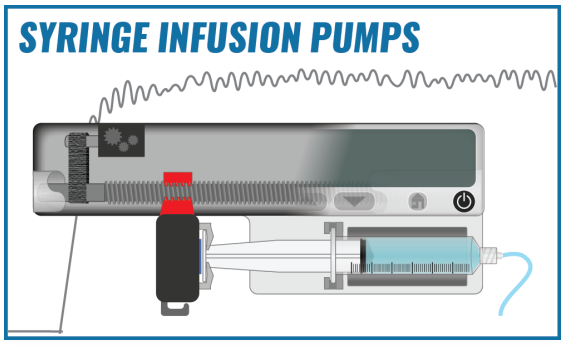
Drug Infusion Safety

Educational material for maintaining good drug infusion practices

Education Resources

Syringe Infusion Pumps – Operation and Safety Considerations



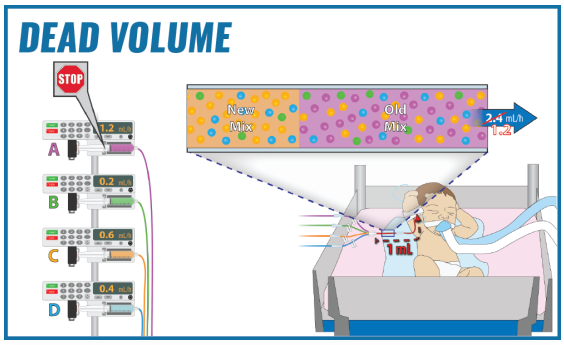
Syringe infusion pumps play an important role in the delivery of medication. They have distinct benefits for neonate, pediatric and adult patient groups. However, as with any sophisticated device there are some important considerations to keep in mind as we continue to use them to provide excellent care. This two part series will discuss how syringe infusion pumps operate and how the nuances of this mechanism can have clinical implications. Each module is intended to bring knowledge and awareness of some topics we need to remain mindful of, so we know what to expect and how best to respond in certain situations. These modules also aim to provide guidance for helping prevent or mitigate certain elements of syringe infusion pump operation that can result in undesirable clinical responses.

These modules address several topics noted in a safety communication released by the FDA in August 2016 highlighting the need for updated education and consideration of the specific nuances of syringe pump operation to reduce the potential for serious adverse events.

View Part 1

View Part 2

Delivery of Life Supporting Drugs: Dead Volume

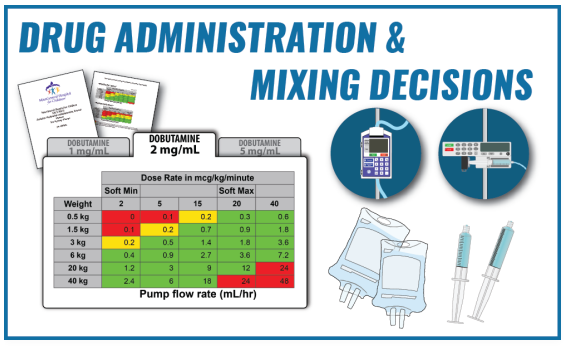


When multiple fluid paths converge into a single IV line their flow can become dynamically linked. In these situations, flow rate changes to any one infusion will influence the delivery of all the infusions. Dead volume is the common volume, shared by multiple fluids when they join together, creating a single pathway to the patient's bloodstream. Interactions within the dead volume can lead to unintended boluses, delays, and variations in the delivery rate of potent drugs, resulting in unintended clinical consequences for patients. This two part series will introduce the topic of dead volume, the implications of dead volume on the infusion setup, and some steps that can be taken to help manage the dead volume.

View Part 1 – What is Dead Volume?

View Part 2 – Managing Dead Volume

Drug Administration & Mixing Decisions



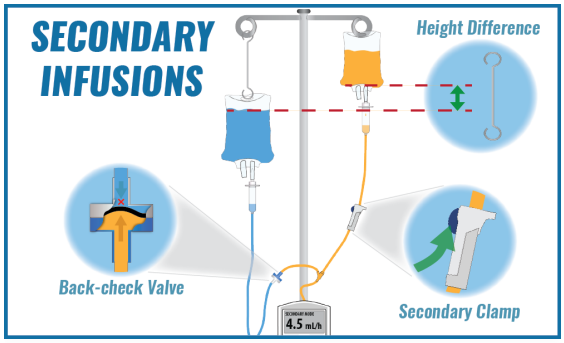
The use of a select number of standardized drug concentrations and dose strengths for high-alert medications is a requirement for all accredited hospitals. However, making the optimal choices when selecting from these standardized drug concentrations and administering them can require us to be aware of several important considerations. It is not always a straight forward task. This module aims to provide some guidance, and tools, to assist in the decision making process of selecting, mixing, and programming standardized, continuous infusions. This includes making the decision of whether a syringe infusion pump or large volume pump may provide the optimal delivery mechanism. The delivery of continuous, rate-critical infusions

that will run for many hours to days, and may be frequently adjusted, or titrated, during that time will be the focus of this module.

This module makes reference to the **Massachusetts General Hospital NICU/PICU Pediatric Medication Administration Process Manual for Syringe Pumps** .

View – Drug Administration & Mixing Decisions Module

Basic Principles of Secondary Infusions



A secondary infusion, also called a piggyback infusion, involves the delivery of an intermittent (or single-dose) IV medication through an established IV access. Delivery is set up in a very specific way in order to administer the secondary medication and, upon completion, automatically change back to administering the primary IV fluid. The delivery of secondary infusions is a common drug administration practice, but in order to ensure the medication is being delivered as intended there are several key setup conditions that need to be met. This module aims to provide a very brief introduction to 3 key principles for ensuring secondary infusions are delivered as expected: the height difference, role of a back-check valve, and secondary roller clamp.

The module also talks about the practice of back priming. Back priming is used when chemotherapy or hazardous drugs are provided with a secondary IV tubing set that has been spiked, but not primed.

The material presented in this module includes content developed by Massachusetts General Hospital and the HumanEra group of Toronto's University Health Network.

View – Basic Principles of Secondary Infusions