Infusion pumps allow for the mechanical administration of infusions when it is impractical for a person to manually infuse medication. Many factors are considered when ordering an infusion pump, including expense, reliability, volume of medication to be infused, type of medication to be infused and length of infusion, to name a few. In addition, infusion pumps can be programmed to provide continuous infusions, intermittent infusions or bolus infusions.

Continuous infusions usually consist of pulses of infusion with a rate dependent on the programmer’s specifications. The pump can be titrated up or down simply by changing the flow rate of the infusion. Generally lasting for several hours and possibly for days, many types of intravenous therapies can be given with this method. Syringe drivers, another type of pump offering a continuous infusion, also provide pulses of medication at a set rate. However, they also produce high, but controlled pressures and, therefore, are good choices for subcutaneous infusions. Syringe drivers are also useful for delivering IV medications over the course of several minutes, which saves staff time and reduces medication errors.

Intermittent infusion pumps are well-suited for the patient receiving antibiotic therapies. They can be programmed to infuse at selected times throughout the day or night. Bolus infusion pumps, or patient-controlled infusion pumps, allow patients to receive medication based on their symptoms or comfort level, at preset intervals. This type of pump is generally utilized for patient-controlled analgesia.

It is important to note that many pumps come with their own proprietary tubings, syringes and cassettes, most of which are not interchangeable. However, some pumps do not use proprietary products, but specific brands and/or sizes must be used. Additionally, many infusion pumps require routine preventative maintenance. It is of critical importance that a pump be checked yearly, or when recommended, to ensure proper infusion rates, volumes administered and timing.

NANCY CREADON, RN, is vice president of VaxAmerica, a program offered by the specialty pharmacy of FFF Enterprises, which specializes in biopharmaceutical management and distribution.

**Pump Comparison Chart**

<table>
<thead>
<tr>
<th>Pump</th>
<th>Size (pump only)</th>
<th>Weight (battery included)</th>
<th>Proprietary equipment</th>
<th>Rate variable</th>
<th>Cost</th>
<th>Fluid capacity per syringe or cassette</th>
<th>Power source</th>
<th>Links</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graseby MS15A</td>
<td>6.5”L x 2.1”W x 0.9”D</td>
<td>6 oz</td>
<td>no</td>
<td>yes</td>
<td>middle</td>
<td>yes</td>
<td>9V battery</td>
<td>[<a href="http://www.marcalmedical.com/Graseby">www.marcalmedical.com/Graseby</a> MS16A_SCIG_IVIGHourlyPump.htm](<a href="http://www.marcalmedical.com/Graseby">www.marcalmedical.com/Graseby</a> MS16A_SCIG_IVIGHourlyPump.htm)</td>
</tr>
<tr>
<td>Intrapump Crono S-PID 50</td>
<td>3.3”L x 2.1”W x 1.6”H</td>
<td>4.93 oz</td>
<td>syringes</td>
<td>yes</td>
<td>high</td>
<td>yes</td>
<td>CR 123A 3V Lithium battery</td>
<td><a href="www.intrapump.com/ambulatory/cronoS-PID50.htm">www.intrapump.com/ambulatory/cronoS-PID50.htm</a></td>
</tr>
<tr>
<td>Micrel MP101</td>
<td>6.5” L x 1.57” W x 0.9” D</td>
<td>5.6 oz</td>
<td>no</td>
<td>yes</td>
<td>middle</td>
<td>yes</td>
<td>6 AAA batteries</td>
<td><a href="www.micrelmed.com/interior/products/micropump003.htm">www.micrelmed.com/interior/products/micropump003.htm</a></td>
</tr>
<tr>
<td>RMS Medical Freedom 60</td>
<td>12” L x 4.5” W x 1.6” H</td>
<td>14 oz</td>
<td>fixed flow rate tubing</td>
<td>no</td>
<td>lowest</td>
<td>no</td>
<td>manual</td>
<td><a href="www.rmsmedicalproducts.com/Freedom60info.htm">www.rmsmedicalproducts.com/Freedom60info.htm</a></td>
</tr>
</tbody>
</table>
**Directory of Pump Products**

(see also the Pump Product Comparison Chart)

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**Graseby**

The Graseby 3400 offers a wide range of infusion rates. Unlike many other syringe drivers, it is compatible with many syringe sizes and tubing, which makes it cost-effective as there are no dedicated disposables. The operation is simple, and it features an easy-to-read display. The Graseby 3400 runs on batteries and also requires at least yearly maintenance.

(800) 628-9214; www.marcalmedical.com

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**Intrapump Infusion Systems**

The Crono S-PID50 has become very desirable due to its small and compact size. It is designed with subcutaneous immunoglobulin in mind for the home setting. It offers continuous administration and bolus administration of medications and has a very high PSI and occlusion alarms, appropriate for highly viscose medications. The Crono S-PID50 runs on batteries.

(866) 211-7867; intrapump.com

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**Micrel Medical Devices**

The Micrel MP101 syringe driver provides infusion therapy for a wide range of applications. It is an efficient infusion system for delivery of small volume medications, and can be used in both the homecare and hospital setting. Features include a simple rate setting with an LCD display, clear identification of alarms detected and a double microprocessor. It is lightweight and portable, has an ultra-low battery consumption, and comes with a shoulder holster for ambulatory use, plastic carrying case, operating instructions and a set of batteries.

+ 30 210 6032333; www.micrelmed.com

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**RMS Medical Products**

The innovative Freedom 60 pump requires no electricity or batteries; the patient just needs to wind it up. It utilizes proprietary tubing to administer subcutaneous infusions at predetermined rates. With no bells and whistles, it is very portable and extremely effective. The Freedom 60 requires no preventive maintenance. While it may be a bit larger that some of the ambulatory competitors, its ease of use has made it a very popular choice for subcutaneous therapies.

(845) 469-2042; www.freedom60.com

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**Smith Medical**

CADD pumps come in many models that are specific to the type of treatment being administered. The pumps are considered to be ambulatory, but they can be mounted to a pole if the patient wishes, especially if infusing during the night. CADD pumps run on batteries or can be plugged in, and they are small and portable. The pumps may be utilized for continuous, intermittent and subcutaneous therapies, are programmable and can be used with many therapies. Routine maintenance is required at least yearly.

(800) 426 2448; www.smiths-medical.com/brands/cadd