Armstrong Medical

Clinical Applications

What is a pressure infusor, how is it used, and what are its applications to our customers' needs?

A pressure infusor is a specially designed cuff and bladder device used to pressurize sterile parenteral fluids (e.g. blood, IV solution) to provide for rapid infusion into patients suffering from hypovolemia and its complications. Generally, parenteral fluids come packaged in flexible bags in either a 500cc or 1000cc size.

The IV bag is inserted into the cuff of the pressure infusor; then the bladder is inflated putting pressure on the contents of the IV bag. A valve is used to control the airflow through the bladder. The pressure causes the fluid to be infused more quickly into the patient. Infusion cuffs are inflated with a hand pump similar to that of a blood pressure cuff apparatus. The cuff should be pressurized to 300 mmHg.

The pressure infusor was originally designed to speed the infusion time required to deliver blood. Gravity-fed blood can typically take up to an hour for delivery to the patient. With the use of the pressure infusor, the blood can be infused in seconds.

The pressure infusor has also become a necessary component of invasive pressure monitoring procedures. Intra-arterial pressure monitoring and Swan-Ganz catheterization monitoring both require the use of a pressurized plumbing system to retard the retrograde flow of blood and to keep the indwelling catheter patent. The infusor is used to pressurize a bag of heparinized saline to a pressure greater than the patient's highest systolic blood pressure. Typically 300mmHg is used.

The pressurized solution prevents retrograde blood flow into the catheter and plumbing; the heparin prevents blood clotting on the catheter tip. The system is activated by a flush valve which regulates the flow of solution into the patient at usually 24 mls/h[1]. The flush valve also allows for rapid flushing when needed.

Two major clinical applications for pressure infusors are:

- Rapid infusion of blood, blood products, blood expanders, and IV solutions.
- Invasive pressure monitoring procedures

Typically procedures benefiting from the use of pressure infusors are performed in the OR, ER, Trauma unit, ICU, and in post-anesthesia care.

1. Ward Matthew, MBChB FRCA, Langton Jeremy A, MD FRCA ILTM, Blood Pressure Measurement: Continuous, Invasive Blood Pressure Monitoring, Continuing Education Anaesthesia, Critical Care, & Pain, 2007; 7(4): 122-126