Medication errors play a significant role in compromising the safe use of medications. Errors involving continuous infusion medications are particularly troublesome due to the quick onset and complete bioavailability of intravenous medications. The implementation of smart-infusion pumps developed through a multidisciplinary team has been an approach to preventing dose related continuous infusion errors. Guardrails software is a program that was installed on infusion pumps to alert nurses of potential infusion related medication errors prior to the event occurring, and to allow the review of actions through a continuous quality improvement (CQI) process. The objective of this project was to implement Guardrails at TJUH to prevent infusion related errors, and review the CQI data to identify additional ways of improving safety.

Each infusion pump was uploaded with the Guardrails software, which included a data set of medications with institution specific minimum and maximum infusion rates for each drug. Rates were determined using tertiary references and with input from nursing, pharmacy, and medical staff. The data sets were approved by the hospital’s Pharmacy & Therapeutics Committee and Medical Executive Committee prior to uploading. An analysis was completed two weeks post implementation to assess nursing compliance with use of the Guardrails program. The final phase of this project was to download the CQI data contained in the pumps to determine what types of errors are being prevented.

A two-week post-implementation analysis indicated that 60% of applicable infusions were run through Guardrails. The data revealed that the most commonly occurring errors involved insulin, potassium chloride, heparin and phenylephrine infusions. Those with the highest risk of harm as per the i.v. medication harm index were fentanyl, heparin, eptifibatide, insulin and potassium chloride. The multidisciplinary approach of implementing smart pumps at TJUH has been instrumental in preventing infusion related medication errors.