment programs. The discrepancy between the data for California—survey of NADA trained providers indicating 34

programs currently using acupuncture and the SAMHSA survey indicating 115 using acupuncture may be reflective of private programs utilizing full-body acupuncture, not just the NADA protocol. At the same time the 115 are only 8% of the total 1430 substance abuse treatment programs in California that report using acupuncture as an ancillary service.

3.3. Program Profiles Based on Personal Interviews

In Colorado, a law was passed in 2013 allowing for NADA training of licensed individuals in the behavioral health care field, including Licensed Clinical Social Worker (LCSW), Licensed Addiction Counselor (LAC), Licensed Professional Counselor (LPC), Licensed Marriage and Family Therapist (LMFT), Certified Addiction Counselor III (CAC III), and licensed psychologists. These professional groups were granted an allowance to utilize the NADA protocol in their respective practices without supervision, after successfully completing the NADA training (these clinicians have a license which allows them independence as mental health practitioners in the state of Colorado).

The NADA protocol is a safe procedure with minimal side effects [21]. The training includes clean needle technique and ADS providers have demonstrated knowledge and competence to continue to use this procedure safely and effectively without ongoing supervision. In the four years since the CO law has gone into effect, there has been a significant expansion of the availability of this treatment statewide. It is being implemented in private and publicly-funded substance abuse treatment programs, inpatient and outpatient mental health facilities, as well as fully integrated physical and behavioral health programs. Exposure to the NADA protocol has also increased the interest in acupuncture in general, with more people reporting an interest to the authors in pursuing full-body acupuncture with a licensed acupuncturist. This approach creates a win-win for all parties involved, patients, and providers.

3.3.1. Pueblo Community Health Center—Pueblo, Colorado

The Pueblo Community Health Center (PCHC) is a Federally Qualified Health Center (FQHC) that provided primary healthcare to over 24,000 patients in Pueblo, Colorado, in 2016. In addition to providing primary health and dental care they also integrate behavioral healthcare services and employ 17 licensed behavioral health providers including psychologists, social workers, and professional counselors. Of these, eight are ADSes. They utilize acudetox in individual sessions and in group settings. They provide six acudetox groups a week, four days per week—Monday–Thursday. One therapist reported that the patients will attend relaxation groups with acudetox more than any other group they offer. The patients report "a lot of internal healing without a lot of talking". The best attendance is in a group that combines acudetox with coping skills—10 weeks of guided meditation and mindfulness training. The patients report that they like the combination of acudetox with mindfulness. One patient stated that his purpose in attending the group was, "I need to clear my soul".

PCHC also introduced acudetox to an educational group for patients with diabetes. They are collecting data to see if the NADA protocol helps patients better deal with troubling emotions that come up for people with a diabetes diagnosis. The program tracks a patient's weight, hemoglobin A1C, and blood pressure; they are also using the Problem Areas in Diabetes (PAID) scale to track feelings and emotions.

The eight physicians and 20 midlevel providers were initially skeptical about the potential benefits of acudetox. Since implementation they have become enthusiastic about it as a crisis intervention tool and frequently request the behavioral health specialists to give a NADA treatment to the patients they are seeing. Examples of this include a patient who presented with such high blood pressure that transport to the emergency room was imminent. However, an acudetox treatment brought his blood pressure down 20–30 points within 30 min. This aspect of lowering blood pressure proves also helpful with obstetric patients. PCHC has recently started a medication assisted treatment program using buprenorphine for their pregnant clients with an addiction to opiates. Acudetox helps with the medication induction and then maintenance, keeping the women engaged in treatment.

PCHC ADSes also use Vaccaria seeds (annual plant that grows in China—cow soapwort plant) applied with pieces of tape as acupressure on the Shen Men point in the ear either after a NADA treatment, for those who do not want needles, or for babies and children. One therapist related her experience with two babies born dependent on opiates and experiencing symptoms of neonatal abstinence syndrome. In both cases, the babies at three months were underweight and still struggling with agitation, irritability, and tremors. The therapist applied Vaccaria seeds bilaterally on the Shen Men point of the babies' ears and taught the mothers how to do this with some massage of the points. Both babies went right to sleep. The mothers were given a supply of seeds to take home with them.

Staff at PCHC frequently request an acudetox treatment when they feel stressed so this has been helpful in their staff wellness program. One staff member finds the treatment helps decrease the frequency and intensity of her migraine headaches. Now staff is considering a pain management group using acudetox because many patients have been able to decrease their medications for anxiety and pain when they get regular acudetox treatments. In their recent Health Resources and Services Administration (HRSA) 2017 survey PCHC was given a "best practice" for their use of acudetox.

3.3.2. Marillac Clinic—Grand Junction, Colorado

The Marillac Clinic is a Federally Qualified Health Center (FQHC) providing medical, integrated behavioral health, optical, and dental services to over 9000 underserved and low-income patients and their families at five clinic sites in Mesa County, Colorado. They have introduced the use of NADA acudetox since 2014 with great success. The medical providers refer patients to the social worker and ADS provider for help with smoking cessation, anxiety, relapse prevention, medication tapers and chronic pain. The ADS provider reports doing an average of 10–15 treatments per week with many more brief interventions using seeds or beads for acupressure. Using questionnaires he has found that 80% of the patients report reductions in chronic pain, stress, depression and anxiety, fear, and substance cravings with the use of acudetox as well as improvement in self-esteem and clear thinking. In May 2015, Marillac received a HRSA evaluation "best practice" for their use of the NADA protocol, which they refer to as "acu-wellness".

3.3.3. St. Mary Corwin Hospital—Pueblo, Colorado

St. Mary Corwin Medical Center is a regional full-service, 408-bed hospital in Pueblo, Colorado, part of the Centura Health Network. Four social workers who work as psychiatric liaisons in the emergency department have been trained as ADSes. Patients who present in opiate withdrawal have been offered acudetox rather than the opiates they requested. Such patients have experienced some relief of withdrawal symptoms and are then referred to other acudetox providers or to the hospital's own free weekly acudetox group, which routinely serves 20–30 people from the community at large.

A NADA-trained medical provider at the hospital successfully used acudetox with an uncooperative adolescent post overdose/suicide attempt. She said the ear acupuncture gave her a sense of well-being and she became more compliant. The provider reported that his primary goal in the use of the protocol in this case was to give her a sense of empowerment; to offer her a therapy that she could refuse without repercussion, and from that build some trust so that they could interact. He reported "it is definitely a nice arrow to have in the quiver when dealing with this population".

3.3.4. Southern Colorado Harm Reduction Association—Pueblo, Colorado

In an effort to aid in the serious opioid epidemic happening in Pueblo, this non-profit organization opened a second needle exchange facility in July 2017, adding to the initial one that opened in July 2014. Needle exchange services are available once a week, seeing as many as 92 people in a day. Recently one of the staff members became trained as an ADS and started offering acudetox. Addressing the positive response she is seeing to the acudetox, she commented, "I believe we are prepping people for treatment". The clients express sincere gratitude for the treatment. One reported that he came back because after the first session he "slept better than I have my entire life—I slept 12 h".

4. Discussion

Collectively, these results illustrate the importance of ADS provision. Our comparison of states provided a snapshot of the differences between a state that does not allow NADA-trained health care practitioners who are not also licensed acupuncturists or physicians to practice, to one that allows ADSes but only under strict onsite supervision, with one that allows behavioral health professionals to incorporate the NADA protocol broadly. The contrast in availability of NADA to clients is significant. Looking nationally at states, the results in Table 1 strongly suggest that where there is real potential for ADS integration, there can be more acupuncture available. Currently the only national information available is limited to substance abuse treatment programs. Future research could utilize a survey that captured actual integrated provision of acudetox within the entire behavioral health system.

The interview-derived anecdotal Colorado reports highlight the creative applications of the NADA protocol within integrated behavioral healthcare settings facilitated by a change in the legislation. We want to note that Colorado acupuncturists as represented by their state association as well as acupuncture schools came to support the legislation over time. The Colorado examples highlight the kind of benefit that acudetox can bring to healthcare when in the hands of the frontline healthcare staff. Even though Colorado has 1513 licensed acupuncturists, integration in behavioral health settings could not have happened without ADS-friendly legislation. In comparison, California with 17,959 licensed acupuncturists but only 41 current ADSes has a lower percentage (only 8%) of treatment programs utilizing acupuncture as compared to Colorado (9.8%).

The state with the highest number of ADSes in the NADA database is Michigan, where ADSes outnumber LAc, and almost 13% of the programs report using acupuncture. In fact, most of the top ten states providing some form of acupuncture in their treatment programs are ADS-friendly states. These include Connecticut (13.8%), New Mexico (16.2%), and Virginia (17%), all of whom have had ADS-friendly laws for more than 10 years, and in 2016 Connecticut expanded its law to all behavioral health settings.

Limitations to this study include our reliance on extant data bases that offer only limited information. The survey we conducted was subjectively submitted to three states. The response rate was fairly low and the survey had no objective verification of responses. A more thorough survey would be expensive and difficult to pursue outside of a research institution or government agency. We are missing data from a few state boards that did not respond and states without acupuncture legislation may have acupuncturists that are not reported above. Some acupuncturists are licensed in several states. SAMHSA data only reflects addiction treatment programs, not other forms of behavioral health provision and as discussed above, the survey asks about "acupuncture", not specifying NADA. The number of current ADSes reflects only those who are current members of NADA which may under-report NADA-trained persons who are not current members of the organization but who still practice acudetox. Furthermore, the ADS stipulation here does not differentiate between persons trained so the number would include licensed acupuncturists who are NADA-trained and current NADA members.

As more states adopt ADS-friendly regulation that allows behavioral health professionals to use ear acupuncture for treating a wide range of behavioral health issues, the authors expect to amass similar case and program reports. It is our hope that more states, provinces, and countries will adopt rules and regulations that allow this practice because the need is great and urgent. It is also our hope that states with existing ADS regulations will expand scope of practice, and decrease supervision and training requirements to increase access.

In addressing social determinants of health, it is often noted that the providers need to reflect the population that they serve in terms of race and ethnicity. The U.S. national acupuncture community tends to be largely white or Asian (76.9% White/Caucasian, 16.6% Asian), according to a 2013 acupuncture job survey, whereas the larger community of behavioral health practitioners more commonly reflects their treatment communities [22]. That same job study reports that more than half of acupuncturists say they work in private practice. Full-body acupuncturists also tend to be

clustered in major metropolitan areas and are not generally extensively trained in allopathic addiction or behavioral health treatment modalities. Conversely, behavioral health needs are everywhere and optimum treatment requires training in behavioral health. The NADA protocol is a tool that the behavioral health provider can add to their tool box.

5. Conclusions

The practice of the NADA protocol by behavioral healthcare professionals facilitates greater access to this treatment for clients. Legislation that allows for non-acupuncturist ADSes to perform the NADA protocol supports this expansion. The NADA organization will continue to advocate for legislative changes that support the widespread application of acudetox within the healthcare and other relevant delivery systems such as disaster-response and community wellness initiatives.

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Conflicts of Interest: The authors declare no conflict of interest. The authors all have NADA affiliation but do not stand to profit directly from this publication. Authors represent NADA leadership and management as well as functioning themselves as trainers. They might indirectly benefit from increased interest in training.

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A recent search using the National Center for Biotechnology Information U.S. Library of Medicine National Institutes of Health database for published articles on French energetic acupuncture identified 11 articles. There were 5 articles published by Helms and at least one co-authored by Dr. Richard Niemtzow (Gambel, Helms, Pock, Burns, & Baxter, 2006): a retired military doctor who developed and marketed Battlefield Acupuncture, a five-point auricular (ear) protocol designed for acute pain.

Pain management is one of several predominate uses of acupuncture. A recent systematic review of auricular acupuncture (stimulation of areas on the cartilage of the outer ear with acupuncture needles or semi-permanent needles) for substance abuse identified 119 studies with rigorous design and control of confounding variables, of which 85 acknowledged the efficacy of acupuncture for treating addiction (Motlagh, Ibrahim, Rashid, Seghatoleslam, & Habil, 2016). Most of the 85 articles cited the National Acupuncture Detoxification Association (NADA) protocol. The Battlefield Acupuncture protocol appears to be like the NADA acupuncture protocol in design and expanded use (Clearfield Medical Group, n.d.), but appears to be marketed and taught before it was researched or found effective for original intent and expanded use.
Given the biomedical research that supports the Chinese medical theory, the application of the NADA protocol to address substance abuse is supported by evidence, clinical practice, and patient experience. The diagnostic criteria for substance dependence coincides with various symptoms including failed attempts to stop using the substance, a preoccupation with the product, and changes in behavior (American Psychiatric Association, 2013). The feeling of not being able to control cravings or shift the preoccupation may become more emotionally frustrating if the user experiences physical withdrawal symptoms. The NADA auricular acupuncture protocol has the potential to offer physical, mental, and emotional support (Collis, 2008; Shwartz & Saitz, 2000).

The (NADA) protocol was designed by a Psychiatrist and licensed acupuncturist as an adjunct treatment for addiction (Raith, Kutschera, Müller, & Urlesberger, 2011). The NADA protocol consists of three to five small acupuncture needles placed in specific points in each outer ear (D'alberto, 2004). Reports of successful outcome measures for the intended use included increased program retention, more optimistic and cooperative attitudes toward the process of recovery, improved sleep, and reductions in cravings, anxiety, and pharmaceuticals (Otto, 2003; Shwartz & Saitz, 2000; Stuyt & Meeker, 2006). The biomedical finding of NADA acupuncture includes increased levels of enkephalin, epinephrine, endorphin, serotonin, norepinephrine, and dopamine in the central nervous system/ plasma that may quell substance abuse (Cabioglu, Ergene, & Tan, 2007). The NADA organization developed a certification program so that providers who are not licensed acupuncturists can use this evidence-based method for substance abuse, stress, poor sleep, anxiety, and pain relief.

Mechanism of NADA Acupuncture Protocol and Points

Both addiction and posttraumatic stress manifest with a range of unpleasant emotions that the sufferer is expected to control by way of behavior (Kesebir, Luszczynska, Pyszczynski, & Benight, 2011). This suppression of emotion can lead to added frustration, which can be further challenging for both the client and counselor. Cabioglu, Ergene, and

Tan (2007) reported that the auricular lung point is important in terms of substance withdrawal since it is located at the most superficial branch of the vagus nerve. Stimulation of the vagus nerve is thought to produce neural impulses that ultimately initiate the reward cascade that is produced when receptors in the nervous system are stimulated. Stimulation of the Liver auricular point is considered to help sooth tension and anger while the Shen Men auricular point calms the mind (Chih-Chieh et al., 2007). Additionally, the auricular Kidney point is considered to abate fear and, most importantly, the auricular Sympathetic point calms the nervous system (Shen, Hsieh, Chang, & Lin, 2009).

Mechanism of Battlefield Acupuncture Protocol and Points

Under the heading Mechanism of Action, Niemtzow's paper on Battlefield Acupuncture (2007) generalized that "most likely the Battlefield methodology favors the processing and the modulation of pain in the Central Nervous System involving the hypothalamus, thalamus, cingulate gyrus and cerebral cortex structures. fMRI research studies from Dr. ZH Cho suggests involvement of these structures." One interpretation from this article is that the Battlefield Acupuncture protocol, which has been altered several times since being introduced, was based on loose theory without randomized clinical trials to support safety or efficacy before experimenting and testing on members of the military, veterans, and family members; some of our nation's most precious and protected classes.

Several years later, Dr. Neimtzow explored functional magnetic imaging (fMRI) on the acupuncture points he selected for his protocol. In his book, Auriculotherapy Manual: Chinese and Western Systems of Ear Acupuncture (2014), page 352, Terry Oleson included Dr. Neimtzow's fMRI research conducted from the Acupuncture Center of the U.S. Department of the Air Force on patients receiving Battlefield Acupuncture. "The measured increase in fMRI activity of the anterior cingulate gyrus, thalamus, hypothalamus, and periaqueductal gray was prominently reduced after stimulation of the Battlefield Acupuncture points on the auricle." These findings may explain why so many Soldiers/veterans with chronic pain and post-traumatic stress respond unfavorably to the Battlefield Acupuncture.

Post-traumatic stress can result in a central nervous system (CNS) neuron sensitization (He et al, 2016) that effects certain areas of the brain while chronic pain can result in central sensitization of the CNS (Breivika, Stubhauga, Butler, 2017; Lee & Goto, 2011). Research in post-traumatic stress sensitization has shown increased activity in the amygdala and decreased activity in the cingulate cortex (Clausen, Francisco, Thelen, Bruce, Martin, McDowd, Simmons, & Aupperle, 2017). Increased activity, demonstrated with fMRIs, in the cingulate gyrus, is association with decreased levels of pain (Nakata, Sakamoto, & Kakigi, 2014; Vogt, 2005). Thus, decreasing cingulate gyrus activity through the stimulation of acupuncture on that point may increase pain and perpetuate pain dysregulation, especially in cases post-traumatic stress comorbidly.

To date, there exists limited information regarding research and biomedical mechanisms of the Battlefield Acupuncture approach to postulate the use as evidence-based. A recent PubMed search for articles with the terms auricular acupuncture AND pain with the filter clinical trial, identified over 300 articles. Only 2 articles were clinical trials for Battlefield auricular acupuncture. A recent search for published articles for Battlefield auricular acupuncture using the National Center for Biotechnology Information U.S. Library of Medicine National Institutes of Health database, identified 15 articles. Several articles on Battlefield Acupuncture have been authored or co-authored by Dr. Richard Niemtzow.

Discussion

Considering the tuition fees charged by Helms Medical Institute (HMI), along with travel, food, and lodging expenses each week participants attended the course, the average cost for sending military and VA physicians to the Helms program could have averaged $30,000 per person. One follow-up contract for prior graduates of the HMI non-accredited program for Battlefield Acupuncture refresher training was $190,000 (Department of the Navy, 2011).

In 2013, a grant to teach Battlefield Acupuncture across military and VA clinical settings, recently culminated in the certification and training of over 2,800 non-licensed acupuncture providers (Defense & Veterans Center for Integrative Pain Management, 2017). In May 2017, an officer in the U.S. Army was sporting semi-permanent needles in a slightly inflamed ear (Figure1. Soldier Suffering Incorrect Battlefield Acupuncture;). The soldier reported that a Pharmacologist at a military treatment facility, who recently completed the Battlefield Acupuncture training, performed the acupuncture about five days prior. The acupuncture points were in proximity to the Battlefield Acupuncture points, but remarkably off the target ear acupuncture points Omega 2, Shen Men, Point Zero, Thalamus, and Cingulate Gyrus (Figure 2. Diagram of Auricular Protocols).

The expense for non-acupuncture-licensed military and VA provider acupuncture preparation, privileging, and practice incurred by our tax dollars, to date, is beyond money, time and resources. The return on investment could have been significantly better if senior leaders had been adequately informed. It may now be concerning to consider that the military and VA providers who are considered the subject matter experts of acupuncture received expensive training that was not grounded in accredited education. A dissertation, outlining the value of medical acupuncture, submitted by Dr. Joseph Helms (2005) as a requirement for the degree of Doctor of Theology from Integrative Healthcare at Holos; a non-accredited university (Holos University, 2017), expresses the limits of the esoteric acupuncture differential diagnosis method. Helms' dissertation describes asking the patient what color he is thinking of at that moment. The stated color then becomes the basis for diagnosis. In other words, if the patient is thinking of the color blue, the patient is then diagnosed with a kidney pathology and the preponderance for the emotion of fear. This is not consistent with authentic Chinese medical practice and is neither logical from a biomedical nor Chinese medical perspective. It is these types of non-quantifiable mysterious ideologies that makes professional acupuncture practice appear questionable (Greenwood, 2008).

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