Capstone for Impact Submission | GY2019

Project Title: Assessment of Application-Driven Postoperative Care in the Pediatric Tonsillectomy Population

Student Name(s): Hwang, Charles

Advisor Names(s): Syed Ali

Branch: Procedure Based Care

Path of Excellence: Innovation and Entrepreneurship

Handover/Transition:
If this project can be continued by another UMMS student, you may contact them at the following email address/phone number (N/A if project cannot be handed over): **N/A**

Summary:

Smart device–based applications (apps) are enjoying an exponential increase in productivity and usability.Health care has fallen behind in incorporating smartphone technology in communication and education with patients.

At UM Mott, parents receive postoperative instructions in the form of a paper pamphlet. The usefulness of disseminating postoperative information via paper instructions has not been studied. We set out to examine if the practice of paper instructions could be improved and that parents would prefer information relayed via a smartphone format.

Methodology:

I generated a mobile app for android and iOS that would provide access to all post-op parents and guardians regarding the patient's surgery, specifically tonsillectomy and adenectomy.

Results/Conclusion:

A greater proportion of parents referenced the app more than 3 times vs the paper instructions (absolute difference, 0.36; 95% CI, 0.164-0.515). Ease of use and helpfulness of either modality (Figure 2) were graded on a 5-point scale (1 = very difficult, 2 = difficult, 3 = neutral, 4 = easy, and 5 = very easy). A greater proportion of parents graded the smartphone app as "very helpful" (absolute difference, 0.250; 95% CI, 0.083-0.404) and "very easy to use" (absolute difference, 0.330; 95% CI, 0.172-0.467) vs the paper instructions.

Reflection/Lessons Learned:

There is a very large opportunity for addressing healthcare gaps, accessibility, and healthcare literacy amongst our patient populations. Producing a protocol for the generation of this mobile apps, especially with the aid of packages such as PhoneGap, institutions could produce educational materials that would cost very little but could provide an enormous resource for patients and caretakers, making communication between the healthcare system and its stakeholders more efficient and having large ramifications on policy, safety, and healthcare delivery.

Capstone for Impact Submission | GY2019

Project Title: Statewide Comparison of Opioid Prescribing in Teaching Versus Nonteaching Hospitals

Student Name(s): Hwang, Charles

Advisor Names(s): Jennifer Waljee

Branch: Procedure Based Care

Path of Excellence: Policy

Handover/Transition:
If this project can be continued by another UMMS student, you may contact them at the following email address/phone number (N/A if project cannot be handed over): **N/A**

Summary:

With the large healthcare epidemic of opioid abuse and overdose, it is imperative to fully characterize the problem, particularly in the healthcare system. Postoperative opioid prescribing is often excessive, but the differences in opioid prescribing between teaching hospitals and nonteaching hospitals is not well understood. Given the workload of surgical training and frequent turnover of prescribers on surgical services, we hypothesized that postoperative opioid prescribing would be higher among teaching compared with nonteaching hospitals, and examined the potential explanatory variables.

Methodology:

We used insurance claims from a statewide quality collaborative in Michigan to identify 17,075 opioid-naïve patients who underwent 22 surgical procedures across 76 hospitals from 2012 to 2016. Our outcomes included the following: (1) the amount of opioid prescribed for the initial postoperative prescription in oral morphine equivalents and (2) high-risk prescribing in the 30 days after surgery (high daily dose [$\geq$ 100 oral morphine equivalents], new long-acting/extended-release opioid, overlapping prescriptions, or concurrent benzodiazepine prescription). Teaching hospital status was obtained from the 2014 American Hospital Association survey. Multilevel regression was used to adjust for patient and procedural factors and to perform reliability adjustment.

Results/Conclusion:

The amount of opioid prescribed per initial opioid prescription varied 4.7-fold across all hospitals from 130 oral morphine equivalents to 616 oral morphine equivalents. Patients discharged from teaching hospitals filled larger initial opioid prescriptions overall compared with nonteaching hospitals (251 oral morphine equivalents versus 232 oral morphine equivalents; P = .026). Teaching hospitals had higher risk-adjusted rates of high-risk prescribing compared with nonteaching hospitals (13.7% vs 10.3%; P = .034).

In Michigan, surgical patients discharged from teaching hospitals received significantly larger postoperative opioid prescriptions and had higher rates of high-risk prescribing compared with nonteaching hospitals. All

hospitals, and particularly teaching institutions, should ensure that adequate resources are devoted to facilitating safe postoperative opioid prescribing.

Reflection/Lessons Learned:

As a student that is relatively close to entering the surgical world as a resident, this proclivity or risk for extraneous prescriptions is something to be cognizant about. Additionally, the associated downstream outcomes, specifically with the development of new and persistent users, makes pursuing appropriate education for pain and pain control even more imperative.