CODONICS

INSIGHTS

A Clinical Evaluation

Codonics Safe Label System; the standard of care in the world's leading hospitals.

Study conducted at the University of Washington confirms SLS significantly improves medication labeling compliance which can increase patient safety

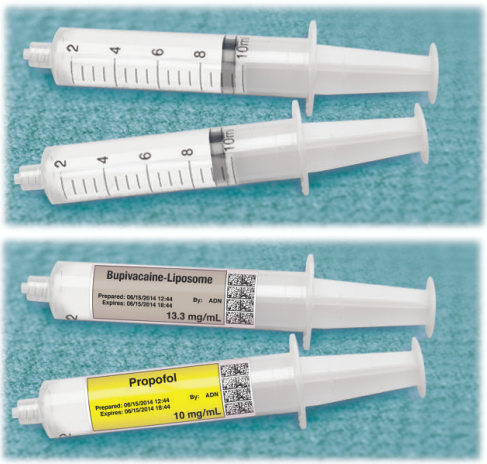
The following report contains data which confirms that implementation of Codonics Safe Label System (SLS) ensures 100% medication labeling compliance with The Joint Commission requirements and American Society of Anesthesiologists guidelines.

Introduction

Manual syringe labeling is often incomplete, incorrect or illegible, resulting in poor compliance with the American Society of Anesthesiologists (ASA) guidelines and the Joint Commission for Hospital Accreditation (TJC) requirements, and creates a significant safety risk to patients. The TJC requirements state that all medication labels should contain the medication name, concentration, quantity, diluent and volume, expiration date (when not used within 24 hours), and expiration time when expiration occurs in less than 24 hours. To establish a baseline, the University of Washington randomly surveyed syringes in their operating rooms which were labeled by clinicians and pharmacy for compliance with the ASA guidelines and TJC requirements. The facility then deployed Codonics Safe Label System (SLS), a medication preparation safety system that uses a hospital-approved formulary and barcode technology at the point of care to produce compliant drug labels, in two operating rooms. After a training period, syringes in these operating rooms were audited for compliance with the ASA guidelines and TJC requirements using the same criteria.

Methodology

A quality assurance audit of syringe labels was performed to determine the level of compliance among University of Washington anesthesia providers. The site randomly selected operating rooms over a 5 week period for the pre-installation audit and over 7 weeks for the post-installation audit.



A major cause for medication errors involves the selection of similar looking drug vials and prepared, unlabeled containers and syringes. There are many examples, including Propofol and Exparel, both used in the fast-paced OR, ICU and ED environments, which have recently become a subject of concern. The Institute for Safe Medication Practices (ISMP), Anesthesia Patient Safety Foundation (APSF) and American Society of Health-System Pharmacists (ASHP) are alerting healthcare professionals about the possible mix-ups of Propofol and Exparel vials and unlabeled syringes that pose dangerous risks with inadvertent injections, noting that the long held belief that Propofol is the only white milky parenteral medication in the surgical setting is now false.

University of Washington, Seattle, WA

The audit was conducted without the knowledge of the anesthesia providers. Specific data collected during the audit included: (a) existence of a label, (b) whether prepared by the satellite pharmacy or anesthesia provider, (c) correct concentration, date and time of preparation, color code and (d) did not contain abbreviations and was legible. University of Washington did not collect any patient or provider identifiers.

Results

1. General Audit (without SLS) - A total of 327 syringes were audited. Of the 327 syringes, 127 (39%) were prepared by the anesthesia providers and 200 (61%) were prepared by the pharmacy. Twelve percent (12%) (n=15) of clinician-prepared syringes were without a label. As shown in Figure 1, of 112 clinician-labeled syringes, 21% (n=24) were missing medication concentration, 41% (n=46) were missing preparation date and time, 7% (n=8) had incorrect label color, 4% (n=4) were illegible and 1% (n=1) used abbreviations (Figure 1). In the pharmacy-prepared syringe group, 3% (n=6) had incorrect label color (all were syringes containing Lidocaine with white labels instead of the recommended gray labels).

Thirteen (13) out of fifteen (15) unlabeled syringes contained Propofol while two (2) had a medication vial taped to the syringe.

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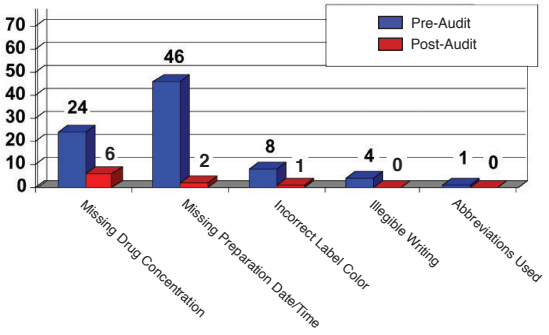
Most of the clinician-prepared syringes had 3 or more label elements missing (Figure 2). There were only 16 syringes (13%) in the clinician-prepared syringe group that completely met the ASA guidelines and TJC requirements.

2. SLS-Equipped Operating Rooms - After introducing Codonics SLS in two cardiothoracic ORs and an OR satellite pharmacy, a repeat audit found 312 syringes with 101 (32%) syringes prepared by anesthesia providers and 211 (68%) prepared by the satellite pharmacy. All of these syringes had a label. All of the syringe labels prepared by the satellite pharmacy and 93% of the syringe labels prepared by the anesthesia providers were completely compliant. **All of the syringe labels prepared by the SLS systems, whether by the anesthesia provider or satellite pharmacy, were compliant.** Anesthesia providers prepared 88% (89/101) of the syringe labels using Safe Label System, which were all completely compliant. Twelve percent (12%) (12/101) of the syringe labels prepared by anesthesia providers were still made by hand, out of which only 42% (5/12) were completely compliant. Of 12 syringe labels manually prepared by anesthesia providers, 50% (n=6) were missing drug concentration, 17% (n=2) were missing expiration date and time and 8% (n=1) had incorrect label color. Seventeen percent (n=2) of syringe labels manually prepared by anesthesia providers had at least 2 label elements missing. None of the syringe labels prepared by anesthesia providers were illegible or used abbreviations. University of Washington's OR satellite pharmacy prepared all of the syringe labels using Codonics SLS. Anesthesia providers exchanged 91% (192/211) of the pharmacy pre-filled syringes containing traditional labels for pharmacy pre-filled syringes containing Codonics SLS labels.

Discussion

Although the University of Washington's study did not evaluate whether current labeling practices at the facility lead to near or actual medication errors, previous studies have provided some evidence that inadequate labeling can attribute to medication errors. Their pre-intervention syringe audit demonstrated poor compliance consistent with two previously published reports. The use of the Codonics SLS medication safety system resulted in complete compliance with labeling requirements when used by the anesthesia provider; the only labeling failures pertained to labels that were made by hand. Manual, handwritten syringe labels rarely comply with the ASA guidelines and TJC requirements and should be replaced with machine generated, barcoded syringe labels, which would virtually eliminate compliance issues.

Figure 1: Syringes prepared without SLS displaying the specific label element missing



Many vials and ampoules look alike. SLS provides a visual and audible confirmation of the drug to help eliminate vial swaps.

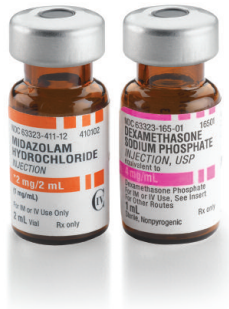


Figure 2: Syringes prepared without SLS displayed by the number of label elements missing

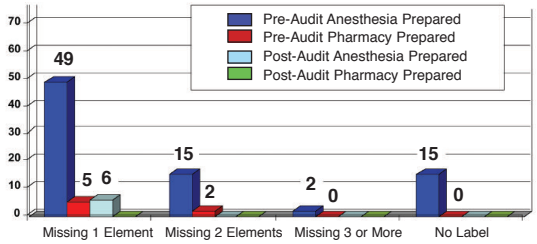
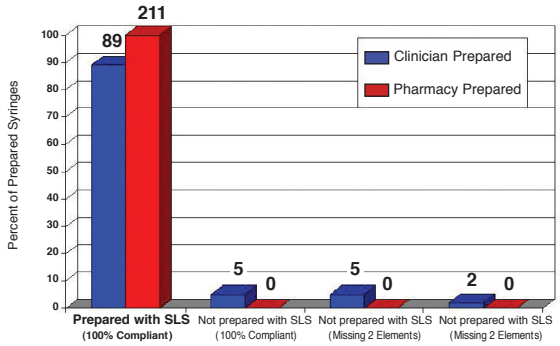


Figure 3: Post SLS installation compliance. Percent of prepared syringes in each group displayed by compliance and the number of label elements missing



Source: Anesthesia and Analgesia 2014: A System for Anesthesia Drug Administration Using Barcode Technology: The Codonics Safe Label System and Smart Anesthesia Manager™

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