



IV Smart Pumps

Improving Patient Safety by Reducing Life-Threatening Medication Errors

What is an IV Smart Pump?

An IV Smart Pump is an automated pump that administers fluid and medication into a patient's vein. Its customized software transforms a conventional IV pump into a computer that immediately alerts staff if a programmed infusion does not match a particular medication's recommended guidelines regarding dose, dosing unit, rate and concentration.

Why do we need IV Smart Pumps?

IV pumps are used across the hospital, wherever and whenever IV fluids and medications are administered. Every year, over 10,000 inpatients have at least one IV at some point during their admission. A significant number of outpatients may need IV access, fluids or medications.

Conventional IV pumps, like the one displayed above, cannot detect drug errors that are costly and can result in significant patient injury and even death. Over a 13-month period, 79 medication errors were reported at the hospital—likely a conservative estimate given that medication and other errors are often under-reported.

What's more, conventional IV pumps made it difficult to provide evidence-based practices, and meet new provincial and accreditation requirements.

How will IV Smart Pumps make a difference?

The Dose Error Reduction Software is the most compelling and distinguishing feature of the IV Smart Pump. This software can help staff intercept and correct potentially serious infusion mistakes before they happen. Some 60% of the 79 reported IV medication errors may have been prevented with the IV Smart Pump.

The IV Smart Pump also helps us to meet provincial requirements, accreditation standards and evidence-based practices:

- Drugs will be now infused through “needleless” valves and access ports—a provincial regulation.
- Buretols (cylindrical devices used with conventional IV pumps to dilute/administer some drugs) will be eliminated. This means

improved drug delivery, an end to drug trapping and loss (drugs would stick to the buretrol wall) and minimal fluid volumes needed to flush medication through the pump administration tubing—reducing the risk of fluid overload.

- Standard concentrations of continuous medication are now assured, resulting in decreased preparation errors, order errors and costs. The Dose Error Reduction Software provides a mechanism to list these standard concentrations, helping staff to easily program the pump to deliver the correct medication rate and dose every time.

With the implementation of the IV Smart Pumps in June, SickKids is at the forefront of evidence-based practice that promotes patient safety, improves patient care and meets exacting standards.

“ Consultants from pump manufacturer, Cardinal Health, recently assessed compliance of our staff with this technology. While staff in other hospitals often bypass the Dose Error Reduction Software (typically to save time), our staff was found to be 100% compliant for both IV fluids and drugs. The consultants had never seen this degree of compliance in their history of implementation. The bottom line? Our staff understand the importance of applying the best technology to provide safe, quality care to their patients. ”

Helen Edwards, Project Lead