

What's New in the Patient Safety World

December 2015

Opioid Alert Fatigue

Opioid-induced respiratory depression is a major problem in hospitalized patients and post-operative patients (see our numerous columns listed below). But prescribed opioids are also a major cause of overdoses in outpatients and many patients who become addicted to opioids started with opioids that were prescribed for medical conditions. So careful use of opioids is important for many reasons.

CPOE (computerized physician order entry) and electronic prescribing with clinical decision support offer an important opportunity to reduce inappropriate use of opioids. These technological tools have the ability to alert clinicians to potency issues of the various opioids, remind clinicians of the opioid-naïve vs. opioid-tolerant issues, alert clinicians that a patient may also be taking other medications that can cause respiratory depression, and other issues.

But, just as with all our other clinical decision support interventions, the issue of “alert fatigue” rears its ugly head. Medication-related clinical decision support alerts are often ignored and several studies cite very high override rates ranging between 49% and 96% with a rate of 90% for drug–drug interaction (DDI) alerts specifically ([Phansalkar 2013](#)). And a recent study suggests that alert fatigue for opioids may actually be worse than for other drugs. Genco and colleagues ([Genco 2015](#)) did a retrospective chart review study assessing adverse drug event occurrences for emergency department (ED) visits in a large urban academic medical center using a commercial electronic health record system with clinical decision support.

Opioid drug alerts were 35% more likely to be overridden than non-opioid alerts. Opioid drug-allergy alerts were twice as likely to be overridden and opioid duplicate therapy alerts were 1.57 times as likely to be overridden.

Of those adverse drug events found in their ED patients, opioids did account for 57% but none of the adverse drug events were preventable by clinical decision support. However, they did identify 46 alerts that averted a potential adverse drug event.

Overall, 98.9% of opioid alerts did not result in an actual or averted adverse drug event, and 96.3% of opioid alerts were overridden. They found that to prevent 1 adverse drug event, providers dealt with more than 123 unnecessary alerts.

So does this surprise you? Probably not. In our March 3, 2009 Patient Safety Tip of the Week “[Overriding Alerts...Like Surfin’ the Web](#)” we recommended that you pick a relatively small number of serious things you are trying to prevent and use more interruptive techniques to discourage those things. Having way too many alerts of little consequence makes clinicians simply avoid all alerts just like you ignore all those flashing ads when you are surfing the internet.

Probably the biggest problem with opioids is the “allergy” issue. Every electronic medical record (or paper chart, for that matter) that we’ve ever seen lists all sorts of unwanted reactions to opioids under “allergies”. Typically, things like nausea and vomiting after opioids may lead a patient to state they are “allergic” to that opioid. So it’s no surprise that opioid drug-allergy alerts were overridden more than twice as often in the Genco study than drug-allergy alerts for other drugs. In fact, Genco and colleagues noted that retaining only exact and base ingredient matches as interruptive alerts could eliminate 85% of the interruptive drug-allergy alerts without eliminating those alerts that would prevent an adverse drug event. (They do recommend retaining such opioid intolerances in a “non-interruptive” fashion in the EMR).

Perhaps more surprisingly, however, are their recommendations regarding duplicate drug order or duplicate therapy opioid alerts. They note studies showing that opioid-naïve patients and patients receiving long-term opioid therapy have a 3- to 6-fold increased risk of overdose with a dose of 50 morphine equivalents per day. They, therefore, suggest future research look at using non-interruptive alerts if the morphine equivalent is less than 50 mg in the previous 24 hours and interruptive alerts for those higher than 50 morphine equivalents/day. We’ve seen far too many patients who develop respiratory depression at doses far lower than 50 morphine equivalents/day. Perhaps if you had a complete medical record in which a background search for other conditions predisposing to opioid-induced respiratory depression could be used to convert the alert to an interruptive one that threshold might be reasonable. But most ED EMR systems are not robust enough or comprehensive enough to pick up those conditions and modify the alert. We’d be very hesitant to use that threshold.

Keep in mind that the nature of alerts in the ED or outpatient venues might be different than that for hospital inpatients. For example, in a hospital inpatient having a condition that might predispose to opioid-induced respiratory depression (eg. obstructive sleep apnea) an alert might be used to ensure appropriate monitoring (eg. capnography) is done if any opioid is being prescribed for that patient.

Everyone agrees that the fewer interruptions you cause for physicians, the more they are likely to adopt CPOE. So you need to put your stake in the ground – pick a relatively small number of serious things you are trying to prevent and use more interruptive techniques to discourage those things. One alert we would definitely keep is the interruptive alert that alerts prescribers that HYDRomorphone is at least 7 times more potent on a mg basis than morphine. We also think that alerts flagging relatively high opioid doses in opioid-naïve patients are wise.

The key question is whether the non-interruptive alerts and reminders are of value. We spend a great deal of time developing many of those despite lack of good evidence that they actually change outcomes. They are the ones that are like the internet ads – we’ll bet you never pay attention to them either! The Genco study certainly suggests that we need to take a closer look at the alerts we use, both interruptive and non-interruptive, for opioids.

Other Patient Safety Tips of the Week pertaining to opioid-induced respiratory depression and PCA safety:

- January 4, 2011 [“Safer Use of PCA”](#)
- July 13, 2010 [“Postoperative Opioid-Induced Respiratory Depression”](#)
- May 12, 2009 [“Errors With PCA Pumps”](#)
- September 21, 2010 [“Dilaudid Dangers”](#)
- November 2010 [“More on Preoperative Screening for Obstructive Sleep Apnea”](#)
- February 22, 2011 [“Rethinking Alarms”](#)
- May 17, 2011 [“Opioid-Induced Respiratory Depression – Again!”](#)
- September 6, 2011 [“More Tips on PCA Safety”](#)
- December 6, 2011 [“Why You Need to Beware of Oxygen Therapy”](#)
- February 21, 2012 [“Improving PCA Safety with Capnography”](#)
- September 2012 [“Joint Commission Sentinel Event Alert on Opioids”](#)
- September 2012 [“FDA Warning on Codeine Use in Children Following Tonsillectomy”](#)
- July 3, 2012 [“Recycling an Old Column: Dilaudid Dangers”](#)
- February 12, 2013 [“CDPH: Lessons Learned from PCA Incident”](#)
- February 19, 2013 [“Practical Postoperative Pain Management”](#)
- May 6, 2014 [“Monitoring for Opioid-induced Sedation and Respiratory Depression”](#)
- March 3, 2015 [“Factors Related to Postoperative Respiratory Depression”](#)
- June 2, 2015 [“Reminders of Dilaudid Dangers”](#)
- August 11, 2015 [“New Oxygen Guidelines: Thoracic Society of Australia and NZ”](#)
- August 18, 2015 [“Missing Obstructive Sleep Apnea”](#)

- Tools: [PCA Pump Audit Tool](#) and the [PCA Pump Criteria](#)

Our prior articles pertaining to long-acting and/or extended release preparations of opioids:

- April 2010 [“RCA: Epidural Solution Infused Intravenously”](#)
- July 13, 2010 [“Postoperative Opioid-Induced Respiratory Depression”](#)
- January 18, 2011 [“More on Medication Errors in Long Term Care”](#)
- April 12, 2011 [“Medication Issues in the Ambulatory Setting”](#)

- June 28, 2011 “[Long-Acting and Extended-Release Opioid Dangers](#)”
- September 13, 2011 “[Do You Use Fentanyl Transdermal Patches Safely?](#)”
- November 8, 2011 “[WHO’s Multi-Professional Patient Safety Curriculum Guide](#)”
- May 2012 “[Another Fentanyl Patch Warning from FDA](#)”
- July 24, 2012 “[FDA and Extended-Release/Long-Acting Opioids](#)”
- September 2012 “[Joint Commission Sentinel Event Alert on Opioids](#)”
- March 2013 “[Try Googling Fentanyl Accidents](#)”
- September 2013 “[ISMP Outreach on Fentanyl Patch Safety](#)”
- October 2013 “[Opioid Safety Actions and Resources](#)”
- February 24, 2015 “[More Risks with Long-Acting Opioids](#)”

Our prior columns on patient safety issues related to Dilaudid/HYDROmorphone:

- September 21, 2010 “[Dilaudid Dangers](#)”
- November 2011 “[FDA Changes on Dilaudid/HYDROmorphone](#)”
- July 3, 2012 “[Recycling an Old Column: Dilaudid Dangers](#)”
- November 19, 2013 “[Can We Improve Dilaudid/HYDROmorphone Safety?](#)”
- June 2, 2015 “[Reminders of Dilaudid Dangers](#)”
- October 13, 2015 “[Dilaudid Dangers #3](#)”

Some of our previous columns on opioid safety issues in children:

- September 2012 “[FDA Warning on Codeine Use in Children Following Tonsillectomy](#)”
- March 2013 “[Further Warning on Codeine in Children Following Tonsillectomy](#)”
- May 2014 “[Pediatric Codeine Prescriptions in the ER](#)”
- November 2015 “[FDA Safety Communication on Tramadol in Children](#)”

References:

Genco EK, Forster JE, Flaten H, et al. Clinically Inconsequential Alerts: The Characteristics of Opioid Drug Alerts and Their Utility in Preventing Adverse Drug Events in the Emergency Department. *Ann Emerg Med* 2015; published online first November 6, 2015

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Phansalkar S, van der Sijs H, Tucker AD, et al. Drug–drug interactions that should be non-interruptive in order to reduce alert fatigue in electronic health records. *J Am Med Inform Assoc* 2013; 20(3): 489-493

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