Biennial Preventative Maintenance Testing On Volumetric Infusion And Syringe Infusion Pumps

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Aims and Objectives

- Locate volumetric and syringe infusion pumps requiring preventative maintenance (PM) testing.
- Complete the PM testing on all affected pumps to ensure all pumps are functioning as per the manufacturer's recommendations.

Purpose of Preventative Maintenance Testing (PM)

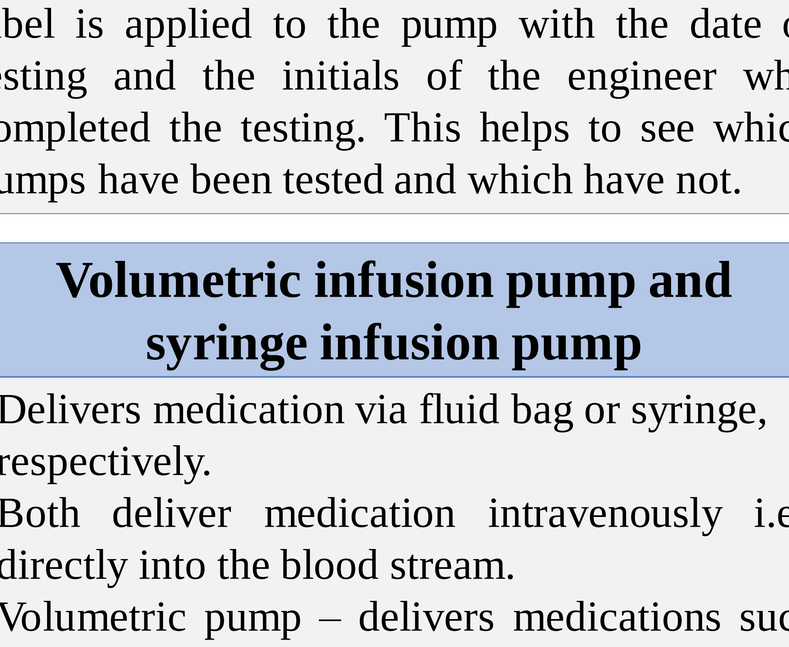
PM testing is a technical safety test carried out on every volumetric infusion pump and syringe infusion pump in the hospital. This test is carried out biennially to ensure that each pump is running within the parameters outlined by the manufacturer.

Both infusion pumps have a unique testing sheet that the manufacturer has curated. A physical and functional check is completed, and a service label is applied to the pump with the date of testing and the initials of the engineer who completed the testing. This helps to see which pumps have been tested and which have not.

Volumetric infusion pump and syringe infusion pump

- Delivers medication via fluid bag or syringe, respectively.
- Both deliver medication intravenously i.e., directly into the blood stream.
- Volumetric pump – delivers medications such as saline for dehydration, tazocin for bacterial infections, as well as some chemotherapy drugs.
- Syringe pump – delivers medications such as insulin for patients with diabetes, furosemide for fluid build-up, and cyclizine for nausea treatment.

[1]



References

- 1. Spacestation. B. Braun Medical Inc. https://www.bbraunusa.com/en/products/b4/b-braun-spacestation.html .

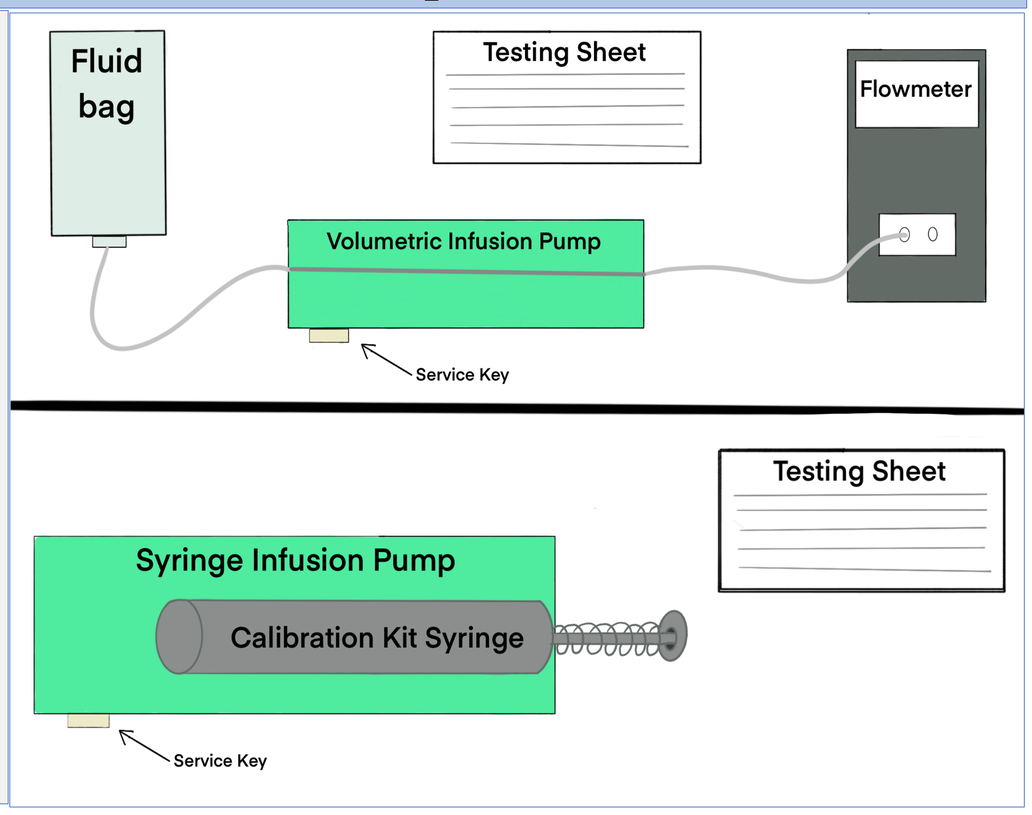
Materials and Set-up

For PM testing of volumetric pumps, the materials required are

- The volumetric pump in need of a PM
- A flowmeter
- Manufacturer service key
- IV fluid bag
- Testing sheet

For PM testing of syringe pumps, the materials required are

- The syringe pump in need of a PM
- Manufacturer calibration kit
- Manufacturer service key
- Testing sheet



Procedure

Volumetric Pump PM Testing

Physical Check and test set-up

Set pressure stages outlined on the testing sheet for electronic pressure testing

Note pressure in *psi* recorded on the flowmeter – ensure the values fall within the manufacturers' limits

Insert the service key and test the mechanical pressure

Record the max and min pressure values for the mechanical pressure

Measure the flow accuracy in ml/hr

Have the results checked by the supervisor and attach a service label

Syringe Pump PM Testing

Physical check

Insert service key and calibration kit syringe

Set the pump to various pressure stages as outlined on the testing sheet for the strain gauge testing

Measure the force in *N* for each pressure stage when the pressure reaches its limit, ensuring it's within the manufacturers' limits

Alter the calibration syringe and repeat the previous process to test the motor limitation

Have the results checked by the supervisor and attach a service label

Results and Discussion

Each pump in the hospital was collected and PM tested. During testing, if any pumps were to fail, they would be placed on the repair shelf. If the pumps passed, they would be checked by my supervisor and placed on the equipment shelf or returned to the area they belong to.

The goal of conducting PM testing on all infusion pumps was achieved, and all pumps are safe for clinical use. I developed my problem-solving skills when determining an error in a pump during PM testing and my time management skills in ensuring all pumps are PM tested as quickly as possible. I gained experience in equipment testing and repair and have been able to complete the testing under supervision.