Introduction of a new technology creates new workflows which can result in unidentified risks and impact on patient care.

The introduction of an automated medication and supplies cabinet is aimed to improve patient safety by standardizing labelling and accurate transaction data for documentation of anesthetic medications.

A large number of pediatric patients require sedation for a variety of procedures in both the Operating Room (OR) and satellite anesthesia locations. Medication preparation is complex due to the need to frequently dilute medications for the broad range of patient sizes.

Despite careful workflow design, various environments may present unique and unanticipated challenges. After tabletop discussions with stakeholders, simulation-based exercises were conducted prior to implementation in the clinical areas to identify challenges in workflow processes and latent safety threats.

Anesthesia volunteers participated in 24 simulations that addressed concerns related to case set up, transitions of care, emergencies, fast turnover lists and medication dilutions. The simulations were carried out in the laboratory and two in situ locations.

As a result of the simulations:
- Increased familiarization of the AWS; decreased anxiety related to its implementation
- Optimized the process by which supplies and medications including narcotics were dispensed, diluted and labeled
- Improved the layout of the medication trays and the supplies
- Additional considerations were made to the power-down process of the SLS
- Gained insight for development and refinement of the orientation program

After introduction of AWS in the OR, several concerns were raised that related to the location of the sharps container, bar code identification of patients, inventory of medications and access to up-to-date information on patients and medication usage from multiple workstations. These were not tested in the simulations.

With respect to the design of the simulation, the use of the mannequin with vital signs was not necessary but improved realism and engagement for some participants. In situ simulation was not essential but highlighted considerations and prompted discussions related to local environment.

Simulation revealed potential risks associated with the AWS and changes were made to mitigate them prior to use with real patients. Repeat simulations in multiple settings expedited the change processes.

Although early simulation may inform development of the implementation of new technology, it is equally important to test the exact end product and avoid the need for extensive alterations after implementation.

Considerations on time and resources posed limitations on the extent of simulations. Ongoing monitoring and support on use of the AWS was essential after implementation.

REFERENCES

1 Sim Healthcare 10: 106-115, 2015