

INTRODUCTION

- The Opioid epidemic, in the United States, has been linked to changes in medication prescribing practices.¹
- Opioids, such as oxycodone, are used primarily as analgesics for acute/chronic pain relief clinically.¹
- We sought to explore the potential of NSAIDs in patient pain satisfaction, reduction of narcotic dependence and fracture healing through patient/physician reported surveys, pill tracking, and non-union rates (determined clinically and radiographically) in ankle fractures requiring surgery.
- Non-union is defined as absence of motion and pain from physiological stress at the fracture site and loss of ability to fully bear weight on the affected limb without pain or support after standard 6 months.²

SIGNIFICANCE

- Since 2000, the rate of deaths from drug overdoses has increased 137%, specifically a 200% increase in the rate of overdose deaths involving opioids.
- The proportion of opiate related admissions increased from 18% of admissions aged 12 and older in 2003 to 28% in 2013 as shown below (figure 1).

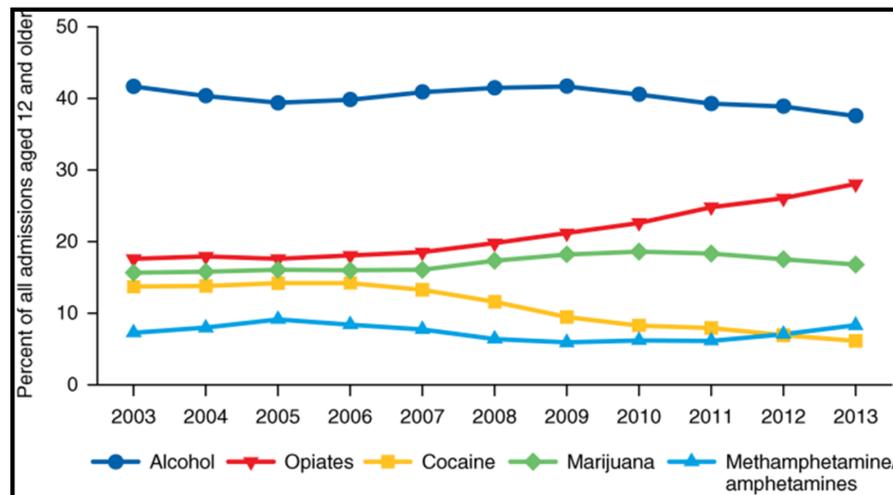


FIGURE 1: Department of Health and Human Services reported primary substance of abuse at admission: 2002-2013.³

METHODS

Design: *Single-blinded, prospective, randomized-controlled trial*

Subjects: 100 patients over the age of 18 who sustain an isolated, acute, non-pathologic ankle fracture that requires surgery (42 patients per group needed to power the study with room for loss to follow up)

Exclusion Criteria:

- History of chronic pain
- Unwillingness to follow post-op protocols
- Patients currently on any glucocorticoid regimen
- History of GI Bleed or renal failure

Independent Variables:

- NSAID exposure (ibuprofen, naproxen, diclofenac, etc.)
- Opioid exposure (the prescription of opioids between patients will follow a strict oral morphine equivalence for standardization)

Oral Morphine Equivalence → $Strength\ per\ unit \times (number\ of\ units/day\ (or\ total)) \times OME\ conversion\ factor = OME\ units\ per\ day$

Dependent Variables:

- Pain control satisfaction (VAS—figure 2)
- Number of patients requiring post-op fixation
- Number of narcotic pills after 6 weeks
- RAND-SF36 Scores (Patient based model) at two weeks⁴
- AOFAS Scores (Physician graded model) at two weeks⁴
- Rate of non-union

Timeline and group definers:

- Follow-ups at 2 weeks, 6 weeks, 3 months, 6 months, and 1 year
- **Case Group:** 50 patients exposed to NSAIDs and standard of care Opioids.
- **Control Group:** 50 patients exposed to standard of care opioid only (following OME guidelines).

Search Key Terms: PubMed, Google Scholar, and QMD searches, key terms included “Opioid”, NSAIDs”, “pain control” and “non-union”

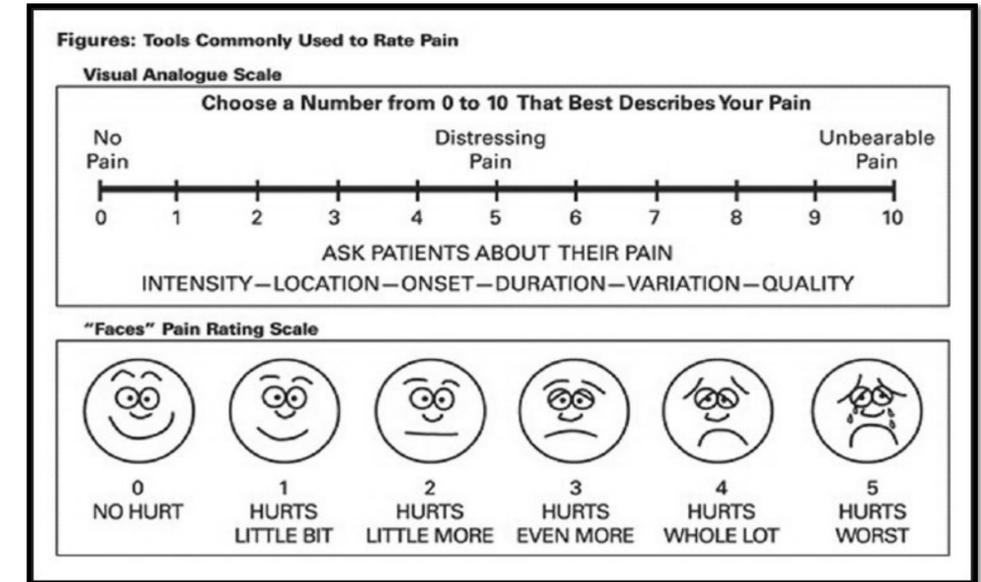


FIGURE 2: Visual analogue scale (VAS) for assessment of pain perception.⁵

RESULTS

- This study is currently pending approval by the Institutional Review Board and recruitment will follow approval. Plan to complete recruitment by May of 2019
- We hypothesize Patients who use NSAIDs in combination with prescription of standard protocol narcotics in isolated ankle fractures will have a lower VAS pain score/ better pain management and lower subsequent Narcotic use post 6 week follow up compared to the control (while minimizing rates of nonunion, delayed unions, and repeated surgical or non-surgical fixations).
- **Statistical Analysis:** longitudinal data analysis will be conducted to access the correlation between pain scores and narcotic pills taken while considering for the repeated measurement across time. T test with random effect will be used to test the difference between the group means.

REFERENCES

1. Reid, M. C., et al. Use of Opioid Medications for Chronic Noncancer Pain Syndromes in Primary Care. *JGIM*, 2002; 17: 173–9.
2. Panteli, M., et al. Biological and molecular profile of fracture non-union tissue: current insights. *Journal of Cellular and Molecular Medicine*, 2015; 19: 685–713.
3. Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS).
4. McHorney, C.A., et al. The MOS 36-Item Short-Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. *Med. Care*, 1993; 31: 247-63
5. Park SS, Kubiak EN, Egol KA, Kummer F, Koval KJ. Stress radiographs after ankle fracture: the effect of ankle position and deltoid ligament status on medial clear space measurements. *J Orthop Trauma*, 2006; 20: 11-8