

BETHLEHEM, Pa.--(BUSINESS WIRE)--Oct. 2, 2000

Recent media attention has identified the reduction in nursing staff and inadequate training in healthcare facilities throughout the United States as a significant contributor to the medical mistakes that claim thousands of lives each year.

This press release is the second half of a two part series focusing on dosing related errors and how infusion pumps are designed to address these issues.

Nurses are routinely asked to calculate dosage information and provide data entry services for medications and intravenous infusions. Assuming the physician's order and patient information are correct, there are three general possibilities for mistakes when administering IV medications via a pump: dosage miscalculation; transcription data entry error; and titration of the wrong medication.

Miscalculation Error--- A miscalculation error can occur for any number of reasons, including the use of inaccurate parameters such as dose, weight, height, drug units, or solution volume. A misplaced decimal or missing number in this complex calculation can result in a calculation error that may not be immediately apparent to the clinician.

While certain miscalculations will be immediately recognized by a nurse. Some mistakes like using the wrong concentration data in the calculation, may go unnoticed and may result with a medication error that is clinically significant, and life threatening.

Data Entry Error--- A transcription type data entry error occurs when a nurse inadvertently inputs the wrong data into the infusion pump. Another type of transcription error is the inputting of an incorrect decimal point. For example, the proper infusion rate is calculated, but the rate is incorrectly entered as 2.63 ml/hr instead of 26.3 ml/hr.

Just as with miscalculation errors this type of mistake can result in a medication error that is clinically significant, and life threatening.

Titration Errors--- According to their effect on the patient, many drug delivery rates are changed while the infusion pump is infusing. This type of rate change is called titration.

In the hectic setting of a critical care area, where a patient may routinely be given more than one intravenous medication at a time, a hurried nurse may increase or decrease the rate medications are being administered on several different infusion pumps in rapid succession.

With multiple infusion pumps clustered together administering intravenous medications, a clinician may incorrectly titrate the wrong infusion pump, which again could result in a medication error that is life threatening.

Infusion pumps today are designed not just to "pump fluid", but to be used as tools to make the clinicians work simpler and to help guard against errors. Many of today's modern infusion pumps incorporate dose/rate calculators to assist the nurse in calculating the correct dosage rates on the pump, thereby reducing calculation and transcription type data entry errors.

Other pumps also offer drug labels that help to reduce titration errors. Even with these tools, errors can occur if the calculation features are not easy to use and do not display the calculation, drug label, and infusion information adequately.

To reduce calculation errors, some health care institutions have centralized calculations in the pharmacy, where it is easier to keep a staff of well-trained pharmacists current on drug calculations. In these cases nurses are provided with the proper dose calculations on the label of

the drug.

The nurse then verifies this information by comparing the calculation data against the patient and preprinted standard dosage information.

B. Braun Medical Inc. pioneered the first dose/rate calculators in infusion pumps and has continued to improve this feature in the Horizon(R) Nxt and Vista(TM) Infusion Systems. The dose calculation tools available in these pumps were designed by pharmacists and nurses to be accurate and easy to use. Safety and Ease of Use are paramount in the design process.

The Horizon(R) and Vista(TM) products promote safe, easy to use, data entry, and display all critical dose calculation data on a single screen so the clinician can confirm the data in one view, prior to starting the delivery of the medication.

Not only do the B. Braun Horizon(R) Nxt Modular Infusion System and Vista(TM) Infusion Systems have dose/rate calculators incorporated into their design, they also contain custom drug libraries with associated drug concentrations. Many facilities have recognized the safety in standardization of concentrations.

The Horizon(R) Nxt and Vista(TM) Infusion Systems allow the facility to define up to three drug concentrations from which to choose for each drug listed in their drug library. Drug libraries also help prevent titration of the wrong drug since the drug name appears clearly on the pump.

When a nurse chooses a drug label for the pump, they are presented with a list of institution-specific drug concentrations. This feature helps to reduce miscalculation and data entry errors.

All B. Braun Medical infusion pumps that allow for numeric data entry also have large easy to read displays and display decimal digits in a significantly different size than the whole numbers. This visual aid helps the nurse to quickly and easily identify the decimal place and which numbers fall before and after the decimal point.

B. Braun is a \$2.5 billion international medical company and a global leader in the healthcare industry. Additional information about B. Braun and its products can be found on the company's website at www.bbraunusa.com.

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