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Analysis of Look-Alike/Sound-Alike Medication Errors Involving Opioid Analgesics

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Background

Opioid analgesics are high-risk medication with the potential for adverse drug events. Look-Alike/Sound-Alike (LA/SA) medication errors account for 25% of medication errors. We reviewed patient safety events related to LA/SA medication errors that occurred involving opioid analgesics.

Study Hypothesis

Medication errors involving opioid analgesics would account for a significant portion of LA/SA errors and these errors would be associated with severe adverse effects.

Methods

Patient safety event (PSE) data was reviewed using text mining and natural language processing algorithms to search for LA/SA related medication errors. The PSE database contains roughly 90,000 incidents from self-reported near misses and harm events by frontline staff in an academic healthcare system. Each case was reviewed independently by two subject matter experts, and categorized by stage in the medication process (documentation, ordering, dispensing, or administration). Patient outcomes were examined.

Results

A total of 282 incidents met inclusion criteria for a LA/SA error, of which 57 (20.2%) involved an opioid analgesic. The most common type of LA/SA errors involved immediate (IR)/extended release (ER) substitutions, (41, 71.9%). Of these IR/ER errors, oxycodone products were implicated in 87.8% (36) of cases. Other IR/ER errors included morphine (4) and tapentadol (1). Additional LA/SA error pairs included hydromorphone/morphine (8.9%), oxycodone with acetaminophen/hydrocodone with acetaminophen (8.9%), codeine with acetaminophen/oxycodone with acetaminophen (3.6%), oxycodone/oxycodone and acetaminophen (3.6%) and other (5.3%). Error frequency by stage was 5.3% documentation, 52.6% ordering, 21.1% dispensing, and 21.1% administration. Thirty (52.6%) of LA/SA opioid errors reached the patient. Of errors that reached the patient, there were two adverse events: one change in mental status that did not require intervention and one severe respiratory depression that caused temporary harm requiring intubation.

Discussion

While limited by a small retrospective dataset, there were common themes suggesting interventions to prevent LA/SA errors involving opioid analgesics. Emphasis should be placed on improving ordering platforms as well as distinguishing between IR and ER formulations.

Conclusion

LA/SA errors involving opioid analgesics were more frequently associated with oxycodone products, particularly IR/ER formulations and most commonly occurred in the ordering stage of the medication process. Severe adverse effects were rare, but potentially life threatening.