

Product Spotlight

spotlight

The Plum A+ with Hospira MedNet Infusion System from Hospira, Inc.

A WEALTH OF PUBLISHED LITERATURE REVEALS AN ASSOCIATION BETWEEN the use of IV medications and an increased frequency of adverse drug events (ADEs). Within the eight-hospital Advocate HealthCare system in Illinois, we are constantly evaluating our current practices and new technologies in an effort to improve the quality of our patients' care. In 2003, we evaluated IV infusion pumps with newly developed decision-support software with an overriding goal of improving patient safety and care by preventing IV medication errors at the point of care. We evaluated several infusion devices, and ultimately decided to use the Hospira Plum A+ pump with Hospira MedNet safety software. Advocate Lutheran General Hospital (ALGH), a 609-bed community teaching hospital, has used Hospira's Plum A+ IV infusion pumps since 2000. ALGH's 700 Plum A+ pumps have proved to be very reliable, user-friendly devices across all patient-care areas, from pediatrics to adult intensive care.

Prior to implementing the safety software onto the pumps in 2004, we spent several months developing the pumps' drug library and educating our staff. Development of the drug library requires a great deal of input from pharmacists, nurses, and physicians alike. During this process, we identified several features of the Plum A+ infusion system and MedNet software that were of value to ALGH.

Product Features and Benefits

Of particular benefit to our nurses, the pump allows simultaneous delivery of two separate medications, with the ability to independently program and label both lines using the MedNet software. In addition, the nurses like that the infusions are not head-height dependent, so there is no need to raise or lower the height of the IV bags to allow administration. Furthermore, for additional patient safety, the Plum A+ IV administration set provides free-flow protection and air elimination via a back-priming feature.

The PC-based and user-friendly MedNet software (version 1.02) provides 12 customizable clinical-care areas (CCAs), including pediatrics, ICU, and step-down, each with the potential for 99 drug entities plus a "No Drug Selected" option. We are able to customize each CCA based on patient type, commonly used medications, and standards of care.

The software supports the use of "TALLman" lettering to minimize look-alike/sound-alike medication errors, and offers the opportunity to coordinate other patient-safety initiatives, like hospital policies, standardized concentrations of IV medications, and best-practice guidelines. We used the opportunity to implement standardized concentrations for infusions wherever possible in an effort to further reduce programming errors. With pre-programmed medication concentrations, the nurse only has to input the patient's weight, desired dose, and the volume to be infused. For medications that are not included in the drug library, the nurses may choose the "No Drug Selected" option, which allows for the use of drug-calculation features, but does not offer any specific dose limits.

Dose limits can be customized for each drug and within each CCA. The MedNet software allows for both soft and hard dose limits. Nurses can manually override soft dose limits when a dose is clinically appropriate for the patient and the situation. When soft limits are overridden, a symbol ($\uparrow\downarrow$) is displayed on the final screen to indicate that the medication is running above or below the recommended dose range. This visual cue

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The Plum A+ allows simultaneous delivery of two separate medications.



Photo courtesy of Hospira, Inc.

prompts nurses to reevaluate the override and verify its appropriateness. Hard limits, of course, cannot be overridden. We reserve the use of hard limits for medications, such as nitroprusside, that cause a significant safety concern to arise.

One of the features we have found to be most beneficial is the final confirmation screen, which prompts the nurse to review the medication, concentration, dose, and rate, prior to initiating the infusion. Although this adds another step for nursing, we believe the summary of information acts as a valuable safety check. Once the information is confirmed, the final screen displays the medication name, rate in mL per hour, and the dose in appropriate dosing units, such as mcg/kg/min. In addition, the screen displays a cautionary symbol (\triangle) when the pump is being used without the MedNet software, e.g. when "No Drug Selected" has been entered.

Continuous quality improvement (CQI) reports are available to evaluate several aspects of clinical use, including safety-software utilization, clinical alerts, overrides, soft-limit edits, and the most commonly used medications per CCA. Our pumps store approximately two weeks' worth of data, while the latest MedNet release can store approximately one year's worth.

Utilization Evaluation

We have performed two data downloads in an effort to evaluate our utilization of the MedNet software, and to identify any programming errors that have been prevented. Our initial data retrieval from about 150 pumps revealed a MedNet utilization rate of approximately 45%, with the highest utilization rates in the ICUs. There were 46 soft-limit alerts with four edits in response to the alerts. In addition, the data identified the prevention of a potential 25-fold drug overdose of tenecteplase. Analysis of the data has helped us target specific areas of education and follow-up, as well as CCAs and medications that need to be revised with the next update of the drug library.

We are currently in the planning process for updating the medication library, while upgrading to the latest version of MedNet, which will increase our capacity to 18 CCAs and 150 drugs per CCA. Future plans involve evaluating the feasibility of installing wireless communication software between the pumps and a network server, to facilitate drug-library updates and CQI-data downloads. With the new Lifecare PCA pump soon to be available with MedNet software, the potential exists to incorporate and remotely manage the drug libraries for all these infusion devices, and to provide the real-time review of CQI data, resulting in additional improvements to patient safety. **R&P**

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Where to find it:

Hospira, Inc **Circle reader service #97**
or visit www.hospira.com.