Official Title: Auricular Acupressure as a Non-Opioid Adjuvant in Opioid Tolerant Patients
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Title: "AURICULAR (EAR) ACUPRESSURE FOR PAIN MANAGEMENT AS A NON-OPIOID, ADJUVANT THERAPY FOR OPIOID TOLERANT PATIENTS"

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Sponsor or funding source:
Wake Forest Anesthesiology Department

Background and justification for the research:

Despite recent CDC guidelines for limiting the use of opioids in non-malignant related pain, millions of Americans still rely on opioid analgesics for daily pain control. Physicians have been encouraged to seek non-opioid alternatives since there is lack of evidence for opioid efficacy in chronic pain and, even worse, serious adverse effects including dependence, respiratory suppression, and death. When chronic pain patients are admitted to the hospital due to an acute medical problem, controlling their pain becomes problematic. Physicians need to address pain levels (which are often increased), but ideally would like to do so with minimal opioids to avoid CNS and respiratory depression. At Wake Forest Baptist Health, our chronic pain team is consulted to provide safe, effective pharmacological recommendations,

There is growing evidence in the literature for efficacy of auricular acupuncture therapy for chronic pain. Auricular acupressure (AA) is a related technique that uses the same external ear points for stimulation. It is widely held that AA is relatively easy to initiate, has rare adverse effects and is accepted by patients who may have an aversion to needles. There are studies currently underway addressing use of AA in outpatient, elderly chronic low back pain patients and in the perioperative setting, however, no reports of AA as an adjunct for opioid dependent patients during hospitalization. Thus, we propose assessing the effectiveness of AA for pain control on this population via initiating it during chronic pain consults. In addition, by analyzing secondary measures and demographics we hope to characterize patients that may benefit most from AA.

Battlefield Auricular Acupressure (BAApress) Training and Intervention Fidelity (IRB00084011)

This feasibility trial is being performed in collaboration with the BAApress Training and Intervention Fidelity study (IRB00084011). Under this grant, individual study teams conduct non-randomized feasibility trials to assess intervention feasibility and provide initial parameter estimates on specified outcomes.

The AA interventionists for this study will complete Auricular Acupressure training modules and complete competency assessments and intervention assessments throughout the study. Study teams will include the possibility that a study participant may be part of a competency assessment and that their session may be recorded and securely uploaded to a server per IRB and Institutional policies.

Objectives:

The purpose of this study is to determine if the addition of auricular acupressure to the typical pharmacological regimen given to patients on the chronic pain/addiction service will lower pain scores and decrease pain medication usage.

Setting:

This will be a study utilizing the location of Atrium Health Wake Forest Baptist (Main Campus) for initiation of study procedures.

Subject selection criteria

Any patient admitted to Atrium Health Wake Forest Baptist for which our chronic pain/addiction medicine service is consulted.

Inclusion:

Patient admitted to the hospital with a chronic pain/addiction medicine service consult.

1. Age > or equal to 18
2. History of documented chronic pain with or without opioid use disorder
    a. Polysubstance abuse or opioid use disorder
    b. Or opioid use (documented as home medication)
3. Expected length of stay (admission) is at least 5 days at the time of recruitment
4. Able to read and understand the informed consent form

Exclusion:

1. Patient refusal
2. Patients who are at a risk of leaving against medical advice (AMA) during their current admission may be excluded per the investigator's discretion
3. Since this is a feasibility pilot, only English-speaking participants will be eligible.
4. Inability to communicate via telephone
5. Participants with a history of skin disease (e.g., psoriasis) involving the ear, adhesive allergy, recent scar tissue on ear, or current abrasions or cuts on ear,
6. Cognitive impairment (delirium, dementia)
7. Physical impairment preventing them from applying pressure to the beads
8. Patients with cardiac pacemakers (contraindication to POINTER PAL)

9. Use of some types of hearing aids (obstructing the placement of beads)
10. Any chronic or acute illness or psychiatric conditions that would impact adherence to the study requirements

Sample Size

A total of 20 patients will be recruited from chronic pain patients hospitalized at Wake Forest Baptist Health Main Campus

Interventions and Interactions:

A. The chronic pain Advanced Practice Provider will evaluate the patient and determine if and when they can be included in the study. If the patient is determined to be eligible, the participant will be consented by a study team member prior to collection of any study data.

   Baseline

   -Review the home dose of opioid w/ participant collecting type, frequency and milligram use and date and time of last use prior to admission.
   - A study team member will provide the participant with the study questionnaire packet as well as instructions for completing the questionnaires.
   - Participants will be informed of the reminders that they will receive to complete the questionnaires twice a day for three days (i.e., verbal reminder from staff, signage placed in the room). Participant contact information will be collected to ensure appropriate and timely follow up.
   - A study team member will perform the pain score assessment with the participant to establish baseline pain score.
   - The participants will be asked to complete baseline questionnaires prior to the initiating placement of the acupressure including: Discomfort on Initiation of Acupressure (on 0-10 NRS scale), Pain Intensity, Enjoyment, General Activities Scale (PEG), Pain Catastrophizing Scale (PCS), Generalized Anxiety Disorder Scale (GAD-7), Patient Global Impression of Change Scale (PGIC) (only collected after Acupressure applied) and PROMIS sleep disturbance scale.

   Day 1

   The Baseline and Day 1 visits can take place on the same day.
   Following completion of baseline questionnaires, the trained Auricular Acupressure nurse will place the acupressure pads and instruct the participant how to do acupressure three times daily for 3 days.

- If the ear contains lesions, skin breakdown, or show signs of irritation, the acupressure pads will not be placed, and this will be noted in the study record.

- If the participant consented to the recording portion of the study, they will be reminded of the process and the acupressure nurse will confirm that the participant still agrees to participate in the recording portion of the study.
- A total of 10 adhesive acupressure pads will be placed, 5 acupressure pads per ear. The pads will be placed bilaterally on the following 5 auricular sites: 1) "Cyngulate gyrus", 2) "Thalamus", 3) "Omega 2", 4) "Point Zero", and 5) "Shen Men". These sites were selected based on the WV's Battlefield Auricular Acupressure Protocol for acute and chronic pain. This is the protocol the Veterans Administration uses for acupressure therapy for acute and chronic pain management.
- Each ear will be cleansed with alcohol, beginning at the base of the ear (lobule) to the apex. The acupoints will be visually located and marked with a sterile surgical marker or a POINTER-PAL trigger point locator will be used if one is available.
- The acupressure pads will be placed by visual identification of the preselected acupoints as per BAA protocol. The pads will be placed on the identified site by hand or with the assistance tweezers, with the seed portion of the pad aligning with the identified acupoint.
- To secure the pad, gentle but firm pressure will be applied to the pad, making sure that pressure is applied to the entire pad.
- After placement, the study nurse will apply moderate pressure to each acupressure pad for 30 seconds (total time 2.5 minutes per ear). Both right and left ear site will be stimulated at the same time with pressure in the following order: 1) "Cyngulate gyrus", 2) "Thalamus", 3) "Omega 2", 4) "Point Zero", and 5) "Shen Men".
- Participants will tell the acupressure nurse when they feel a tingling sensation in the ear or feel moderate tenderness or pressure as confirmation that moderate pressure is being applied.
- The acupressure nurse will document acupressure pad placement and activation in Wake One.
  - If the acupressure pads fall off before day 3 the participant will be instructed to note which pad fell off in the study participant questionnaire. The acupressure pads will not be replaced during the study.
- After completion of the day 3 study activities, the study team will instruct the participant to remove the acupressure pads by gently pulling on the edges of the pad and lifting off with their fingers or using tweezers to loosen the pad if needed.

The interventionist (Acupressure nurse) may record and take pictures of the treatment visit. These recordings will be used to ascertain fidelity to the intervention protocol as it relates to a) proper placement of acupressure seeds and b) and provision of instructions to the participant.
Each study participant will be asked to sign a separate consent giving permission for the intervention to be recorded and used for educational and research purposes. The recordings will be done to limit exposure of the study participant's face.

The interventionist's time will be measured in minutes from time the interventionist enters room to place acupressure pads to when the interventionist exits room. Qualitative questions will be used to assess overall feasibility.

- The study team will perform the pain score assessment with participants (on 0-10 NRS scale) two (2) times a day for 3 days. If the study team is unable to perform the pain scores assessment in person, we will use the pain score that has been assessed by the clinical team as part of their regular care and documented in the participant's medical record.

  Study participants will be reminded to complete their daily study activities.
  - A member of the study team will remind the participant to complete their assessment(s) or the study nurse can place an order in Wake One to prompt the care team to remind the participant.
  - A sign will be placed in the participant's room reminding them to complete their study activities.

  Monitoring opioid usage: data abstraction will be done and verified in Wake One if the participant remains inpatient for the 3 days.

  End of Study Assessment:
  Within 24 hours of the completion of the assessments and the removal of the acupressure beads, a member of the study team will assess patients'
  - Pain scores
  - Opioid medication frequency and dosage

  - Verify completion of Day 3 study questionnaires: Pain Catastrophizing Scale (PCS); Generalized Anxiety Disorder Scale (GAD-7); Pain, Enjoyment, General Activities Scale (PEG); Patient Global Impression of Change Scale (PGIC); PROMIS sleep disturbance scale

Participant will also be asked to complete "Willingness or desire to decrease opioid dependence and usage" and Acupressure Acceptability questionnaires on Day 3

Outcome Measures:

Since this is a feasibility study, results will be analyzed initially using descriptive statistics of main outcome measures.
To evaluate the efficacy of the auricular acupressure the following outcomes will be assessed:

Primary Outcomes:

Patient reported pain scores – change in patient reported pain scores (derived from the NRS and PEG scale) from baseline and Day 1-Day 3.

Secondary Outcomes to be measured:

Opioid use - Pre-Admission Opioid requirement and change from baseline (medication used during the intervention and as reported afterwards vs. home dose before the study started) collecting type, frequency and milligram use and date and time of last use prior to admission measuring mean/median changes from Baseline to Day 3 post evaluation. Trajectory of am and pm pain scores.

Generalized Anxiety Disorder Scale (GAD-7) – A Self-administered 7 item scale that draws from DSM-V criteria for General Anxiety Disorder (GAD) to identify GAD and measure symptom severity. It is routinely used as a tool to measure longitudinal changes and track treatment progress.
Patients are asked to rate the frequency of anxiety symptoms over the last 2 weeks on a Likert Scale (0-3). In general, patients with GAD or other common anxiety disorders exhibit GAD-7 scores of 10 or greater.

Pain Catastrophizing Scale (PCS) - The assessment of thoughts and feelings of the patients will be assessed using questions that are rated 0 for not at all to 4 for all the time. The Pain Catastrophizing Scale (PCS) assesses the extent of catastrophic thinking due to low back pain according to 3 components: rumination, magnification, and helplessness. It is a 13-item scale, with a total range of 0 to 52. Higher scores are associated with higher amounts of pain catastrophizing.

Composite Pain, Enjoyment and General Activity Scale (PEG) Assessment of pain intensity and interference. We will compare scores before and after initiation of Auricular Acupressure.

Patient Global Impression of Change (PGIC) – patient reported assessment of improvement or decline of their pain

PROMIS Sleep disturbance – patient reported outcome on the quality of their sleep.

Acupressure Acceptability questions - We will ask acceptability questions. "How satisfied were you with how your pain has been treated?" using the Likert scale to measure "Very satisfied =5, Satisfied=4, Somewhat satisfied = 3, Somewhat dissatisfied= 2, Dissatisfied 1, Very Dissatisfied 0. Would you consider using auricular acupressure in the future for pain or if recommended by your nurse or physician? a. No, would not use again (Score of 0) b. Maybe (Score of 1), c. Yes, I would consider using in the future (Score of 2) 3. Is there anything else you would like to tell us that may be helpful for us to know regarding ear acupressure? (Each answer will be collected and assessed for future studies).

Willingness or desire to decrease opioid dependence and usage (Assessed using Likert Scale). Assessment of patient's willingness or desire to decrease opioid dependence and usage will be assessed through having the patient answer by stating (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree to determine patients with a higher score denoting a greater willingness to decrease dependence.

BAA Press placement survey (interventionists only)
The Interventionist's (Acupressure nurse) will be asked to capture time related to completion of study tasks and other qualitative questions to assess overall feasibility.

Additional Data collection: contact information, relevant demographic data that will be recorded are DOB, age, gender identity, sex at birth, BMI, ethnicity/race, educational level, employment status, relationship status, disability insurance status and socioeconomic status. Relevant medical history will be duration of narcotic use (in years) and comorbid pain syndrome diagnoses.

Study activity	Baseline[a]	Day 1	Day 2	Day 3/ end of study
Informed Consent signed	X			
Review the home dose of opioid w/ participant	X			
Complete data collection form	X	X	X	X
Distribute Participant Questionnaire and review completion instructions	X			
Administer or record Pain score assessment (NRS)[b]	X	X	X	X
Questionnaire completion reminder [c]		X	X	X

Pain Catastrophizing Scale (PCS)	X			X
Pain, Enjoyment, General Activities Scale (PEG)	X			X
Patient Global Impression of Change Scale (PGIC)	X			X
PROMIS sleep disturbance scale	X			X
Generalized Anxiety Disorder Scale (GAD-7)	X			X
Acupressure placement and patient education		X		
*Optional interventionist recording of AA placement[d]		X		
Willingness or desire to decrease opioid dependence and usage questionnaire				X
Acupressure Acceptability questionnaire				X
Study team collect completed questionnaire				X
Compensation administration				X

BAA press placement survey (interventionist only)	X	X	X	X

[a] Baseline and Day 1 can be completed on the same day. Baseline activities are to be completed prior to Acupressure administration

[b] The study team will perform the pain score assessment with the participant two times a day for three days. If the study team is unable to perform the pain scores assessment in person, the pain score that has been assessed by their clinical team as part of their regular care will be pulled

[c] Participants will receive reminders to complete the study questionnaires twice a day

[d] Only participants who agree to participate in the optional recording/photography at the time of informed consent will have their acupressure placement session recorded

Analytical Plan

Sample Size:

This is a feasibility study with no control group. Target enrollment is 20 participants. Data from this study will be used to generate parameter estimates to calculate power for future studies.

Analysis Plan:

Since this is a feasibility study, results will be analyzed initially using descriptive statistics of main outcome measures. Any group comparisons will be done using chi square tests for proportions, and t-tests or ANOVA procedures for continuous variables. Other inferential statistical analysis will be conducted as appropriate.

Human Subjects Protection

Subject Recruitment Methods

Any patient who is on the chronic pain/addiction consult service be approached by either Primary Investigator or study staff regarding participation. Only eligible patients willing to complete all survey's pre and post procedures and provide written consent will participate. If eligible, the participant will be consented by study personnel in their private hospital room. If a family member of visitor is present, the study team member will ask the participant permission to discuss the study at that time or if they would prefer to discuss another time. The study team will ensure that the participant understands the voluntary nature of participating in the research study and that study participation study will not affect the care that they will receive.

The study personnel will maintain a record of eligible study participants separate from the study files. This list will include name, MRN, and hospital room number and

enrollment status. The list will be kept in a secure file on a secure computer, separate from the study files and only accessible to study staff. The file of eligible participants will be destroyed at the end of recruitment.

Informed Consent

Signed informed consent will be obtained from each subject prior to any study procedures being performed. Any study related procedures will adhere to ICH-GCP standards.

Confidentiality and Privacy

Confidentiality will be protected by collecting only information needed to assess study outcomes, minimizing to the fullest extent possible the collection of any information that could directly identify subjects, and maintaining all study information in a secure manner. To help ensure subject privacy and confidentiality, only a unique study identifier will appear on the data collection form. Any collected patient identifying information corresponding to the unique study identifier will be maintained on a linkage file, store separately from the data. The linkage file will be kept secure, with access limited to designated study personnel. Following data collection subject identifying information will be destroyed 3 years after the completion of the study consistent with data validation and study design, producing an anonymous analytical data set. Data access will be limited to study staff. Data and records will be kept locked and secured, with any computer data password protected. No reference to any individual participant will appear in reports, presentations, or publications that may arise from the study.

Data and Safety Monitoring

The principal investigator will be responsible for the overall monitoring of the data and safety of study participants. The principal investigator will be assisted by other members of the study staff. Although no serious safety events have been reported in the literature related to auricular acupressure, participants will be asked to report any events to study personnel. Participants and the acupressure nurses will be instructed to monitor and report any concerns to the principal investigator.

Reporting of Unanticipated Problems, Adverse Events or Deviations

Any unanticipated problems, serious and unexpected adverse events, deviations or protocol changes will be promptly reported by the principal investigator or designated member of the research team to the IRB and sponsor or appropriate government agency if appropriate.

Appendix A: Data Collection Form
Appendix B: Pain Catastrophizing Scale (PCS)
Appendix C: Generalized Anxiety Discorder Scale (GAD-7)
Appendix D: Pain, Enjoyment, General Activities Scale (PEG)

Appendix E: Patient Global Impression of Change Scale (PGIC)
Appendix F: PROMIS sleep disturbance scale
Appendix G: Study participant questionnaire
Appendix H: Vaccaria 600 t ears seeds
Appendix I: Acupressure Acceptability Questionnaire
Appendix J: Willingness or desire to decrease opioid dependence and usage assessment
Appendix K: BAA Press placement survey (interventionists)