Elastomeric Infusion Pump

Basic Training

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General Knowledge for Elastomeric Infusion Pump

Objectives

After completing this class, the student will:

- Understand what an elastomeric infusion pump is.
- Be able to identify reasons for the use of an elastomeric infusion pump.
- Be knowledgeable of the advantages and disadvantages of an elastomeric infusion pump.
- Know the proper procedure for the administration of Elastomeric Pump Infusion, including documentation.
- Be aware of possible complications that can arise while a patient is receiving Elastomeric Pump Infusion.

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General Knowledge for Elastomeric Infusion Pump

Definitions

- **Elastomeric Pump –** Also known as a "ball" or "balloon" pump, it makes use of elastic pressure to infuse medication.
- **Local Anesthetic –** Medication that causes the absence of pain sensation in a localized area.
- **Extravasation –** The leakage of medication or other fluids from a blood vessel or tube into the tissue around it.
- **Flow Rate –** The time it takes for medication to be administered.
- **Flow Rate Accuracy –** Flow rate accuracy is how close the set rate is to the true value.

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General Knowledge for Elastomeric Infusion Pump

What is an elastomeric infusion pump?

Elastomeric infusion pumps are designed for continuous drug delivery, on-demand delivery or a combination of continuous and on-demand drug delivery (patient-controlled analgesia, PCA).

Elastomeric pumps offer a safe alternative to electronic pump systems for various therapeutic areas and applications. They are intended for single use and, in contrast to electric infusion pumps, work without external energy sources such as batteries or electricity.

Which patients are appropriate to use an elastomeric infusion pump?

Patients recovering postoperatively, pediatric patients, and patients requiring medication in an outpatient setting. Medications that may be infused through an elastomeric infusion pump include antibiotics, chemotherapy, fluorouracil, analgesics, and local anesthetics.

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Elastomeric infusion pumps are indicated for managing pain in:

- Patients who suffer from acute pain postoperatively, either in outpatient or inpatient settings, for whom intravenous local anesthetics or analgesics are indicated.
- Patients who cannot maintain the oral route for medication administration.
- Pediatric patients receiving chemotherapy in an outpatient or inpatient settings.

Advantages of elastomeric infusion pumps include:

- High efficacy
- Low rate of complications
- Ease of use
- Potential for maintaining patient autonomy in the outpatient setting
- Significantly lower cost than an inpatient treatment without elastomeric infusion pump

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Disadvantages to the use of an elastomeric infusion pump include:

- Diluent restrictions
- Limitation of flow rates
- Limited range of infusion rates
- Fixed reservoir volume
- Accuracy range of volume delivered
- No alarms or smart features
- External conditions influence pump performance (such as temperature and back pressure)

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General Knowledge for Elastomeric Infusion Pump

Recommendations for the use of an elastomeric infusion pump.

- The pump should be worn between armpits and hips, as its elevation can impact medication administration rate.
- The pump should be kept at room temperature, as cooling or warming the fluid inside can decrease or increase the flow rate, respectively.
- Pressure **should not** be applied to the pump, as this can affect the flow rate or cause the pump to burst.
- If the patient's pump is attached to an implanted port, tunneled chest catheter, or PICC, the attachment site should not be gotten wet while bathing or showering.
- An inpatient receiving infusion therapy through an elastomeric infusion pump should be closely monitored to ensure the fluid is not flowing too quickly and no complications occur.
- The pump should be kept in a carrying case or pocket during the infusion, with tubing worn outside of clothing to prevent kinking of tubing or the disruption of flow.

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Signs of a malfunctioning elastomeric infusion pump include:

- The balloon deflating and forming wrinkles faster than it should.
- The pump emptying earlier than it should.
- The balloon not deflating or forming wrinkles.
- The pump not emptying like it should.
- Fluid on the skin around an implanted port access site or catheter exit site.
- Redness, pain, swelling, or drainage near the implanted port access site or catheter exit site.
- Leakage from the pump.

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General Knowledge for Elastomeric Infusion Pump

Complications associated with the use of an elastomeric infusion pump

Other Complications associated with the use of an elastomeric infusion pump include:

- Infection
- Catheter dislodgement
- Medication leakage
- Skin irritation
- Allergic reaction
- Extravasation

Side effects of an elastomeric infusion pump can be related to the medications used and include nausea and vomiting, constipation, urinary retention, pruritus, and respiratory depression.

When observing signs or symptoms of complications related to the use of an elastomeric pump, close the clamp on the line and contact prescribing physician for further instructions on additional interventions.

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References

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