

Infusion Pumps

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Infusion pumps are used to infuse food, medication or nutrients into a patient's circulatory system. Most often this occurs intravenously (directly into the veins), however it can also be done subcutaneously (under the skin), arterially (directly into the arteries) or into the epidural space.

Infusion pumps carry out their task in a way that would be unrealistic for nursing staff to introduce fluids. They introduce very small amounts of fluid which is too small for a drip. They also do this on a time schedule, hourly, or every minute. They can even be programmed to administer different amounts of fluid at different time intervals during the day



There are two basic types of infusion pumps. The first, large volume pumps can move enough fluid to feed a patient who would be otherwise unable to eat. The small volume pumps are more commonly used to administer drugs such as opiates, or hormones, like insulin. These two types come in a variety of different styles, some are meant to be portable, others were meant for battle field use and some are only for hospitals.

Large Volume pumps generally use some sort of peristaltic pump. That is a pump that is meant to mimic the action

of peristalsis which is the wave like muscle contractions that force food through tubes in the body.

Small Volume pumps such as the simplified diagram displayed below use a computer controlled motor to turn a screw attached to the plunger on a syringe. A typical small volume infusion pump might have a flow rate range from .2 cubic centimeters (cc) to 500cc per hour. At .2cc per hour, a 10cc syringe would require 50 hours to empty.



Safety features are available on most pumps. No one point of failure, that is if the pump silently fails to operate and alarm would go off (this is a required safety feature). Many have batteries incase power fails or if it becomes unplugged. Some pumps have an "Air-in-Line detector" to detect if any air is being allowed to enter the patient's body. (Too much air entering the body can kill a patient.) There are also security codes to prevent tampering and many others. Infusion pumps have come a long way since their creation, and create an ideal way to administer small amounts of fluids.

Sources: <http://www.animatedsoftware.com/pumpglos/infusion.htm>
<http://www.cancerhelp.org.uk/help/default.asp?page=303>
<http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat6.section.43813>
http://en.wikipedia.org/wiki/Infusion_pump.