Evaluation of the Efficacy of a Computer-Based Reminder System for the Timely Start of Intra-Operative Epidural Infusion for Post-Operative Pain Control

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Background/Introduction: Preoperative epidural catheters placed for post-operative pain management are often only started after conclusion of the surgery. Consequences of delayed epidural initiation include increased post surgical pain and prolonged recovery room stay time by delaying patient discharge, and it is thus recommended that these infusions be started early on during surgery.1-3 In our institution, a large academic medical center, a baseline audit of patients receiving pre-operative epidurals revealed that infusions were started pre or intra-operatively only 57% of the time despite them being placed pre-operatively. We describe the use of a near real-time decision support system to improve compliance to starting epidural infusion.

Methods: We used an Anesthesia Information Management System (AIMS) based decision support system called Smart Anesthesia Manager (SAM), to institute a computer reminder system to encourage the timely initiation of post-operative pain control epidurals. Through SAM, selected issues related to quality of care and documentation are brought to the attention of the anesthesia provider via “pop-up” message screens. As part of the patient time-out feature, we instituted an optional check box to note whether an epidural is placed for post-operative pain control. If the provider checked “Yes”, SAM system generated reminders every 24 minutes via “pop-up” screens to encourage providers to start and document the epidural. (Figure 1) The messages are stopped when either an epidural infusion has been started or if the provider documents an epidural contraindication. We reviewed the compliance for cases for 1 month before (Baseline: September 2014) and 1 month after the SAM intervention was instituted (Intervention: November 2014).

Results: Compliance to starting epidural infusion increased from 57% (49 out of 86 epidurals) during the baseline period to 74 % (68 out of 92 epidurals) during the intervention period (p=0.02). However, during the intervention period, providers used the checkbox for post-operative pain control epidural only 25% of the time (334 out of 1322 cases). Also, among the 92 pre-operative epidurals placed during the intervention period in only 32 instances was there a confirmatory answer in the AIMS epidural checkbox (34.8% compliance). Compliance to starting epidural in cases when providers documented a confirmatory answer in the AIMS epidural checkbox, thus triggering a SAM reminder, was 90.6%. This was higher than the 65% compliance for cases that did not use the AIMS checkbox and SAM reminders (p=0.01). The time elapsed until epidural intiation was shorter in patients for whom an answer was provided to the SAM prompt, compared to those in whom the prompt was ignored (35.4 vs 58.5 min), a statistically insignificant trend (p=0.10).

Conclusion: Near real-time notifications to initiate epidural infusions were modestly effective. An optional documentation feature in AIMS to note whether a patient has an epidural for postoperative pain management had poor compliance, which in turn meant SAM reminders were not triggered for a significant number of epidural patients. Triggering SAM reminders based on epidural orders in the hospital EMRs, rather than on voluntary documentation may be a more effective way to improve compliance to epidural initiation.
References:

Figure 1: SAM notification for initiating epidural infusion