

January 2021

## The Impact Two Opioid Prescription Protocols had on Provider Prescription Patterns Following Ankle Fracture Repair Surgeries

Charles Jiang  
charles.jiang1281@gmail.com

Joshua Hester  
*Wayne State School of Medicine*

Luke Wesemann

Follow this and additional works at: [https://digitalcommons.wayne.edu/som\\_srs](https://digitalcommons.wayne.edu/som_srs)

 Part of the [Medicine and Health Sciences Commons](#)

---

### Recommended Citation

Jiang, Charles; Hester, Joshua; and Wesemann, Luke, "The Impact Two Opioid Prescription Protocols had on Provider Prescription Patterns Following Ankle Fracture Repair Surgeries" (2021). *Medical Student Research Symposium*. 101.

[https://digitalcommons.wayne.edu/som\\_srs/101](https://digitalcommons.wayne.edu/som_srs/101)

This Research Abstract is brought to you for free and open access by the School of Medicine at DigitalCommons@WayneState. It has been accepted for inclusion in Medical Student Research Symposium by an authorized administrator of DigitalCommons@WayneState.

# The Impact Opioid Prescription Patterns have on Opioid Consumption Following Surgery



**JOSHUA HESTER, BS, LUKE WESEMANN BS, CHARLES JIANG BS, S. TRENT GUTHRIE, MD, WILLIAM HAKEOS, MD, JOSEPH HOEGLER, MD, KAMIL BOBER, MD, AYOOLUWA AYOOLA, BS, SALMA MUMUNI, BS**

# Introduction: Why Research Opioid prescriptions

- ▶ According to the U.S. Department of Health and Human Services, over 42,000 deaths have occurred in 2016 alone secondary to opioid overdose
- ▶ 67% of the 67,367 overdose deaths in 2018 involved a synthetic opioid
- ▶ 2018 data shows that every day, 128 people in the United States die after overdosing on opioids
- ▶ 2017 had 47,000 deaths with 1.7 million people diagnosed with substance abuse disorder secondary to a prescribed opioid
- ▶ CDC estimates the “Economical Burden” to be 78.5 Billion a year including the costs of healthcare expenses, lost productivity, addiction treatment, and criminal justice involvement



# Opioid Protocol

- ▶ January 2018 a protocol with a 6-week outpatient and 12-week inpatient taper after undergoing an Orthopedic surgery was implemented to reduce the amount of opioid prescriptions prescribed. This was the first protocol under guidelines of the state Michigan where all physicians were required in 24 hours of prescribing an opioid to look at the Michigan Automated Prescription System (MAPS) and provide opioid education.
- ▶ Second protocol was implemented in January 2020 by Henry Ford Orthopedic Trauma Department with a 4 week taper opioid protocol
  - ▶ Patients were given opioids as follows:
    - ▶ 1st week: 42 5mg hydrocodone/acetaminophen(Norco)
    - ▶ 2nd week: 42 5mg hydrocodone/acetaminophen(Norco)
    - ▶ 3rd week: 28 5mg hydrocodone/acetaminophen(Norco)
    - ▶ 4th week: 21 5mg hydrocodone/acetaminophen(Norco)
  - ▶ Patients that needed extra were to go to one physician with strict rules discouraging refills when not needed. Many patients got less than the protocol stated above after the opioid protocol was implemented



# Purpose of this study

Does an opioid protocol effectively reduce the number of opioid prescriptions prescribed while still managing patients' pain and function?

# Methods

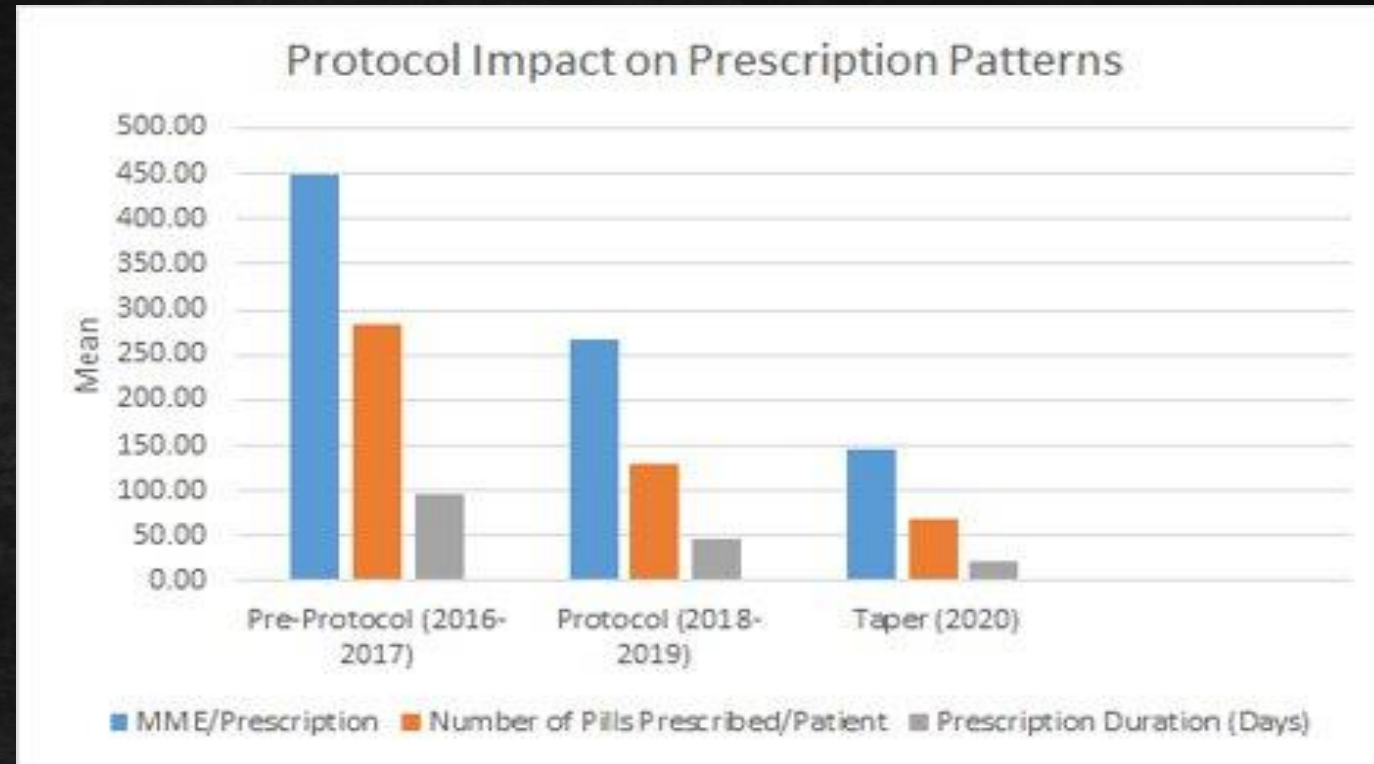
- ▶ We retrospectively enrolled and examined the charts of 289 patients from January 2016-October 2020 undergoing open reduction and internal fixation of ankle fractures through Henry Ford's EMR (Epic).
- ▶ We collected basic demographics on patients:
  - ▶ Sex: 125 Males and 164 female.
  - ▶ Race: 175 patients were of African American decent and 77 were of Caucasian decent
- ▶ We noted all PROMIS and pain scores patients had at preop visits and subsequent visits 1, 2, 3-6 months post op.
- ▶ We recorded the amount of pills prescribed, calculated the MME based on the prescription quantity, duration and type of opioid , and calculated the prescription duration.
- ▶ PMH including depression, anxiety, and smoking history were collected and stratified to test for potential confounders.
- ▶ Means, and standard deviations were calculated, an ANOVA test was used to look for significant differences between years for number of pills prescribed per patient, MME, and total prescription duration.



# Results: 2016-2020 Opioid Prescription Patterns by Orthopedic Surgeons

Year	Average MME Per Prescription	Average Number of Pills Prescribed Per Patient	Average Prescription Duration (Days)
2016	483.35	334.67	103.19
2017	417.04	233.33	90.12
2018	283.16	145.25	65.20
2019	248.22	111.06	30.65
2020	145.51	69.53	20.74

# 2016-2020 Opioid Prescription Patterns by Orthopedic Surgeons





# Patient Pain and PROMIS Measurements

- ▶ 1-month post-operative visual-analog pain score (VAS)
  - ▶ 1-10 with 10 being greatest pain
- ▶ 1-month post-operative physical PROMIS scores
  - ▶ 0-100 with 50 being the mean and 10(+ or -) being one SD

Year	Average 1-month VAS	VAS t-Test P-value	Average 1-month PROMIS Physical	PROMIS t-Test P-value
2016	3.62	N/A	N/A	N/A
2017	3.68	0.92	N/A	N/A
2018	3.93	0.66	40.91	N/A
2019	4.52	0.29	37.63	<b>0.03</b>
2020	4.09	0.46	40.58	0.07

# Average Physical and Mental PROMIS Scores

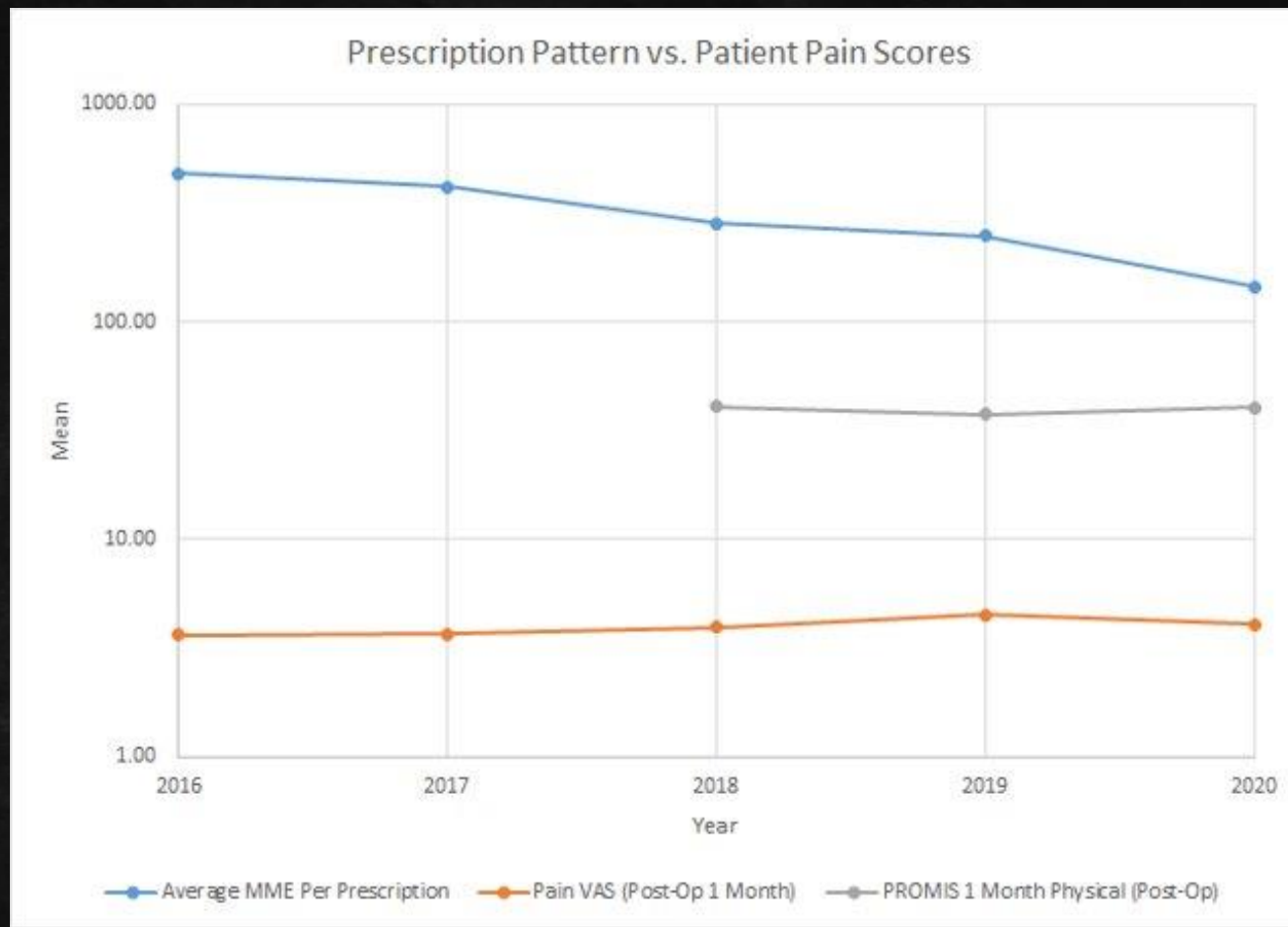
## Average Physical PROMIS SCORE:

Year	Pre-Op	Post-Op: 1 Month	Post-Op: 2 Months	Post-Op: 3-6 Months
2018	37.39	40.91	43.52	45.35
2019	36.68 (p >> 0.05)	37.63 (p < 0.05)	41.66 (p >> 0.05)	44.05 (p >> 0.05)
2020	38.07 (p >> 0.05)	40.58 (p > 0.05)	43.07 (p >> 0.05)	36.82 (p > 0.05)

## Average Mental Promis Score

Year	Pre-Op	Post-Op: 1 Month	Post-Op: 2 Months	Post-Op: 3-6 Months
2018	49.79	51.00	49.86	50.96
2019	48.65 (p >> 0.05)	48.85 (p >> 0.05)	49.02 (p >> 0.05)	49.58 (p >> 0.05)
2020	51.54 (p >> 0.05)	50.12 (p >> 0.05)	50.71 (p >> 0.05)	44.14 (p >> 0.05)

# Patient Pain Indicators



# Conclusion

- ▶ Implementing opioid protocols effectively reduced the amount of opioids prescribed by orthopedic surgeons
- ▶ Opioid amount and duration doesn't seem to be correlated with higher pain scores reported by patients, leading to the belief that patient's pain is being appropriately treated while responsibly prescribing controlled substances
- ▶ Reducing opioid intake is not correlated with lower PROMIS scores



# References

- <https://www.hhs.gov/opioids/about-the-epidemic/index.html>
- Strickler GK, Kreiner PW, Halpin JF, Doyle E, Paulozzi LJ. Opioid Prescribing Behaviors — Prescription Behavior Surveillance System, 11 States, 2010–2016. *MMWR Surveill Summ* 2020;69(No. SS-1):1–14. DOI: <http://dx.doi.org/10.15585/mmwr.ss6901a1>
- Scully, R. E., Schoenfeld, A. J., Jiang, W., Lipsitz, S., Chaudhary, M. A., Learn, P. A., ... Nguyen, L. L. (2018). Defining Optimal Length of Opioid Pain Medication Prescription After Common Surgical Procedures. *JAMA Surgery*, 153(1), 37. doi:10.1001/jamasurg.2017.3132
- <https://www.cdc.gov>

