Northumbria Healthcare NHS Trust

Clinical Governance Policies and Procedures

MS26 Graseby Ambulatory Syringe Driver

Policy for all Trust Healthcare Workers

Approved by Trust Board	Version	Issue Date	Review Date	Contact Person
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1. Introduction

The monitoring of standards for electronic syringe drivers comes under the Medical Devices Agency which issues alerts and hazard warnings about problems and the actions to be taken. The commonest problem with subcutaneous drivers has been confusion over the Graseby MS16a which delivers its dose in 1 hour and the Graseby MS26 which delivers its dose in 24 hours. We have addressed these concerns by standardising such drivers to the MS26 throughout the hospital.

An MS26 syringe driver is an ambulatory battery operated infusion pump.
The MS26 has a green panel and is designed to deliver in mm/24 hours.

The syringe driver is used to deliver drugs at a predetermined rate via the subcutaneous route.

2. Accountability

2.1 Who can set up a driver?

Only those nurses who are competent and have attended regular updates on the use of subcutaneous syringe drivers should set one up.

2.2 Mandatory Training & Updates

It is a collective responsibility that the individual nurse and ward manager ensure staff have attended initial training and then annual updates on the use of subcutaneous ambulatory syringe drivers.

There is a resource pack with every policy which contains information on drugs suitable for administration in this way and may be used for teaching purposes.

3. Indications for Use

Should only be used as indicated in clinical symptom.

For example:

- When the oral/rectal route is not suitable i.e. vomiting, dysphagia, severe weakness, decreased conscious level, rectal tumour, obstruction, constipation/diarrhoea or patients object to suppositories.
- (Rarely) malabsorption.

4. Aims of Use

The aims are as follows:

- Continuous symptom control due to constant drug plasma levels.
- Good symptom control using minimal dose infusion.

- ♦ Increased patient comfort - 4 hourly injections no longer necessary.

- ♦ Maintain patient's level of mobility and independence.

5. Equipment Required

The equipment needed will be as follows:

- Graseby Ms26 syringe pump and 9 volt battery.
- Drug prescription & pump chart.
- Cannula - neo delta ven 24g (order no: del- 1181)
- Subcutaneous infusion line – microbore driver set 100cm + needle-free injection site (order no: wemb100ys).
- Tape to secure line (i.e. Micropore).
- Tegaderm (ensure no allergy).
- Syringe : luer-lock bd plastipak (10 ml or 20 ml)
- Drug label. (own supply on ward)
- Prescribed drugs (from wards own supply).
- Alcohol wipe
- Graseby measuring tool

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All the equipment apart from labels, sterets and prescribed drugs will be supplied in the toolboxes stored in the Palliative Care Secretary's office (Administration Corridor, C/O Anaesthetics) – See section 10.8 regarding procedure for obtaining and returning the syringe driver.

North Tyneside

Each ward should have their own supply.

Hexham

6. Procedures

6.1 Procedure for Setting up the Infusion

- Explanation and consent from the patient.
- Wash hands.
- Draw up the prescribed drugs and complete the drug label (checking drug concentrations against pharmacy recommendations).
- Measure the volume in the syringe in millimetres against the scale on the driver or use the Graseby measurement tool in the storage box (a paper clip or small screwdriver can be used as an alternative if the measuring tool not available but please ensure one is available) and set the rate: mm/24 hours. We would recommend no less than:

    - 8 ml of solution in total when using a 10 ml syringe.
    - 14 ml of solution in total when using a 20 ml syringe.
    - 17 ml of solution in total when using a 30 ml syringe.

- Attach the infusion line and prime it (when the line is initially primed the infusion will complete earlier than 24 hours, this should be noted on the pump chart in the comments section so everyone is aware).
- Insert the cannula into the skin and secure with tape (refer to section 6.2).
- Attach the infusion line to the cannula, loop the infusion line to reduce drag and secure with Tegaderm provided.
- Insert syringe into pump and secure with strap, ensuring the syringe plunger head is located in the syringe activator (if unsure refer to wallchart displayed on the ward or appropriate place where it is contained).
- Insert the battery and press the start button to activate the pump, ensure the Indicator light is flashing.
- Complete the prescription and pump chart.
- Patients may carry the pump in a pocket or the holster provided.

Special Note
- If for any reason the syringe driver needs to be stopped either set the rate to zero or remove the battery. There is no stop or off switch.
- The driver will automatically switch off when the syringe has been emptied and an alarm will sound for at least 10 seconds.

6.2 Procedure for Siting a Subcutaneous Infusion

- Discuss the site to be used with the patient and/or carer.
- Check the chosen site for any contraindications (refer to 6.3).
- Wash hands.
- Prepare the site to be used, removing any hair, if necessary (shaving or clipping).
- Swab the area with an alcohol wipe for 30 seconds and allow to dry.
- Pinch the skin firmly, warn the patient that you are about to insert the cannula, then insert at an angle of 45 degrees.
- Remove the introducer, ensuring no blood is seen (if there is then the procedure should be abandoned and changed to a suitable site)
- Secure the cannula with tape i.e. Micropore.
- Attach the primed infusion line, securing a loop of line with tape to minimise drag on the insertion site.
- Cover the whole site with the Tegaderm dressing provided.
  Dispose of used materials and sharps according to hospital policy.

6.3 Skin Site

Skin Site Selection for Indwelling Cannula

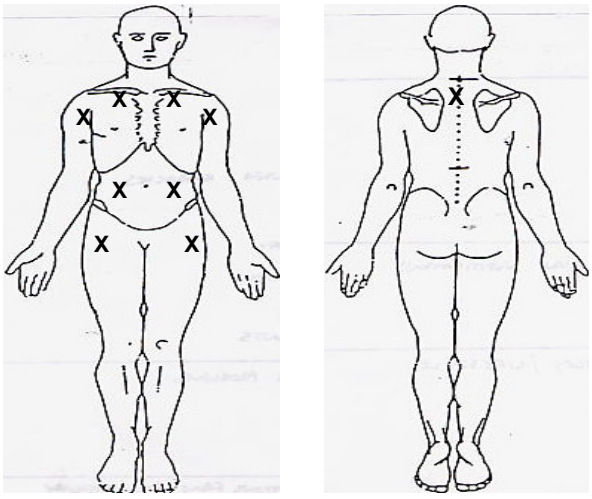
⇒ Do not administer within 5cm of scar tissue, umbilicus, bruise or birthmark.
⇒ Do not inject into oedematous or irradiated area.
⇒ Do not inject into inflamed tissue.
⇒ Check the patient has no coagulation problems (see section 8).

Care of Skin Site

Make sure site of infusion is written on the pump chart provided.
Observe infusion site at every drugs round for signs of redness, inflammation, leakage or skin reaction. If any abnormality or problem noted the site and the whole infusion should be renewed.

6.4 Site Selection

Body map to show acceptable sites for cannula insertion.



(1) ANTERIOR CHEST WALL.

(2) ANTERIOR ABDOMINAL WALL.

(3) ANTERIOR ASPECT OF THIGHS.

(4) ANTERIOR ASPECT OF UPPER ARMS.

7.0 Reducing the Risks of Complications

7.1 Potential Infiltration of Tissues / Infection of Site.

- Ensure no allergies exist e.g. drugs, tapes, dressings.
- Rotate the sites of insertion. Ensuring new sites are 3-5cm from previous sites in same region.
- Ensure all drugs which are to be mixed are compatible with each other (see drug information contained in the appendices consult the palliative care team or pharmacy).
- Be aware that certain drugs can be irritant to the skin – i.e Levomepromazine/Cyclizine and may need to be further diluted in syringe driver. Some drugs are not appropriate via subcutaneous route at all. If there is any doubt please contact Pharmacy or the appropriate Palliative Care Team. It is advisable not to use more than two drugs in one infusion and always use the maximum amount of diluent.
- Ensure that the cannula and line are secured to reduce drag (refer to section 6.2)
- Check the site within one hour of insertion, then at each subsequent medicine round to ensure any skin reaction or crystallisation is detected at the earliest opportunity and record.
- Change the whole infusion and site should this occur.

7.2 Potential Incorrect Delivery

- Always check prescription as per hospital policy. Ensure you are certain that the prescription is correct and if unsure clarify with the Palliative Care Team or Pharmacy.
- Measure the volume of the syringe before priming the infusion line (different makes of syringe will measure different lengths) and each change of syringe. Always ensure the agreed standardised luer lock syringe is used.
- Ensure the rate of the driver is set correctly (refer to section 6.1).
- Check the driver for the volume infused at the set times of medicine rounds ensuring you document the findings on the approved infusion chart.
- If the volume infused does not correspond with what it should be use troubleshooting checklist on the ward to ascertain cause (see appendix)
- If no reason can be obtained then change both driver and line as per procedure and report the problem – according to local site.

NB. It should be remembered that the syringe drivers are not tamperproof.

7.3 Potential Adverse Drug Reactions

Nurses and medical staff should be aware of the potential side effects of the medication being administered.

Any adverse effects of the medication should be noted within the nursing documentation and the doctors informed. The infusion should be discontinued and advice sought from Pharmacy or the Palliative Care Team during working hours.

8. Coagulation Problems

For patients within the last 24 – 48 hours of life who have coagulation problems there should be no barrier to insertion of a subcutaneous cannula and subsequent use of MS26 syringe driver.

For haematology patients please contact and discuss the use of the Graseby syringe driver with the consultant haematologist, seeking consent prior to commencement.

9. Uncontrolled Symptoms

9.1 If the patient's symptoms appear uncontrolled, yet the infusion is functioning correctly, a review of medication is required and/or advice from the palliative care team.

9.2 Policy Regarding Use of Additional "Top Up" Medication for Symptom Management

- The "Top up" medication should be prescribed on the "as required" section of the patients drug kardex. When a syringe driver is first commenced and symptoms are not completely controlled, then a bolus stat dose of prescribed medication should be administered. It should be remembered that it will take an infusion (set to run over 24

hours), at least 4 hours to reach an effective plasma level which will give adequate symptom management.

- The boost facility on the syringe driver should not be used to give additional medication for relief of uncontrolled symptoms; it is completely ineffective for this purpose.
- When giving extra medication to a patient who has an MS26 syringe driver running with a cannula and line attached, the procedure is to give a bolus injection via the entry portal on the subcutaneous line.

- WASH HANDS IN THE APPROPRIATE MANNER.

- DRAW UP THE REQUIRED BOLUS OF MEDICATION.

- WIPE THE PORTAL SITE WITH A STERET AND LEAVE A FEW MOMENTS TO DRY. THEN SCREW ON LUER LOCK SYRINGE AND ADMINISTER DRUG (NO NEEDLE IS REQUIRED).

- FLUSH THE PORTAL SITE WITH 0.5mls WATER PRIOR AND AFTER.

- DISCARD SHARPS AS PER POLICY.

10. Additional Information about the MS26 Syringe Driver.

10.1 Batteries

Always use a 9v alkaline battery. A fresh battery will last for 50 complete infusions. Remove the battery when the syringe driver is not in continuous use. Correct insertion of the battery is confirmed by an alarm which sounds for several seconds.

10.2 Syringes

Use only disposable luer-lock syringes. The following syringe sizes can be used.

* 2ml.
* 5ml.
* 10ml (8-10ml usable volume).
* 20ml (16-20ml usable volume).
* 30/35ml (22-28ml usable volume).

The usable volume in the larger sizes depends on the syringe make. The majority of infusions will go into a 10ml syringe.

10.3 Indicator Light

This light confirms that there should be sufficient power in the battery to complete the infusion. If the light stops flashing whilst the syringe driver is running then the battery should be replaced immediately to complete the infusion.

10.4 Boost Facility

It is not recommended.

10.5 Cleaning Procedure

Before cleaning ensure the battery is removed. The manufacturers instructions recommend that the outside surfaces can be cleaned with a soft cloth either dampened with a solution of mild detergent or disinfectant water.

The threads of the screw the actuator moves along can be cleaned with a small stiff bristled brush (a toothbrush is ideal).

On the recommendation of the Infection Control Team it has been suggested that under section 5 of the Infection Control Policy "Summary of preferred methods of cleaning" although not specifically mentioning Graseby ambulatory syringe pumps they should be treated under electrical equipment; and wipe with 70% alcohol. If soiled remove with a damp cloth prior to using alcohol.

*****Alcohol may damage some of the plastic parts so please be careful when applying this.

10.6 Servicing Procedure

Graseby recommend the servicing of their syringe drivers on an annual basis by the medical electronics department to check for wear and to update units in response to hazard warning and safety bulletins (SIMS GRASEBY 1998).

Care should still be taken on dose modification calculations and the general use of such drivers, reporting when necessary a faulty driver to the Electronics Department and to the Palliative Care Team (Wansbeck site only).

A trouble-shooting chart should be visible on all wards and should be followed for suspected problems (see appendix). If problems continue this should be reported to the Electronics Department and the Graseby MS26 syringe driver serviced.

10.7 Starting the Syringe Driver

Insert the battery and wait for the alarm. Press and hold down the start/boost button. The motor will run for several seconds and then stop. Release the button. The syringe driver is now running. The indicator light will now be flashing. DO NOT proceed if the syringe driver fails any of these tests. Refer to troubleshooting chart or palliative care team.

10.8 Procedure for Obtaining and Returning the Syringe Driver (pertinent to the Wansbeck site only)

<u>Collection Guidelines</u>

The syringe drivers will be stored with the Palliative Care Team Secretary Monday to Friday 9 a.m. until 5 p.m. and are contained in their own box with a supply of syringes, lines and cannulas. If a syringe driver is required for Palliative Care patients then it should be collected from this source and the individual nurse should sign the accountability sheet, stating the ward, the patient's name, the date the syringe driver was taken, along with the serial number of the syringe driver/tool box

<u>After 5 p.m, Weekends & Bank Holidays</u>

Three to four syringe drivers will be stored on ward 2 – please remember to sign the accountability sheet in the same manner as all other times. (Please ensure ward staff

collect the syringe drivers and not porters who are unaware of the syringe driver policy and may not realise the procedure for obtaining one).

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Return Guidelines

Once the syringe driver is no longer required, then it should be returned to the Palliative Care Team office. The accountability sheet MUST be signed and dated to show the return of the syringe driver.
It is very important that a syringe driver which is no longer in use be returned as soon as possible to the palliative care team (within 24 hours) (and out of hours to Ward 2) . This ensures availability for other patients.
If a patient is transferred from your ward with a syringe driver running please inform the palliative care team so a note can be placed on the accountability sheet of the change in location.

Ward Responsibilities

The returned syringe driver box should contain:
- MS26 Graseby syringe driver.
- Two 9v alkaline batteries.
- Roll of adhesive tape (i.e. Micropore).
- Supply of five Tegaderm dressings.
- Supply of five drug labels.
- Resource booklets on using the syringe driver.
- Graseby measuring tool.
- Any unused syringes and cannulae.

10.9 Loan of Syringe Driver out of Hospital

Wansbeck

Occasionally a patient may need to be discharged from the hospital with a syringe driver in situ to allow continued symptom management. In these instances the community nursing team should be fully informed of this and asked to make provision for it to be replaced and returned within 48 hours.
The discharging ward will continue to have responsibility for the equipment until it is returned. The toolbox should remain on the discharging ward and not be sent home with the patient. Community staff should be told to return the syringe driver to the discharging ward and then the ward should return the syringe driver and tool box to the central store (as above). The same procedure should take place if a patient is transferred to another hospital.

North Tyneside & Hexham

Please ensure that wherever the patient is transferred or discharged to, the staff are aware that the syringe driver is to be returned to the discharging ward as soon as possible. And if not – a member of staff from that ward takes responsibility for chasing this up!

10.10 What to do if a Patient has a Fentanyl Patch?

Escalating Pain

If a patch is in situ and the patient is experiencing escalating pain a syringe driver can be used to obtain more effective control. The Fentanyl patch should not be removed and can continue to be prescribed.

Contact the Palliative Care Team for advice re choice of analgesia and dosages.

At the End of Life

There may not be a need for a syringe driver at the end of life for pain control if a Fentanyl patch is in situ. However, the subcutaneous route may be needed for other symptoms. Therefore, pain should be managed accordingly with the Fentanyl patch remaining in situ, and changed every 72 hours as prescribed.

Subcutaneous breakthrough analgesia should always be available and the principles for determining the dose calculation are as follows:

i.e. $\frac{\text{Fentanyl patch}}{5}$ = mg of Diamorphine required.

e.g. $\frac{\text{Fentanyl 25 mcg}}{5}$ = 5 mg Diamorphine

For all other problems or difficulties please contact the relevant Palliative Care Team.

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Appendix (attached)

1. Syringe Driver Medication in Palliative Care
2. Trouble Shooting Chart
3. Syringe Pump Infusion Chart
4. Graseby Information Leaflet
5. Syringe Driver Guidelines Leaflet
6. Resource Pack – Medication for the terminally ill leaflet
7. Resource Pack

MS26 Syringe Driver Policy

Please make sure you read the above policy carefully then sign below.

Name	Department	Signature