NIKI T34 SYRINGE PUMP: MANAGEMENT OF CONTINUOUS SUBCUTANEOUS INFUSION

KEY WORDS
Syringe pump, NIKI, subcutaneous, Saf-T-Intima, additive label, syringe

AIM
Appropriate commencement and management of the NIKI T34 syringe pump.

BACKGROUND
Subcutaneous syringe drivers provide an effective method of continuous medication delivery to control symptoms when other routes are inappropriate or ineffective. Most commonly used in palliative care settings and in persistent pain syndromes.

KEY POINTS

1. Prior to looking after a patient with this pump, all staff must have received instruction on how to operate the pump.

2. Advise the patient that the pump must not get wet. A protective plastic bag should be used in the shower.

EQUIPMENT

- Subcutaneous infusion chart (MR 809.01 Prescription and Monitoring a Subcutaneous Syringe Driver (NIKI T43)) with documented prescription by RMO.

- NIKI T34 syringe pump, rigid locked box and carry pouch.

- SAF-T-Intima™ catheter. Saf-T-Intima™ catheters are used to reduce local site reactions and therefore increase longevity and reduce needle stick injuries.

- 70% isopropyl alcohol 1% chlorhexidine cleansing swab.

- Prescribed medication and diluent.

- 20mL Luer Lok syringe (occasionally a 30mL may be required).
• Subcutaneous drug additive label

![For Subcutaneous Use Only](image)

• Luer lok extension tubing minimum 75cm in length
• 10cm x 10cm sterile transparent dressing.
• 9 volt battery (ensure a spare battery is available on the ward). Always use an alkaline battery. Do not use non-alkaline or rechargeable batteries.
• Gloves.

**PROCEDURE**

**DAY 1**
The NIKI T34 has been pre programmed to a fixed duration of 24 hours and has the programme lock function on.

**Fitting the Battery.**
1. Slide the compartment cover at the back of the pump. Place the battery into the compartment.
2. Ensure the battery terminals are aligned as per the diagram inside the compartment.

**Battery Test**
1. Always check there is enough charge to set up the infusion ( > 20%).
2. Switch the pump on.
3. Press the INFO key.
4. Select ‘BATTERY LIFE’ from the menu and press **YES** to confirm.
5. Verify that sufficient battery charge is available to complete the current programme. If not, change the battery.
Syringe Selection

- The T34 is programmed to recognise most commonly used syringes from 2-50mL

Loading the Syringe

1. Perform hand hygiene.
2. Draw up prescribed medication and diluent to equal 18mL in total.
3. Connect the extension line to the available Y connector of the SAF-T-Intima™ catheter.
4. Connect the extension line to the Luer Lok syringe.
5. Press and hold the ON/OFF button until it beeps.
6. The version of the software will flash on the screen. The screen will then flash ‘Pre-loading’. Wait for the pump to pre-load. It calibrates itself during this process.
7. Measure the drawn up syringe against the NIKI T34 and press either FF or BACK to align actuator to the syringe plunger. The actuator can only be moved in this way. Do not try and force and move the actuator manually as this could damage the device.
8. The pump will state ‘Load Syringe’.

9. Raise the barrel arm clamp and place the syringe in, then lower the barrel arm clamp. If the syringe is not placed in correctly the screen will flash at which sensor the placement is incorrect. Check the 3 sensors
   A – Barrel Clamp Arm
   B– Syringe ear/collar sensor small metal switch. Detect the secure loading of the syringe collar.
   C – Plunger Sensor
10. Once the syringe is correctly loaded, the screen will ask for identification of the syringe brand.
11. Use the ▲▼ to select syringe brand.

12. Review and check the data on the screen- Volume, Duration, Rate e.g. 18mL, 24 hours, 0.75mL / hour

13. To confirm press **YES**

14. Display will read ‘ START INFUSION’. **DO NOT COMMENCE INFUSION IF THIS IS DAY 1** as the line requires priming.

15. Press the FF button. The display will read ‘ PURGE DISCONNECT FROM PATIENT’.

16. Confirm disconnection by pressing **YES**

17. To prime the line, press and hold the FF key. Maximum purge is 2.0mL.

18. Once primed again select the correct brand of the syringe.

19. Press ‘YES’ to resume.

20. The display will now show the new volume and a new duration. The rate will remain constant.
21. To confirm press Yes

COMMENCING THE INFUSION

1. Pump will state START INFUSION. To confirm press Yes.

2. With the commencement of the pump the keypad lock needs to be activated. With the pump infusing press and hold the INFO key until a chart is displayed showing a bar moving from left to right. Hold the key until the bar has moved completely across the screen and a beep is heard to confirm the lock has been activated.

3. During the infusion the rate will always be displayed in the middle of the screen.

4. At the bottom the screen will alternate between brand and size of syringe.

5. A green light will flash intermittently above the ON/OFF key.

6. Place the pump in the allocated locked box and ensure it is locked. The locked box must then be placed inside the protective pouch.

7. Complete the medication additive label and place on the extension line. Do not put the label on the syringe or any part of the pump.
8. Perform hand hygiene.

**Day 2,3 etc**

1. Perform hand hygiene.
2. Prepare medication as per prescription in the relevant syringe.
3. Press the **NO/STOP BUTTON**.
4. Perform hand hygiene.
5. Remove the old syringe and attach the new syringe to the infusion line.
6. Perform hand hygiene.
7. Measure drawn up syringe against the NIKI T34 and press either FF or BACK to align the actuator to the syringe plunger.

8. Raise the arm clamp and place the syringe in the pump.
9. Close the arm clamp.
10. Select the correct syringe brand.
11. Select **NO** for a new syringe.
12. Check and review the data on the screen (Volume, Duration, Rate).
13. To confirm press **YES**.
14. When ‘START INFUSION?’ is displayed, press **YES**.
15. Document the date of insertion / syringe change on the MR 809.01

**Observations**

- Check the display – pump is working and infusion rate is as programmed and document these observations (including volume infused (VI) and Volume To Be Infused (VTBI), battery check % remaining, light is flashing(pump is operational),
  - Hourly for the first two hours
  - Then 4 hourly
- Press the **INFO button** (single press) to check
  - VTBI – Volume to Be Infused
  - VI – Volume Infused
- Press the **INFO button** (double press) to check
  - Battery level – percentage remaining
- Check the insertion site at least daily for
  - Inflammation
  - Hardness
  - Swelling
  - Bleeding
  - Leaking
Pain
The site should be changed if any of these symptoms are present. The Safe-T-Intima™ should be removed and replaced with a new one on the 5th day after insertion.

DISCONTINUING THE SYRINGE PUMP

- Explain the procedure and reason why the pump is to be discontinued.
- Perform hand hygiene.
- Record the final VTBI and VI.
- Press and hold the INFO key to unlock the keypad.
- Press the NO/STOP button.
- Extend the arm clamp and remove the syringe from the pump.
- Press and hold down the ON/OFF button until the screen turns off.

- Remove the battery from the syringe pump.
- Perform hand hygiene and don PPE.
- Remove the extension set form the Saf-T-Intima™
- Remove the Saf-T-Intima™ catheter, clean the site and apply a dressing as required.
- Remove PPE and perform hand hygiene.
- Dispose of any unused medications as per protocol.
- Clean the syringe pump with detergent wipes. **It must not be cleaned with alcohol impregnated wipes.**

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