

INTRODUCTION

Medical errors can occur at any point during the surgical process. A medical error is the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim.

In our ever-changing world, we continue to attempt to improve efficiency and success rates. In the field of anesthesia, errors, though uncommon can occur. As hospitals across the country have begun transitioning to increased labels on vials and syringes, Memorial Hermann and others within the Houston area continue to debate implementing these same procedures.

This research endeavor seeks to understand the benefits and improvements created with increased labeling within Memorial Hermann's surgical common cases. By using cases from across the nation, the data can be used to exemplify population trends.

METHODOLOGY

This research project focuses on nationwide trends using data from the National Center for Biotechnology Information, to be applicable towards Memorial Hermann's national patient population. Using trends from a 2002 to 2014 study, we can accurately determine the effect of an implemented barcode labeling system. With 11,700 minimum patients in each study, we can accurately account for any potential outliers occurring from individual hospitals. The study focuses on categorical variables of type of that error occurred from the perspective of before and after implementation of a barcode system.

RESULTS

Using a study completed in 2001, 85% of anesthesiologists in the Canadian Society experienced one drug error with 70.4% of 687 anesthesiologists listing misidentification of anesthesia as a primary factor.

Figure 3: Drug Identification - National Library of Medicine

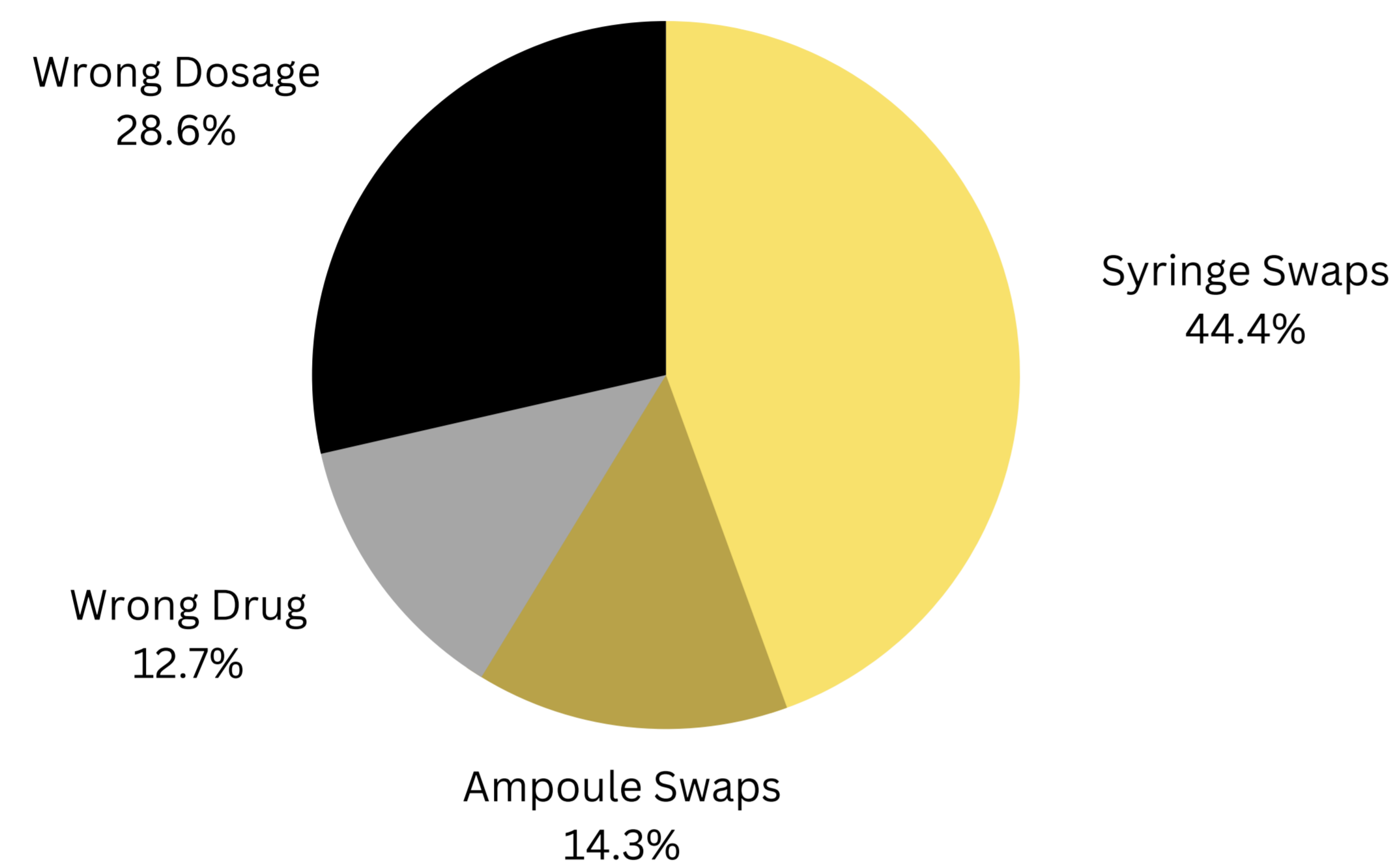


Figure 1: Distribution of errors - National Center for Biotechnology Information

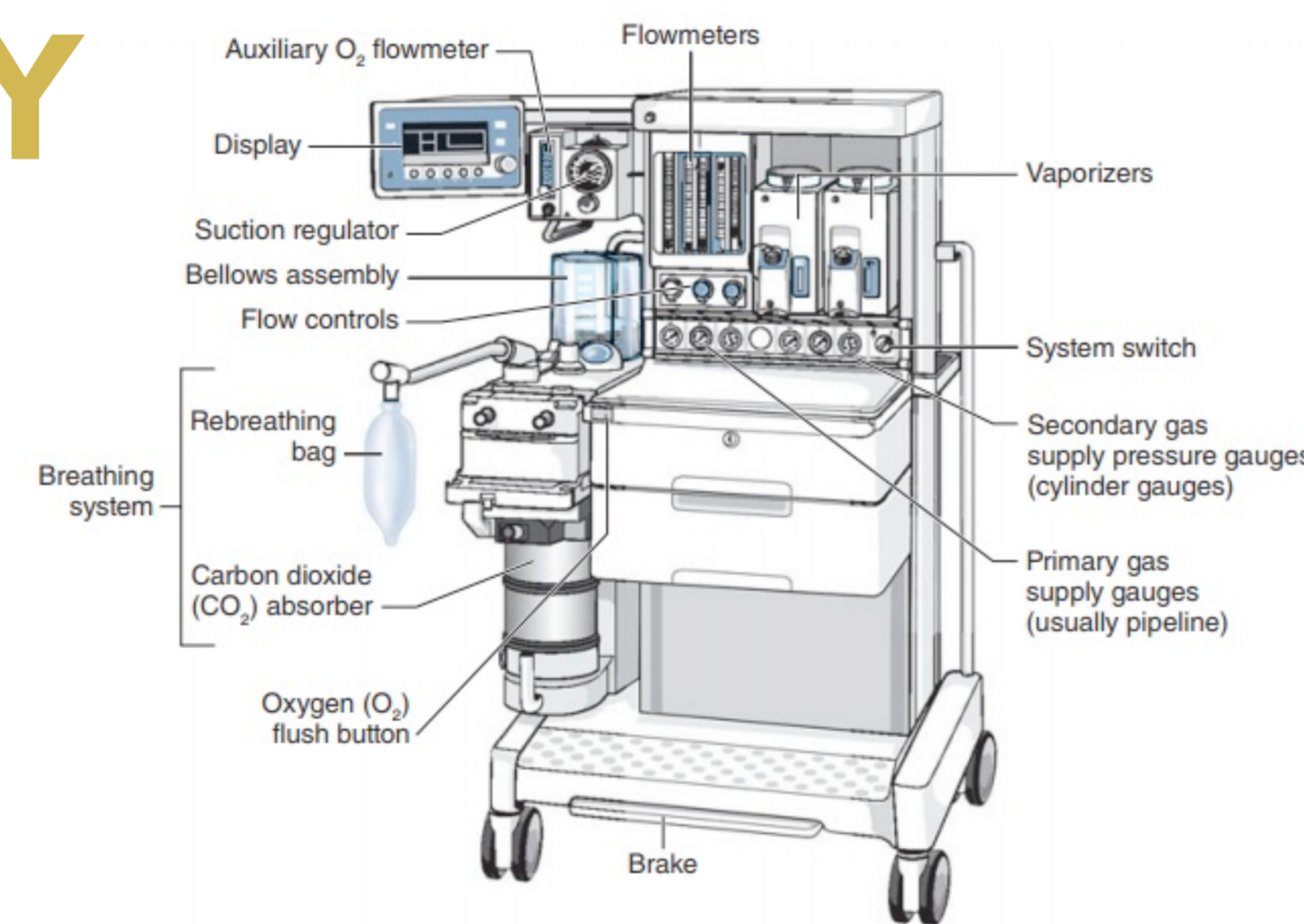


Figure 3: Anesthesia Machine - Brain Cart

The study showed that syringe swaps and ampoule swaps accounted for a majority of errors within the cases identified. This is evident as Figure 1 shows 44% of errors arising from syringe swaps and 14.3% of errors arriving from ampoule swaps. This highlighted the danger within certain situations of possibly giving incorrect medication. However, within other hospitals, the effect of a simple labeling machine has an immense effect on the amount of errors within cases. Figure 2 shows a negative trend for all types of errors with the introduction of a labeling machine.

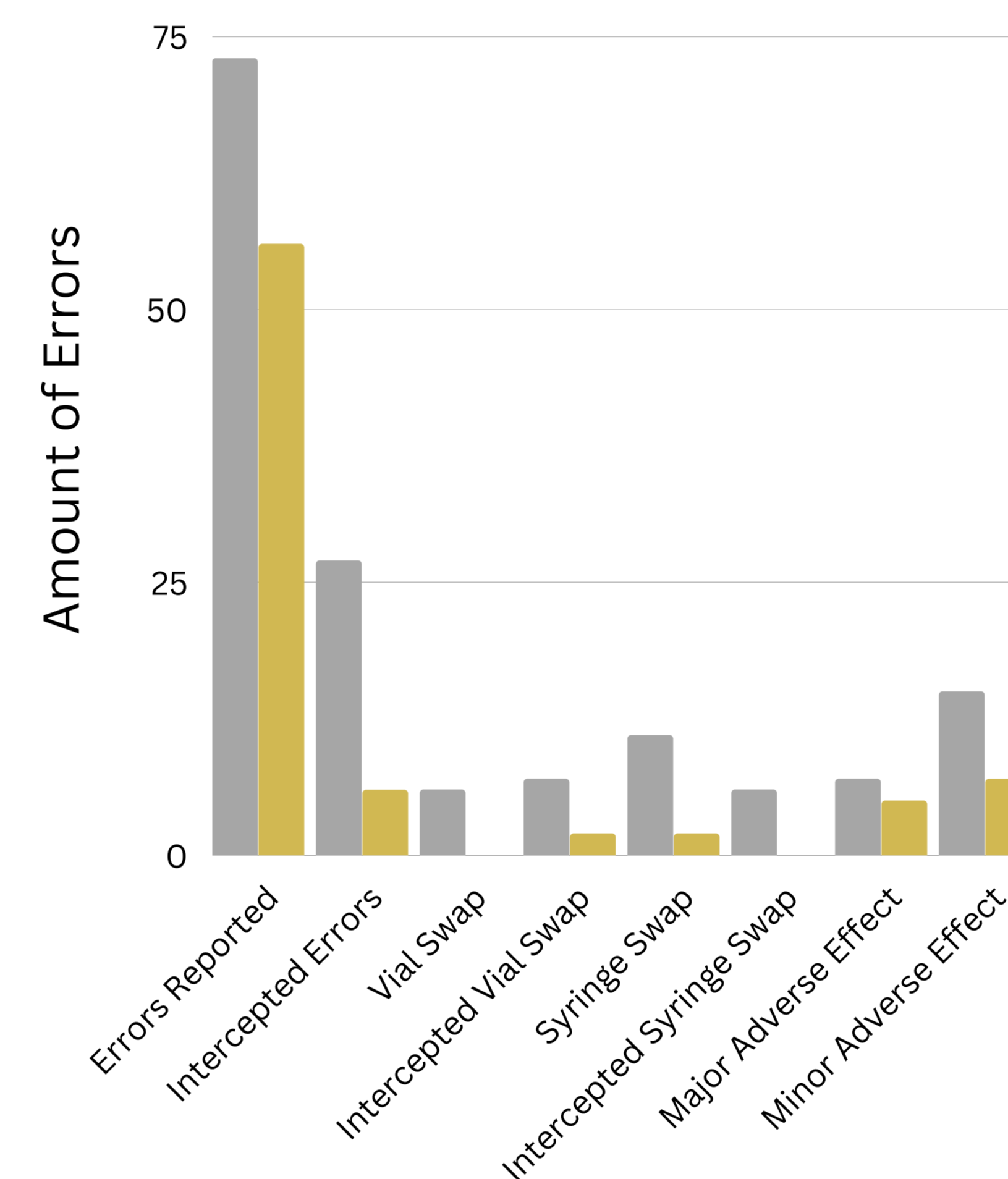


Figure 2: Change with a labeling system - University of Washington

FINDINGS

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DISCUSSION

The field of anesthesiology continues to implement guidelines to minimize errors by standardizing and mandating certain times between patient blood level reports, medication review, and in the future printing labels onto each medication. As the effect of a simple labeling machine can be seen to save lives, the evidence works to encourage physicians of its benefits and uses in the operating room. Although a labeling machine will not completely take error out of the Operating Room, implementing simple procedures such as mislabeling could be the line between life and death.

FUTURE EFFECTS

This study used data from across the nation with labeling systems as a labeling system has yet to be implemented within the OR at Memorial Hermann. There are possible confounding variables that influenced an error, however with a sample size of 11,700 within each study we can safely conclude that the effects of a labeling machine will work towards the benefit of all patients. Figure 3 shows the anesthesia machine's many components and possible areas to incorporate an anesthesia label printer. Although the benefits are great, the efficiency of the OR cannot be sacrificed and the placement of the machine will be important to prevent interference of integral tasks.

