

Capstone for Impact Submission | GY2020

Project Title: Evaluating the Efficacy of Sleep Protocol in Improving Inpatient Sleep Opportunity

Student Name(s): Charles Katzman

Advisor Names(s): Anita Shelgikar

Branch: Diagnostics and Therapeutics

Path of Excellence: Ethics

If this project can be continued by another UMMS student, please include your contact information or any other details you would like to share here: Anita Shlegikar. avalanju@med.umich.edu.

Summary: The importance of sleep in recovery and wound healing is well-described; however, inpatient sleep quantity and quality remains consistently poor.¹ This dilemma has been attributed to patient and iatrogenic factors,^{2,3} and the latter have served as frequent targets for quality improvement interventions. The Sleep Protocol (SP) at Michigan Medicine was created to address iatrogenic factors by encouraging clustered care and minimal external stimuli during nighttime hours. However, the SP's efficacy has yet to be formally investigated. Our study aims to quantitatively evaluate the effect of SP initiation on the distribution of uninterrupted nighttime hours as a reflection of inpatient sleep opportunity for patients admitted to a single inpatient unit.

Methodology: Conducted a mixed prospective and retrospective review of electronic medical records for adults admitted to the Michigan Medicine Inpatient Rehabilitation Unit. Maximum consecutive uninterrupted hours between 8PM and 10AM are calculated as a quantitative measurement of sleep opportunity for five days before and after SP initiation. Disturbances were identified by time-stamped recordings of vital sign assessments, enteral and subcutaneous medication administrations, imaging studies, and procedures.

Results: Preliminary results include data from six patients, four men and two women with an average age of 55.8 ± 20.3 years. Following SP initiation, maximum consecutive uninterrupted nighttime hours increased from 4.0 ± 0.03 hours to 6.0 ± 0.06 hours ($p = 0.028$). Data collection is still in process with a goal sample size of $n = 40$.

Conclusion: Results of our ongoing study will inform understanding of the SP's impact on inpatient sleep opportunity. Future research on the SP should examine patient-reported sleep quality and other health outcomes, such as length of stay and complication rate. Evidence of

improved sleep and other outcomes may support broader SP implementation across the hospital. Other lessons learned from this study can guide potential revisions to the content and/or implementation of the existing protocol. Our research will contribute to future quality improvement efforts aimed at inpatient sleep and health outcomes.

Reflection/Impact Statement:

You may use the following questions to guide your reflection:

1. How did the process of conducting this research confront any limitations of your prior thinking?
2. Who could potentially benefit from this CFI project over different timescales and how?
3. What actions will you take afterwards to continue the momentum of this project, and maximise the likelihood of the identified benefits being achieved?
4. What advice would you give to another student completing their CFI?

I intentionally completed a CFI project that was centered around QI. As a health professional in a field that is rapidly changing, I think it will be vital to understand the logistics of how meaningful and evidence-based changes are implemented in the hospital. In fact, I am pretty sure most of my residency programs even require students to complete at least 1 or 2 QI projects as part of their training. Thus, while the actual context of the project is important, I think it was truly the process of researching and attempting to fix an identified problem that will be most useful to me as I move forward. In terms of the momentum of this particular project, I have had multiple discussions with my CFI advisor on how this project can be continued in the future. We have laid the groundwork for a study with a larger “n” value and have already proven with our small cohort that the results are significant. We specifically chose to seek out an advisor that has already completed research in the same field and that has a passion for the subject in order to maximize the potential that our project can continue in the future. I would encourage other medical students to choose a CFI that is interesting to them, has the potential for a large-scale impact and that will maximize potential for learning or reinforcing lifelong skills in research.