

Using a 'Graseby MS26' Syringe Driver for Continuous Subcutaneous Infusions (CSCI) Protocol

Who Division 1 Registered Nursing staff for the purposes of administering and monitoring of infusion

Division 2 Nursing staff for the purposes of monitoring of infusion

Medical staff to assist with appropriate prescribing of syringe driver medications

Expected Outcomes That the continuous infusion of medication via a subcutaneous route, using a portable battery operated pump, will achieve good symptom control for patients.

Precautions



CSCI may be used in Southern Health in managing medication delivery in the following areas:

- Palliative Care
- Type 1 diabetes
- Parkinson's Disease for the administration of Apomorphine

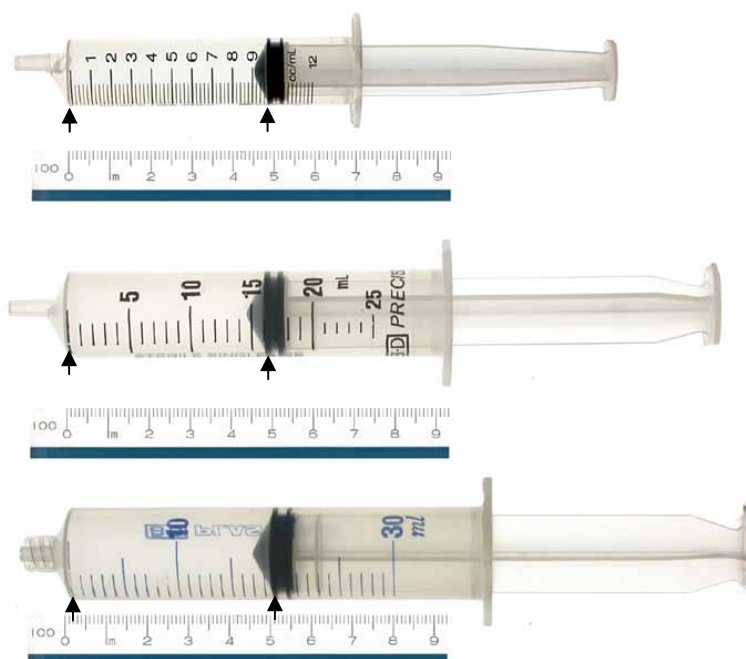
Why

- To administer medication in the setting of:
 - Persistent nausea and vomiting
 - Obstruction of the digestive tract or impaired absorption
 - Altered level of consciousness as experienced in the terminal phase
 - Uncontrolled pain
 - Ineffective oral medication
- To ensure optimum symptom control and reduce side effects due to fluctuating drug levels
- To avoid intramuscular/intravenous injections
- Maintain patients/consumer independence via an ambulatory device

- Equipment**
- Syringe Driver - 'Graseby MS26'
 - 9 volt battery
 - Appropriate syringe (10ml, 20ml, 30ml)
 - 25 gauge butterfly needle or BD Saf-T-Intima™ if available
 - Alcohol swab
 - Op-site dressing
 - Extension tubing
 - Medication as ordered
 - Appropriate diluent (normal saline or water for injection)
 - Medication Order form MR L18
 - Pain Assessment chart MR L19
 - Ruler

Preparation of the Syringe

- Step 1** Calculate the total volume of the medication ordered and then select the appropriate syringe size. (10mls -30mls syringes are acceptable).
- Step 2** Draw up the required medication and add the appropriate diluent until the length of fluid in the syringe measures 50mm.





The 'Graseby MS26' syringe driver utilises a delivery mode of millimeters per 24 hours. This allows the usage of all brands of syringes. To simplify management, a fluid length of 50mm for all infusions is essential.

As illustrated above, the volume in millilitres (ml) will depend upon the volume of drug needing to be delivered and the syringe size, but the total length of fluid must always measure 50 millimetres (50 mm).



Within Southern Health there are two areas where the standardization of 50mm is not used. These are McCulloch House and Ward 2 Moorabbin Oncology Unit. Staff working on these units should familiarise themselves with ward based practice.

Step 4 Connect the syringe and prime the extension tubing.

Volume will be lost in priming the line therefore the syringe will finish 2-4 hours earlier in the first 24 hour period.

Step 5 Label syringe, ensuring volume markings on the syringe are visible.

Preparation of a New Infusion

Step 1 Insert battery making sure that the positive terminal is placed appropriately in the compartment.



Battery should be dated and discarded after two months.

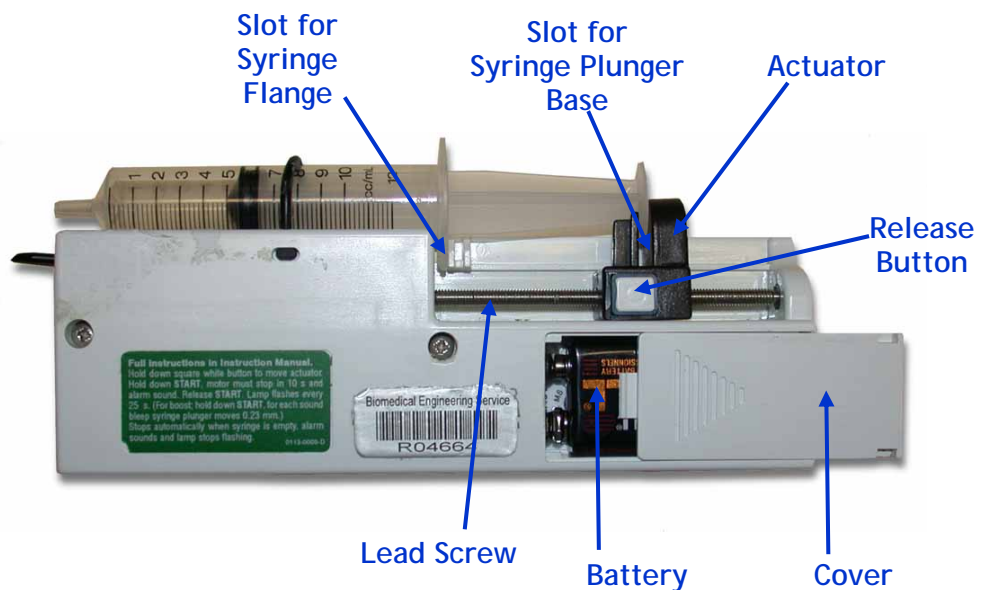
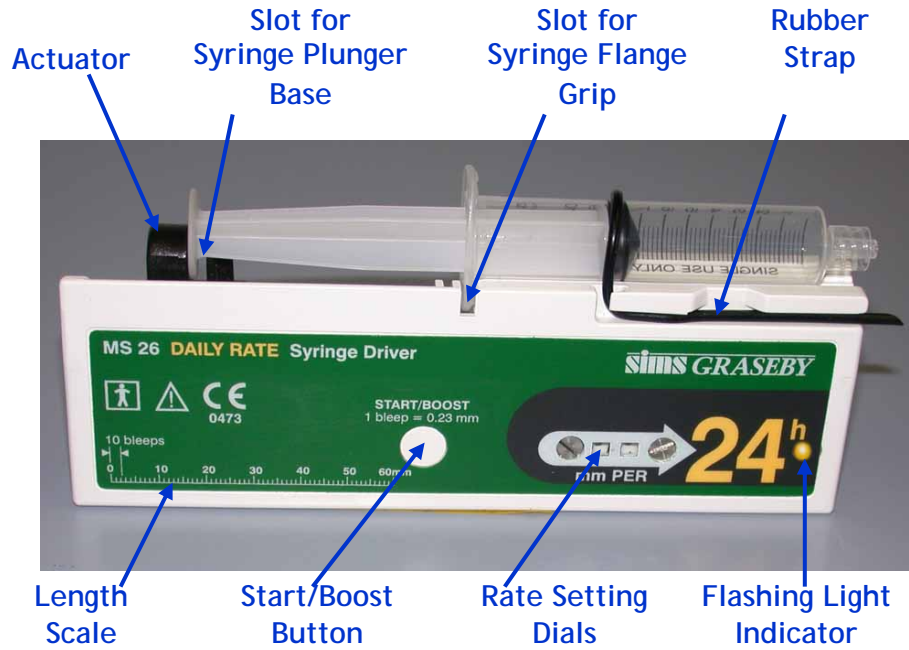
Step 2 An audible alarm will be heard. This can be silenced by pressing the Start-Boost button. This will also commence the infusion. A blinking light indicates that the battery is functional.

Step 3 Ensure the rate is set at 50mm. The plunger will be advanced 50mm per 24 hours.



Loading and Securing Syringe into the 'Graseby MS26' Syringe Driver

- Step 1** Place the syringe in the shallow v-shaped recess on the top of the syringe driver with the flange inserted into the syringe slot (as shown in photo below).
- Step 2** Press release button on the actuator and slide it along the lead screw until it is pressing firmly against the syringe plunger. The actuator can be moved backwards and forwards by pressing the release button.
- Step 3** Place the rubber strap over the syringe to secure its position.



Insertion of 25 Gauge Subcutaneous Needle or Saf-T-Intima™

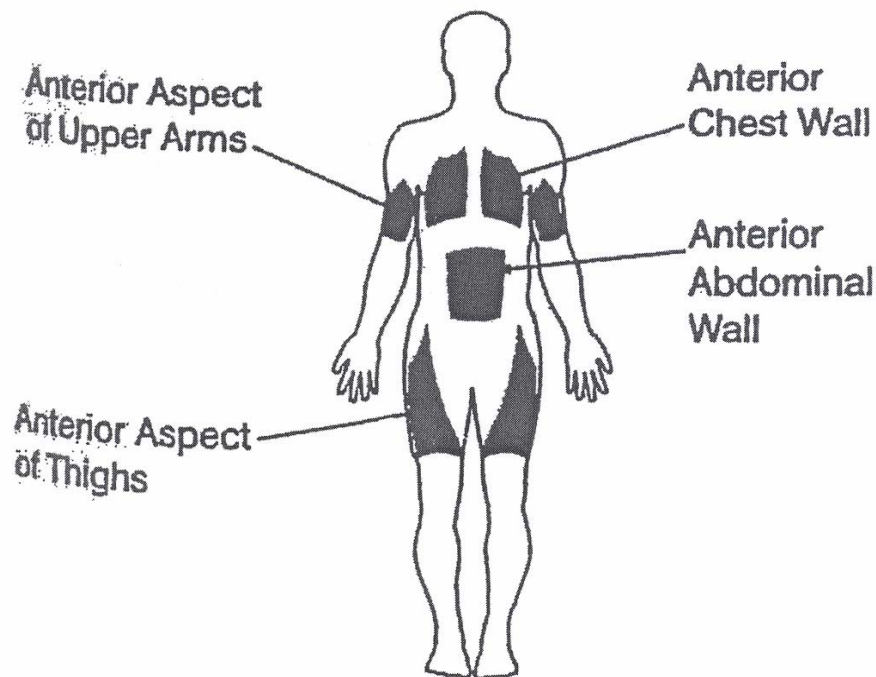
Step 1 Explain to the patient what you plan to do and gain verbal consent.

Step 2 Choose a suitable site. Preferred areas are chest wall, upper arms, upper abdominal wall and anterior aspect of thighs as shown below. Upper back areas can be used if patient is confused or agitated.^{1, 2}



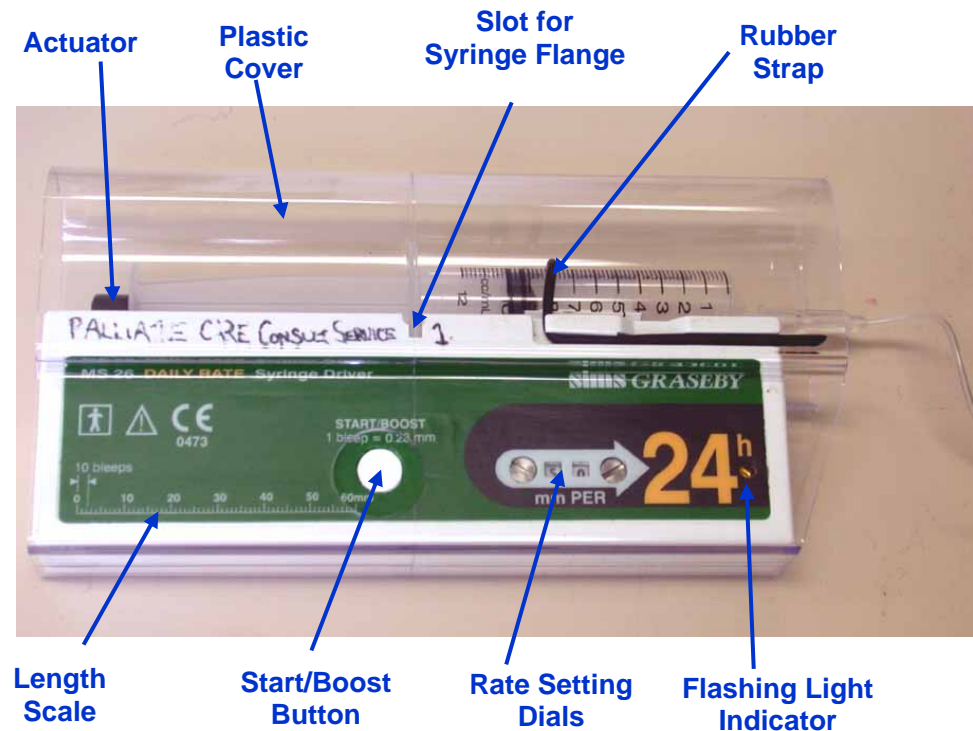
Avoid oedematous areas, skin creases, scars or bony prominences. Also avoid lower abdominal areas due to higher risk of infection.^{1, 2}

- Step 3** Clean site with alcohol swab.
- Step 4** Insert needle at 30-45 degree angle and secure with op-site dressing.
- Step 5** Attach extension tubing and syringe to needle insitu. If a clamp is present ensure that it has been opened.



Management of a Syringe Driver

- Step 1** Start the syringe driver by pressing the Start-Boost button for one (1) second until a whirring noise is heard. This needs to be done with every new syringe or if syringe has been disconnected.
- Step 2** Test that the syringe is working by observing the light flashing every 25 seconds and that there is an intermittent whirring noise of driver.
- Step 3** Place inside plastic cover and carry bag.



Monitoring of a Continuous Subcutaneous Infusion



The 4 hourly checks that should be documented on MR L19 include:

- Assessment of the patient's pain/symptom level and side effect profile. Please refer to the multilingual pain assessment charts located in the pain folder kept on each ward.
- Chart the remaining fluid length/volume and estimate the remaining infusion time to ensure syringe driver is running accurately. **In an 8 hour shift the syringe should have delivered approximately 1/3 of the total volume.**
- Check the insertion site; butterfly should be changed if site is inflamed/tender.
- Ensure the syringe is inserted correctly with no clamps or kinks in the tubing.
- Continue to monitor the patient's pain/symptom level even after the syringe driver is discontinued in order to assess the effectiveness of pain control during transition to an oral regimen.



See examples of MR L18 'Medication Order' form and MR L19 'Pain Assessment' chart completed correctly in Appendix 1.

Special Notes

Up to 3 medications can be delivered simultaneously by infusion. If clouding or precipitation are observed, then discontinue infusion and notify Palliative Care Service.^{2, 3}

The syringe driver is not waterproof and should be disconnected when patient/consumer is showering.

Do not use bolus button to give breakthrough doses. A second butterfly should be inserted to give breakthrough medication if required and then flushed with approximately 0.25mls of air. If Saf-T-Intima™ is used breakthrough doses can be given through the 'Y' port.

When syringe driver is no longer in use, the device and the casing should be wiped over with mild detergent and water and returned to the Palliative Care Consult Service.

Contacts

For assistance contact the Palliative Care Nurse Consultant on:

- Clayton pager 346
- Moorabbin pager 805
- Dandenong pager 7210

Or after hours the staff in the following units are a good resource

- McCulloch House ext 45320/45330
- Ward 2 Moorabbin ext 88373
- West 4 Dandenong ext 49053



If an adverse event (actual or 'near miss') is associated with using a MS26 syringe driver for continuous subcutaneous infusions, document details in the health record and complete an incident report.



1. Gomez, Y (2000) *The Use of Syringe Drivers in Palliative Care*. The Australian Nursing Journal, Vol 8, No. 2 pgs 23-35.
 2. Cunningham, D. (1995) *Patients in the Driving Seat ... Syringe Drivers*. Nursing Times, 91(51): 55-6.
 3. Peter Mac Pharmacy Bulletin Drug compatibilities in Syringes, February 1997, PMCI.
- Sims Graseby (1998), MS 16A and MS 26 Instruction Manual. Sims Graseby Limited, England.

SH Policy	Patient Care	ACHS	Continuum of Care
Reviewer	Palliative Care Nurse Consultancy	Last review date	May 2004
Authoriser	Executive Quality and Risk	Next review date	May 2007

This hard copy might not be the latest version of this document. Please see the Southern Health Policy and Protocol Intranet site for current policies, protocols and guidelines.

Appendix A: Forms

Southern Health

Dandenong Hospital
 Hampton Rehabilitation Hospital
 Kingston Centre
 Jessie McPherson

Monash Medical Centre - Clayton
 Monash Medical Centre - Moorabbin
 Community Health Services
 Cranbourne Integrated Care Centre

Unit Record Number: _____

Surname _____

Given Name _____

D.O.B. _____ Age _____ Sex _____

Medical Officer _____

Affix Patient Identification Label

RECORD

- * Drugs in syringe at 0800am each day plus any syringe change
- * 4 hourly pain score, routine syringe driver checks, side effects and respiratory rates (RR)
- * Breakthrough analgesia or other action

REPORT → RMO

Drowsiness >
Respiratory Rate <

PAIN SCORE

0 1 2 3 4 5 6 7 8 9 10

Nil Mild Moderate Worst Possible

Check needle site

Symptoms

N - Nausea
V - Vomiting
C - Confusion

D - Drowsiness (sedation score)

0 - None (patient alert)
1 - Mild (occasionally drowsy, easy to rouse)
2 - Moderate (frequently drowsy, easy to rouse)
3 - Severe (sornolent, difficult to rouse)
4 - Unconscious (unrousable)
S - Asleep

Date	Time	Patient Pain Score*										Drugs and Dose in Syringe	Syringe Driver Documentation Vol ml remaining	Rate set mmI	Breakthrough analgesia			Symptoms*				RR	Nurses comment / action and signature		
		0	1	2	3	4	5	6	7	8	9				10	Drug	Dose	Route	P	A	N			V	C
19/8	10:00										✓	Morphine 30mg Maxolon 40mg	13mls	50mg 2uhri	Morphine Maxolon	10mg	SC	P	A					024	PT clo severe or pain to Dabdo
	11:00	✓																A	A					118	Pain severe
	14:00	✓											11.5		Morphine	5mg	SC	A	A					018	P having Dabdo pain again
	15:00										✓							A	A					026	
	15:40										✓							A	A					016	Site inflamed needle changed
	18:00										✓		10					A	A					016	
	23:00	✓											8.0					A	A					016	
29/8	07:00												6.2					A	A					514	P sleeping
	06:00										✓		3.0					A	A					016	
	10:00										✓	Morphine 30mg Maxolon 40mg	0/14				A	A					020		
	14:00	✓											11					A	A					016	

NURSING PAIN ASSESSMENT AND INTERVENTION CHART MR L19

Southern Health

- | | |
|--|--|
| <input type="checkbox"/> Dandenong Hospital | <input type="checkbox"/> Monash Medical Centre - Clayton |
| <input type="checkbox"/> Hampton Rehabilitation Hospital | <input type="checkbox"/> Monash Medical Centre - Moorabbin |
| <input type="checkbox"/> Kingston Centre | <input type="checkbox"/> Community Health Services |
| <input type="checkbox"/> Jessie McPherson | <input type="checkbox"/> Cranbourne Integrated Care Centre |

Unit Record Number: _____

Surname _____

Given Name _____

D.O.B. _____ Age _____ Sex _____

Medical Officer _____

Affix Patient Identification Label

DOCTOR'S DRUG ORDERS:

Pump Type: *MS 26 Graseby Syringe Driver*
 Route: *SC*
 Diluent: *As specified*

Drug (Approved Name)	24 Hr Dose	Doctor's Signature	Start Date	Cease Date	Dilute to	Rate Setting (mm)
<i>Morphine</i>	<i>30mg</i>	<i>[Signature]</i>	<i>19/8/10</i>		<i>50 mm</i>	<i>50mm per 24hrs</i>
<i>Maxolon</i>	<i>40mg</i>	<i>[Signature]</i>	<i>19/8/10</i>			

NURSING ADMINISTRATION RECORDS:

- * Patient and syringe driver to be observed and recorded 4 hourly
- * See drug chart for breakthrough and orders

Date	Time	Drugs and Dose in Syringe	Volume in Syringe	Rate Set	RN Signature
<i>19/8/10</i>	<i>10</i>	<i>Morphine 30mg Maxolon 40mg</i>	<i>14mls</i>	<i>50 ml</i>	<i>2 signatures</i>
<i>20/8/10</i>	<i>10</i>	<i>Morphine 30mg Maxolon 40mg</i>	<i>14mls</i>	<i>50 ml</i>	<i>2 signatures</i>

SYRINGE DRIVER MEDICATION CHART FOR SINGLE OR MULTIPLE DRUGS MR L18