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Summer Student Research Program
Project Description
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PROJECT TITLE (200 Characters max): The Impact of Nonpharmacological Interventions for Pain Management in the Emergency Department (Music Therapy, Meditation, and Virtual Reality): A Comparative Analysis of Pre and Post-Pain Scores

HYPOTHESIS:
We hypothesize that following the implementation of the ED-ALT grant in September 2024, there will be a decrease in opioid ordering and improvement in pain assessment measurements in the emergency department (ED) and ED Observation Unit (EDOU), accompanied by an increased utilization of nonpharmacological interventions of interest, suggesting an evolution in pain management strategies. ED-ALT nonpharmacological interventions of interest include passive music therapy, active music therapy, guided meditation, and virtual reality.

PROJECT DESCRIPTION (Include design, methodology, data collection, techniques, data analysis to be employed and evaluation and interpretation methodology)

This project combines a retrospective and prospective clinical study design. Retrospectively, the project will review opioid ordering patterns in the ED and EDOU before and after the implementation of the ED-ALT grant in September 2024. Data will be collected using the EPIC electronic health record system and analyzed to assess changes in opioid ordering rates and the adoption of nonpharmacologic therapies.

Prospectively, the study will evaluate the impact of nonpharmacological pain management interventions—passive music listening, interactive music therapy, guided meditation, and virtual reality—on patient-reported pain assessment scores. Participants will be recruited from the ED and EDOU and surveyed before and after their participation using validated tools including the Visual Analog Scale (VAS), Pain Intensity/Pain Interference (PEG), Biopsychosocial impact on pain (DoD/VA), Opioid Misuse and ED visit utilization (COMM), and Substance use (ADCS) assessments.

Data will be securely stored in REDCap, and statistical analyses will include comparisons of pre- and post-intervention pain scores, patient demographics, and trends in intervention uptake. The project will help evaluate the feasibility and clinical outcomes of integrating nonpharmacological approaches into emergency pain management.

SPONSOR'S MOST RECENT PUBLICATIONS RELEVANT TO THIS RESEARCH:

1. Tran T, Imperato N, Dym A, Rosania A, Nelson L, Ramdin C, Santos C. *The promising use of an emergency department observation unit to manage patients with opioid use disorder.* Am J Emerg Med. 2025 Feb 6;92:152-155. doi: 10.1016/j.ajem.2025.02.007. PMID: 40112682.
2. Santos C, Ramdin C, Becceril J, Al Kik B, Jefri M, Nelson L. *The impact of an emergency department peer navigator (EDPN) program in improving clinical outcomes and healthcare utilization in an urban setting.* Am J Emerg Med. 2023 Jun;68:10-16. doi: 10.1016/j.ajem.2023.02.031. PMID: 36905880.
3. Cisewski DH, Santos C, Koyfman A, Long B. *Approach to buprenorphine use for opioid withdrawal treatment in the emergency setting.* Am J Emerg Med. 2019 Jan;37(1):143-150. doi: 10.1016/j.ajem.2018.10.013. PMID: 30355476.

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THIS PROJECT IS: ☐ <mark>**Clinical**</mark> ☐ **Laboratory** ☐ <mark>**Behavioral**</mark> ☐ **Other**

THIS PROJECT IS CANCER-RELATED: <mark>**No**</mark>☐
Please explain Cancer relevance

THIS PROJECT IS HEART, LUNG & BLOOD- RELATED: <mark>**No**</mark>☐
Please explain Heart, Lung, Blood relevance

THIS PROJECT INVOLVE RADIOISOTOPES? <mark>**No**</mark>☐

THIS PROJECT INVOLVES THE USE OF ANIMALS ☐
　　　PENDING ☐　　　**APPROVED** ☐　　　**IACUC PROTOCOL #**

THIS PROJECT INVOLVES THE USE OF HUMAN SUBJECTS? ☐
　　　<mark>**PENDING**</mark> ☐　**APPROVED** ☐ **IRB PROTOCOL # Pro2024000098, Pro2022001805, Pro2023001676**

THIS PROJECT IS SUITABLE FOR:
UNDERGRADUATE STUDENTS ☐　　ENTERING FRESHMAN　　☐
SOPHMORES　　　　　　　☐　<mark>ALL STUDENTS</mark>　　　　☐

THIS PROJECT IS WORK-STUDY:　**Yes** ☐　**or**　<mark>**No**</mark> ☐

THIS PROJECT WILL BE POSTED DURING ACADEMIC YEAR
FOR INTERESTED VOLUNTEERS:　**Yes** ☐　　　　　☐

WHAT WILL THE STUDENT LEARN FROM THIS EXPERIENCE?

The student will gain experience in clinical research through retrospective and prospective data analysis. They will learn how to review and abstract electronic health records, manage and analyze clinical survey data using REDCap, and perform statistical comparisons to evaluate changes in opioid ordering patterns and the effectiveness of nonpharmacological pain interventions. This project will also provide exposure to quality improvement methods and the use of validated assessment tools in pain management research.