PROCEDURE FOR THE USE OF McKINLEY T34 SYRINGE DRIVER TO DELIVER A CONTINUOUS SUBCUTANEOUS INFUSION IN PALLIATIVE CARE FOR ADULTS

Policy authors | Palliative Care Team (Kate Hall)
Accountable Executive Lead | Chief Nurse
Approving body | Patient Safety Committee, Drugs and Therapeutic Committee
Policy reference | SWBH/Pt Care/021

ESSENTIAL READING FOR THE FOLLOWING STAFF GROUPS:
1 – Clinical Staff, all Registered Nurses

STAFF GROUPS WHICH SHOULD BE AWARE OF THE POLICY FOR REFERENCE PURPOSES:
1 – Medical Staff

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<tbody>
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</tr>
</tbody>
</table>
Procedure for the use of Mckinley T34 syringe driver to deliver a Continuous subcutaneous infusion in palliative care for adults

KEY POINTS

1. Initial and subsequent setting up of the syringe driver must be undertaken by Registered Nurses competent in the use of the McKinley T34 ambulatory syringe driver.

2. If the prescription for a patient is changed the registered nurse must prepare a new syringe. Never add additional medicine(s) to the syringe after an infusion has commenced.

3. A lock box must be used at all times.

4. A syringe driver monitoring form must be completed whenever a syringe driver infusion is commenced.

5. To avoid an accidental bolus dose of drug, the infusion line must be disconnected from the syringe before the syringe is removed from the syringe driver.
## Contents page

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>2.0</td>
<td>Aim</td>
<td>4</td>
</tr>
<tr>
<td>3.0</td>
<td>Objectives</td>
<td>4</td>
</tr>
<tr>
<td>4.0</td>
<td>Scope</td>
<td>4</td>
</tr>
<tr>
<td>5.0</td>
<td>Definitions / Abbreviations</td>
<td>4</td>
</tr>
<tr>
<td>6.0</td>
<td>Roles &amp; Responsibilities</td>
<td>4</td>
</tr>
<tr>
<td>7.0</td>
<td>Indications for Using a McKinley T34 Syringe Driver</td>
<td>5</td>
</tr>
<tr>
<td>8.0</td>
<td>Information For Patients And Carers</td>
<td>6</td>
</tr>
<tr>
<td>9.0</td>
<td>Prescribing and Administering Drugs by Subcutaneous Infusion</td>
<td>6</td>
</tr>
<tr>
<td>10.0</td>
<td>Drug Stability and Compatibility</td>
<td>7</td>
</tr>
<tr>
<td>11.0</td>
<td>Choice of Site for using Syringe Driver</td>
<td>7</td>
</tr>
<tr>
<td>12.0</td>
<td>Care Of Site</td>
<td>7</td>
</tr>
<tr>
<td>13.0</td>
<td>Setting up the McKinley T34 syringe pump</td>
<td>8</td>
</tr>
<tr>
<td>14.0</td>
<td>Monitoring the Infusion</td>
<td>13</td>
</tr>
<tr>
<td>15.0</td>
<td>Discontinuing a syringe driver</td>
<td>15</td>
</tr>
<tr>
<td>16.0</td>
<td>When a patient dies</td>
<td>15</td>
</tr>
<tr>
<td>17.0</td>
<td>Transfer of patients</td>
<td>15</td>
</tr>
<tr>
<td>18.0</td>
<td>Maintenance</td>
<td>16</td>
</tr>
<tr>
<td>19.0</td>
<td>Infection Control</td>
<td>16</td>
</tr>
<tr>
<td>20.0</td>
<td>Risk Management</td>
<td>16</td>
</tr>
<tr>
<td>21.0</td>
<td>Trouble Shooting</td>
<td>17</td>
</tr>
<tr>
<td>22.0</td>
<td>Training &amp; Awareness</td>
<td>20</td>
</tr>
<tr>
<td>23.0</td>
<td>Equality &amp; Diversity</td>
<td>20</td>
</tr>
<tr>
<td>24.0</td>
<td>Review</td>
<td>20</td>
</tr>
<tr>
<td>25.0</td>
<td>Further Enquires</td>
<td>20</td>
</tr>
<tr>
<td>26.0</td>
<td>References</td>
<td>20</td>
</tr>
<tr>
<td>27.0</td>
<td>Bibliography</td>
<td>21</td>
</tr>
<tr>
<td>28.0</td>
<td>Useful links</td>
<td>21</td>
</tr>
<tr>
<td>29.0</td>
<td>Appendices</td>
<td>22</td>
</tr>
<tr>
<td>Appendix 1</td>
<td>Syringe Driver – Information for patients</td>
<td>22</td>
</tr>
<tr>
<td>Appendix 2</td>
<td>Prescription and monitoring form for syringe drivers</td>
<td>26</td>
</tr>
<tr>
<td>Appendix 3</td>
<td>Instruction for use of syringe driver in community (Sandwell)</td>
<td>28</td>
</tr>
<tr>
<td>Appendix 4</td>
<td>Self assessment / Competencies</td>
<td>30</td>
</tr>
<tr>
<td>Appendix 5</td>
<td>Collection of controlled drugs from a community pharmacy</td>
<td>33</td>
</tr>
<tr>
<td>Appendix 6</td>
<td>Administration Record – Community</td>
<td>34</td>
</tr>
<tr>
<td>Appendix 7</td>
<td>Standard Operating Procedure – Disposal of drugs</td>
<td>36</td>
</tr>
<tr>
<td>Appendix 8</td>
<td>T34 McKinley Community Observation Chart</td>
<td>38</td>
</tr>
<tr>
<td>Appendix 9</td>
<td>CME Operating Procedure</td>
<td>39</td>
</tr>
</tbody>
</table>
1.0 INTRODUCTION

The McKinley T34 syringe driver can be used for patients who:

- Require control of their symptoms, with an aim to maintaining their quality of life, and can be considered to be used in end of life care.
- Require symptom control in acute illness or disease, which is not deemed as being end of life.

This procedure has been produced to promote the safe and effective subcutaneous administration of medicine(s) using the McKinley T34 syringe driver for adult patients with palliative care needs.

All staff using the McKinley T34 syringe driver must be familiar with the Controlled Drug Policy (Pt Care /06) and the Medicine management Policy (Pt Care 05).

2.0 OTHER POLICIES TO WHICH THIS POLICY RELATES

Controlled Drug Policy (Pt Care/06)
Medicines management Policy (Pt Care/05)
Medical Devices, Policy for the management (org/065)
Medical Devices, Policy for the safe use (org/066)
Incident Reporting Policy (org/050)
West Midlands Palliative Care Physicians (2012)
Guidelines for the use of drugs in symptom control
IFC Policy on the Decontamination of Equipment (SWBH/COI/029)

3.0 OBJECTIVES

- To define the indications for use of continuous subcutaneous administration of medicine via a McKinley T34 syringe driver.
- To determine knowledge and skills criteria for the preparation, administration of medicine, use of McKinley T34 syringe driver and patient monitoring.
- To define patient monitoring standards and documentation templates. For use in secondary and primary care settings.
- To outline action to take if continuous subcutaneous medication is given outside the dose or rate of that prescribed or there appears to be mechanical problems with the medical device (McKinley T34).
- To ensure that all registered nurses understand their role and responsibilities with regard to the management and disposal of controlled and other medications.
- To ensure safe clinical practice.

4.0 SCOPE

This policy is intended to support the safe use of the McKinley T34 syringe driver by all registered nurses and applies to all Trust staff in all locations including temporary employees, locums and agency staff.

5.0 DEFINITIONS / ABBREVIATIONS

McKINLEY T34 SYRINGE DRIVER  a portable battery operated device that is used to deliver a continuous subcutaneous
infusion of drug(s) over a predetermined time at a predetermined rate.

**REGISTERED NURSE**
any practitioner registered with the Nursing and Midwifery Council.

**NURSE**
a nurse or health care worker, trained in the checking and management of controlled drugs.

**MEDICINES**
Any drug(s) prescribed by a medical practitioner or non-medical prescriber for subcutaneous administration using a McKinley T34 syringe driver.

**SUBCUTANEOUS**
With a subcutaneous injection, a needle is inserted just under the skin at an angle of 45 degrees. A drug can then be delivered into the subcutaneous tissues.

6.0 ROLES AND RESPONSIBILITIES

Roles and Responsibilities of the Nurse using the McKinley T34 Syringe Driver

6.1 Initial and subsequent setting up of the syringe driver:

- Must only be undertaken by registered nurse(s) competent in using McKinley T34 syringe driver
- All practitioners who perform this procedure should be aware of the content of this policy.
- In addition all registered nurses have an individual responsibility to ensure that they are confident and competent in the knowledge and skills of practice in line with their scope of professional practice (NMC 1992) and Code of Professional Conduct (NMC 2008). They should inform their immediate line manager if they feel they are not competent and discuss their education and support needs.
- **SECONDARY CARE** Two registered nurses must be present when controlled drugs are prepared and administered.
- **PRIMARY CARE** Follow the current policies/practice in relation to the preparation and administration of controlled drugs.

6.2 The registered nurse must ensure that the McKinley T34 syringe driver has been properly maintained and calibrated (via the Trust equipment library)

7.0 INDICATIONS FOR USING THE MCKINLEY T34 SYRINGE DRIVER TO DELIVER A CONTINUOUS SUBCUTANEOUS INFUSION (CSCI)

A Continuous subcutaneous infusion (CSCI) using the McKinley T34 syringe driver can be considered for the administration of drug(s) that cannot be given orally or when other routes of administration are inappropriate, in the following situations:

- Persistent nausea and vomiting.
- Difficulty in swallowing (dysphagia).
- Poor alimentary absorption.
- Intestinal obstruction.
- Profound weakness/cachexia.
procedure for the use of mckinley T34 syringe driver to deliver a continuous subcutaneous infusion in palliative care for adults

- Comatose or moribund patient.
- Administration of drugs that can only be administered via the parenteral route.
- Erratic concordance with the oral route, in spite of in-depth support, in the context of severe symptoms.
- It should be noted that intractable pain is not in itself an indication for a continuous subcutaneous infusion. The oral route remains the preferred route to administer analgesics in the absence of one or several of the above indications.

N.B: Opioids administered via a syringe driver will not give better analgesia than those administered orally, unless there is a problem with enteral absorption.

7.1 Advantages and Disadvantages of Syringe Driver Use

Advantages in the use of the syringe driver:

- Avoids the necessity of intermittent injections.
- Provides patient with continuous unbroken administration of medication.
- Infusion timing is accurate.
- The device is convenient/unobtrusive/light to wear.
- Ambulant patients can move around freely.
- Patients/relatives can be taught to care for the syringe driver themselves if appropriate.
- Mixtures of drugs can be administered.

Disadvantages in the use of the syringe driver:

- The patient may become psychologically dependent upon the device.
- Need for trained nursing staff to administer medication on a daily basis.
- Inflammation/infection can occasionally occur at the needle site. This may interfere with drug absorption.

8.0 INFORMATION FOR PATIENTS AND CARERS

In order to alleviate fears and promote understanding the patient and carer/s should be provided with both verbal and written information to include the following information:

- Explanation and rationale for the use of the syringe driver.
- Explanation and demonstration of how it works.
- What action to take if the alarm sounds or it becomes disconnected.
- Information on care of the syringe driver (to include not getting it wet).
- Who to contact if help is needed. In primary care setting 24/7 contact numbers should be included.
- Information about drugs being administered.
- Patients consent to treatment via a syringe driver.
- What to do in case of suspected overdose.
- What to do if the syringe driver appears to have stopped working.

9.0 PRESCRIBING AND ADMINISTERING DRUGS BY SUBCUTANEOUS INFUSION

9.1 The choice of drug(s) should be consistent with that outlined in The West Midlands Palliative Care Physicians Guidelines Palliative Care for the use of drugs in symptom control (2012) (accessed via intranet and ward resource folder) and be based on a careful patient assessment.
9.2 A valid prescription or directive (in the community) authorising the administration of
drugs via a syringe driver should be written by the doctor or non-medical prescriber and
include the following information:

- The date when the infusion commenced.
- Patients name, address, date of birth and Hospital number PRIMARY CARE – GP
details & NHS Number
- Generic name and dose of each drug to be given over 24 hours
- Details of diluent e.g. water for injections
- Size of syringe to be used (20ml syringe)
- Any special instructions
- An appropriate dose of analgesic or other drug should be prescribed on an ‘as
required’ (prn) basis in anticipation of ‘breakthrough’ symptoms
- With uncontrolled symptoms a bolus dose of the prn/breakthrough medication can be
administered as a separate injection at the same time as the 24 hour infusion is
commenced as a loading dose to ensure symptoms are controlled sooner than
waiting for 24 hour infusion alone to reach peak plasma levels.

N.B. For opioids the breakthrough dose is usually equivalent to 1/6 of the total 24hrs
dose though a smaller dose may be used if it is found to be effective. Prescriber to
discontinue previous oral medication that will now be administered via the syringe
driver to prevent drug errors, unless there is a clear rationale for using oral
breakthrough medication.

10.0 DRUG STABILITY AND COMPATIBILITY

The selection of drugs used in the syringe driver is determined by:

- the patients’ symptoms.
- the suitability of drugs to be used for the subcutaneous route, and
- the compatibility of medications to be included.

Reference should be made to current guidance on drug stability and compatibility, which
can be found in the British National Formulary, the Palliative Care Formulary (PCF4) and
the West Midlands Palliative Care Physicians Guidelines (2012)
In order to reduce risk of incompatibility, it is recommended that no more than three
drugs should be mixed in the syringe driver where possible. Combinations of three drugs
should be checked with the British National Formulary, the Palliative Care Formulary
(PCF4) and the west midlands physicians palliative care guidelines for the Use of drugs
in symptom control (2012). Combinations of more than three drugs should be checked
with a specialist palliative care practitioner or pharmacist.
All drugs should be diluted with water for injection unless otherwise stated (Hirsch,
2002).

11.0 CHOICE OF SITE FOR USING SYRINGE DRIVER

11.1 Recommended sites include:

- Anterior chest wall (avoid if very cachexic)
- Lateral upper arms
- Anterior abdominal wall
- Anterior outer thigh
- Area over scapula
- Use patient’s preferred site if possible whilst considering the following points:
12.0 CARE OF SITE

The infusion site should only be renewed when there is evidence of inflammation (erythema or reddening) or poor absorption (a hard cutaneous swelling Faull 2005), do not inject into an already inflamed site. If sites break down rapidly always refer patient to the palliative care team. Sites can often be retained for longer with the following actions:

- Changing the diluent from water for injection to 0.9% sodium chloride if not contraindicated.
- Use an alternative cannula (e.g. Teflon, Vialon, Sof-set)
- Increase volume of diluent by changing to 30ml syringe
- Changing the site dressing (if this is the suspected irritant)

13.0 SETTING UP THE MCKINLEY T34 SYRINGE PUMP

The McKinley T34 pump has been designed to be used with 2ml to 50ml Luerlok syringes. At Sandwell and West Birmingham NHS Trust the procedure is to use 20ml or 30ml (BD Plastipak) luer lock syringes. Current recommendations are that in most cases a 20ml luer lock syringe is used. This is because a 20ml syringe affords appropriate drug dilution (thus reducing the risk of adverse drug reactions and incompatibility) whilst minimising the volume of fluid to be absorbed (Dickman et al 2005).

These can be filled to a maximum of:

- 18ml in a 20ml
- 22mls in a 30ml

*Remember if the prescription is changed, you must prepare a new syringe NEVER add an additional medicine to the syringe after the infusion has commenced.*

13.1 Equipment List

- Injection tray
- Syringe pump prescription/monitoring sheet/administration record – community [drug chart] (appendix 6)
- Prescribed medicines and diluent.
- Label
- McKinley T34 syringe pump
- Battery, PP3, 9V alkaline/lithium. A new battery will last for approximately 3-4 days dependant on use
- 20 or 30 ml luer lock BD Plastipak syringe
- 100cm administration device and extension set
- Butterfly needle
- Holster (if patient is mobile)
- Lockbox and key
- Transparent adhesive dressing.

Please contact Medical Engineering or Palliative Care team for any queries regarding the setting up of the pump.

13.2 Syringe Loading

**T34 Feature Recognition Syringe Loading**

1. **Barrel Clamp Arm & Sensor**
   - detects syringe size or width of barrel, secures syringe.

2. **Syringe Flange/Collar Sensor**
   - detects secure loading of syringe collar.

3. **Plunger Sensor**
   - detects secure loading of syringe plunger.

4. **Actuator**

**T34 Feature Recognition Keypad**

1. "INFO" key – access event log/set up (code protected)/battery status
IV. "NO/STOP" key – step back a screen/stops infusion.

V. "FF" (forward) key – moves actuator forward/purge facility.
VI. "BACK" key – moves actuator back.

VII. "ON/OFF" KEY – power on/off.

13.2 Preparing the McKinley T34 Syringe Pump

I. Install battery

Figure 3 Battery Compartment

II. Before placing the syringe onto the McKinley T34 Syringe Pump ensure the barrel clamp arm is down the press and hold the "ON/OFF‘ key until the "SELF TEST" screen appears.

III. The LCD display with show "Pre-loading" and the actuator will start to move. Wait until it stops moving and the syringe sensor detection screen (syringe graphic) appears.

Figure 4 Preloading Indication Display

**NOTE:** During Pre-Loading the actuator always returns to the start position of the last infusion programmed.

IV. If the actuator is not in the correct position to accommodate the syringe, leave the barrel clamp arm down and use the "FF" or "BACK" buttons on the keypad to move the actuator. Forward movement of the actuator is limited for safety; therefore repeated presses of the "FF" key may be required when moving the actuator forward. Backwards movement is not restricted.

V. Check the battery by pressing the "INFO" key repeatedly until the battery level appears on the screen and press "YES" to confirm. Verify there is sufficient battery power for the programme. (Discard the battery if there is less than 40% power remaining. Replace with a new battery to ensure the syringe pump will deliver for 24 hours.)
13.3 **Fitting the Syringe to the McKinley T34 Syringe Pump**

Ensure the line is not connected to the patient at this point to avoid accidental bolus delivery of drug.

I. Lift the barrel clamp arm.

II. Seat the filled syringe collar/flange and plunger so the back of the collar/flange sits against the back of the central slot (ensure correct placement). The syringe collar/flange should be vertical.

III. Lower the barrel clamp arm.

IV. Ensure the syringe label does not interfere with the mechanism of the infusion device e.g. if there is contact with the barrel clamp arm and sensor. The syringe graphic on the screen ceases to flash at each point as the syringe is correctly seated.

V. Confirm that the syringe size and brand match the screen message. Press the "YES" key to confirm or scroll up (+) or down (-) keys to view the other syringe sizes, select correct syringe and size and press the "YES" key to confirm (fig. 6).

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Figure 5 Battery Level Indicator Display

Figure 6 Syringe Confirmation Display
VI. After the Syringe Confirmation Display (Figure 6), the first screen that appears is displayed below (Figure 7).

![Figure 7 Volume, Duration and Rate Display](image)

VII. The McKinley T34 Syringe Pump calculates and displays the deliverable volume, the duration of the infusion (24 hours) and the rate of the infusion (ml per hour).

### 13.4 Starting the pump

Press the "YES" key to confirm the details. The display screen prompts "Start Infusion?" (Figure 8).

![Figure 8 Start Infusion Screen Prompt](image)

I. Start the infusion by pressing the "YES" key.

II. When the McKinley T34 Syringe Pump is running the screen displays (Figure 9):

![Figure 9 Pump Running Display](image)

**Top line** – the time remaining for the current infusion  
**Main line** – the infusion rate is displayed in ml/hour  
**Bottom line** – alternates between syringe size and brand and the message "Pump Delivering".  
The Infusion Light Status Indicator flashes green (Figure 2).

### 13.5 Keypad Lock

The McKinley T34 Syringe Pump allows all users to lock the operation of the keypad during infusion. This function should be routinely used to prevent tampering with the device (Figure 10).
I. To activate the keypad lock when the pump is infusing press and hold the "INFO" key until a chart is displayed showing a 'progress' bar moving from left to right.

II. Hold the key until the bar has moved completely across the screen and a beep is heard to confirm the lock has been activated.

III. The "STOP/NO" and "START/YES" and "INFO" keys are still active.

IV. To turn off the lock, repeat the above procedure. The bar will now move from right (lock) to left (lock) and a beep will be heard.

A Syringe Driver Monitoring Form (T34 Syringe Driver Observation Chart – community) must be completed whenever a syringe driver infusion is commenced (see appendix 2 & appendix 8 for community).

13.6 Lockboxes

Every T34 will be supplied with a lockbox. After starting the infusion, place the pump in the supplied lockbox except if using a syringe larger than 30ml. N.B. Avoid using a SIMS Graseby Flo-Safier winged infusion set with a 30ml syringe as this will not easily fit into the lockbox. Universal keys will be supplied to each ward area/community nurse. Replacement keys if required are the responsibility of the individual teams. If a key is lost complete an incident report form.

14.0 MONITORING OF THE INFUSION

In an inpatient unit the syringe driver should be checked regularly at 4 hrly intervals and the monitoring form completed.

Check for:

Procedure for the use of Mckinley T34 syringe driver to deliver a Continuous subcutaneous infusion in palliative care for adults
a) Time
b) Set rate of pump
c) ml remaining
d) Infusing at correct rate
e) Battery satisfactory
f) Site satisfactory
g) Clarity of infusion

Only change the site if there is any evidence of inflammation, infection or hypertrophy. This varies depending on the individual patient and the drug being used.

Battery, PP3: 9V Alkaline/Lithium, a new battery will last for approximately 3-4 days.

Two presses of the blue information key will show battery status. Staff in Sandwell and West Birmingham NHS Trust should be aware of the battery status on starting the device and any battery reading less than 40% should be changed. One press of the blue information key during the course of an infusion will show Volume infused (VI), and Volume to be infused (VTBI).

Document and sign chart for checking procedure using syringe driver monitoring chart (T34 Syringe Driver Observation Chart – community). (see Appendix 2 for acute staff & Appendix 8 for community teams)

14.1 Documentation of the Infusion.

Details of setting up each syringe driver and reloading needs to be documented on the administration chart by the healthcare professional(s) who have performed the procedure according to Trust policy.

Documentation should include:

a) Date and time infusion commenced.
b) Model of syringe driver
c) Rate of syringe driver
d) Site of cannula
e) Drug expiry date and batch number

The syringe should be labelled with the date, drug names, dosages and diluent. (Avoid the numbers on the barrel of the syringe so that amount remaining can be easily seen).

In the community setting, the quantities of controlled and other parenteral drugs present in the patient's home must be checked prior to and after the syringe driver is prepared. An accurate balance for each formulation must be maintained on a separate Administration Record- Community [Drug Chart] (appendix 6). Any discrepancies must be promptly reported to the team leader, medicines management and an incident form
must be completed.

14.2 How to Temporarily Stop the Infusion

This is not normal practice and should only be used in exceptional circumstances

- Press “STOP”.
- Press and hold “OFF” button until a beep is heard. The screen will go blank.
- Do not remove syringe from the syringe driver
- Record on the monitoring chart, the length of time the infusion is stopped for.

14.3 What to do if the Infusion is interrupted

![Resume Program Display](image)

Figure 11 Resume Program Display

- Check that the prescription, syringe label and patient details match, to ensure that this is the correct syringe for this patient.
- Press and hold the "ON" button until a beep is heard. The screen will request confirmation of syringe size and syringe brand.
- Press "YES" to resume. The screen will display "Remaining volume, duration and rate of infusion". Press "YES" to confirm.
- The screen will also give the option to press "No for New Program". DO NOT press this as it will reset the 24 hours clock, this means that the remaining contents of the syringe will be delivered over the next 24 hours from confirming "start infusion".

14.4 Completion of administration of subcutaneous infusion

- When the infusion is complete and the syringe is empty, it will stop automatically and the alarm will sound. If the syringe driver is no longer required for the patient, press "OFF" and then remove the battery from the syringe driver.
- Prescribe appropriate replacement medication, see prescribing guidelines.
- Explain the procedure to the patient.
- Remove giving set: cleanse skin with a wipe saturated with Chlorhexidine Gluconate 2% & 70% Isopropyl Alcohol if required.
- Cover the site with a small occlusive dressing if required.
- Dispose of winged device following organisational guidelines for the safe disposal of sharps.
- Clean the syringe driver as described in section 19.

15.0 DISCONTINUING A SYRINGE DRIVER

To avoid an accidental bolus dose of drug, the infusion line must be disconnected from the syringe before the syringe is removed from the syringe driver.

Removal of the cannula and/or discontinuation of the infusion should only be carried out by appropriately trained staff.

16.0 WHEN A PATIENT DIES

- Stop the syringe driver.
- Press "INFO" and record the date, time and amount of solution remaining to be infused (in mls).
- Once verification of death has taken place, the syringe driver can be removed and the contents destroyed according to local guidelines. If there are any concerns, refer to your line manager before doing so.
- The T34 syringe driver must be returned to Medical Engineering – Equipment Library.
- For further information on the disposal of controlled drugs in a community setting, please see appendices 6 and 7.

17.0 TRANSFER OF PATIENTS

When a patient is discharged from hospital to home/hospice with a syringe driver, information should be clearly communicated to the primary care team. Arrangements should be made for the timely prescribing of drugs in the community. A Medicine Administration Form (MAF) can be used for controlled drugs and drugs used in the syringe driver (see appendix 3) for Sandwell and a yellow card for Birmingham.

It is essential to contact the District Nursing Team (or the Hospice) as soon as the discharge date is known and inform them of patients proposed discharge with a McKinley T34 syringe pump.

Liaise with community team to ensure (if appropriate) that they will stop and disconnect the T34 and replace the syringe driver with the appropriate device used in their area. The McKinley T34 pump must then be returned to Sandwell and West Birmingham Hospitals NHS Trust via the collection service at their GP surgery. Give and discuss with the patient (where possible) and the carer the patient information leaflet (appendix 1)

18.0 MAINTENANCE

The manufacturer of the drivers recommends that:
a) The syringe driver should be serviced every 12 months.

b) If the syringe driver is dropped or damaged at any time, it should be immediately removed from practice and checked by the Sandwell and West Birmingham Hospitals Medical Engineering department.

c) Following any fluid spillage onto the syringe driver, it should be returned for servicing.

d) Care must be taken to ensure that the McKinley T34 is NOT immersed in water or taken into a shower.

19.0 INFECTION CONTROL

Each syringe driver must be cleaned between patients. The outer surface of the driver should be kept clean by wiping with a soft damp cloth using a mild detergent. The driver should then be dried. **NB. Never dip or submerge the syringe driver in water.**

20.0 RISK MANAGEMENT

In the event of an incident, an Incident Form must be completed. This includes:

- Administration of incorrect medication, dose and/or diluent.

- Infusions completing ahead of time or carrying on beyond intended time of completion.

- Any other incident or near miss which may compromise patient safety or comfort.

Where there has been an incident with a syringe pump it must be sent to the Medical Engineering department for investigation.

21.0 TROUBLE SHOOTING

<table>
<thead>
<tr>
<th>LCD DISPLAY</th>
<th>ALERT/ALARM TYPE</th>
<th>POSSIBLE CAUSE</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occlusion/Syringe Empty</td>
<td>Alarm Audible and visual alarm</td>
<td>-Occlusion -Precipitation -Line kinked -Actuator has reached minimum travel position</td>
<td>-New syringe &amp; line required -New syringe &amp; line required -Unkink consider renewing -End of program, turn pump OFF</td>
</tr>
<tr>
<td>Press YES to Confirm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Press YES to Resume NO for New Syringe</td>
<td>Alarm Audible and visual alarm. Intermittent bleep</td>
<td>Something has occurred which has interrupted the current programme (e.g. syringe displaced/power failure) so the device is</td>
<td>Pressing YES: will continue current, interrupted infusion. Check/confirm infusion summary screens &amp; press YES to resume the current infusion. Pressing NO: will programme a new infusion, e.g. new Syringe &amp; or new patient. The</td>
</tr>
</tbody>
</table>
### Procedure for the Use of McKinley T34 Syringe Driver to Deliver a Continuous Subcutaneous Infusion in Palliative Care for Adults

<table>
<thead>
<tr>
<th>Prompting the User to Their Attention</th>
<th>Pump Will Calculate the Volume of the Syringe &amp; Based on Duration Required Will Start a New Programme.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pump Paused Too Long</strong>&lt;br&gt;Confirm, Press YES</td>
<td>Audible and visual alarm. Intermittent bleep&lt;br&gt;Pump left in stop mode (on hold) for 2 minutes&lt;br&gt;Either start infusion, continue programming or switch off</td>
</tr>
<tr>
<td><strong>Syringe nearly empty</strong></td>
<td>Alert Audible and visual alarm. Intermittent bleep&lt;br&gt;15 minutes from end of infusion&lt;br&gt;Prepare to change syringe or switch off</td>
</tr>
<tr>
<td><strong>End Program</strong>&lt;br&gt;Press YES to Confirm</td>
<td>Alarm Audible and visual alarm. Intermittent bleep&lt;br&gt;Infusion Complete&lt;br&gt;Pump will alarm. Press YES to confirm end of program and OFF to switch pump off.</td>
</tr>
<tr>
<td><strong>Low Battery</strong></td>
<td>Alert Visual alarm&lt;br&gt;Battery is almost depleted (15 minutes left)&lt;br&gt;Prepare to change battery and resume infusion</td>
</tr>
<tr>
<td><strong>Battery End</strong></td>
<td>Alarm Visual alarm&lt;br&gt;Battery is depleted&lt;br&gt;Change battery and resume infusion</td>
</tr>
<tr>
<td><strong>System Error</strong></td>
<td>Alarm: System error&lt;br&gt;Error has occurred&lt;br&gt;Pressing INFO key will display the reason for the alarm &amp; give advice for correction, if applicable; If correction not possible: • Remove pump from use &amp; turn power off • Return to Medical Engineering for pump interrogation.</td>
</tr>
</tbody>
</table>

21.1 **The pump will not start**

- No battery present. Fit a battery
- Battery inserted incorrectly. Re-align battery terminals
- Battery is depleted/very low. Fit a new battery.
- Pump is faulty. Service required.

21.2 **Infusion Running Too Fast**

If over-infusion occurs, stop infusion, check condition of patient and contact medical team and duty manager immediately.

For patients receiving treatment in the community, stop the infusion, check condition of patient and obtain immediate medical advice or dial 999 as appropriate. The prescriber should be informed and the on call manager contacted if necessary for serious incidents occurring out of hours. All advice received must be documented in the nursing record.
This constitutes a drug error and an incident form must be completed
Refer to Incident and Hazard Reporting ORG/050

- Immediately undertake 15 min Temp, Pulse, Blood Pressure, Respirations, and
document, until medical staff have reviewed patient and pain control prescription.
- If Respiration is reduced to 8 per minutes and below, and either
Morphine/Diamorphine is prescribed, have in readiness Naloxone 400 microgram
and Sodium Chloride 0.9% ampoules.
- Check rate setting for accuracy
- Check for disconnection of line or needle
- Check syringe securely attached to pump
- Check box is locked & no tampering has occurred
- Check no air present in syringe (solution will siphon in if barrel cracked).
- If syringe pump could be faulty return to EBME.

21.3 Infusion Running Too Slow

- Check Patient, seek medical advice if required. Has symptom control been lost, does
patient require PRN medication?
- Check the syringe pump light is GREEN and flashing.
- Check the battery level.
- Check the rate setting is correct.
- Check the correct syringe brand or size has been programmed.
- Check that syringe is inserted correctly into syringe pump.
- Check if syringe pump has been stopped and restarted for any reason.
- Check contents of syringe/line-is there any evidence of crystallisation/kinking of
tubing?
- Check needle site - is this red/hard/lumpy/sore/oedema? Change needle site if
necessary.
- Consider further dilution of drugs to minimise irritation by setting up a fresh syringe
Consider metal allergy from needle – contact Palliative Care Team.
- If syringe pump continues to run through too slowly, change entire pump and return
to EBME.
- Check rate of infusion at regular intervals.

21.4 The Pump has stopped Before Emptying the Syringe

- Check battery has not exhausted. Fit a new battery, turn pump on, confirm syringe
size and brand, select ‘Resume’ to continue infusion.
- **WARNING** – If you press **NO**, the pump interprets this as a completely new 24
hour period and the remaining contents of the syringe would be delivered over
the next 24 hours from confirming ‘Start Infusion’. The patient would not
therefore receive the prescribed dose. If **NO** has been pressed in error, discard
the remainder of the syringe contents, and prepare and set up a new syringe.
- Trapped/kinked infusion line. Free line or kink & resume infusion if appropriate. If still
not working, return to Medical Engineering.

21.5 Site irritation

- Change site (use a new infusion set when changing site) leave at least 3cm away
from original site.
- Review medication in syringe (cyclizine and levomepromazine most common
causes).
- Dilute drugs to a larger volume in new syringe.
- Consider separating into 2 syringe pumps
- Consider infection
For severe site reactions which persist despite usual measures such as increased dilution of drugs(s), consult Palliative Care Team for advice.

21.6 Precipitation, cloudiness or colour change in syringe contents or line

- Stop infusion and inform prescriber. Issues to check and discuss with prescriber include:
  - Compatibility information
  - Diluent (seek advice from pharmacist/Palliative Care Team)
  - Is it possible to dilute further with water for injection, consider larger syringe?
  - Consider separating into 2 syringe pumps or give one drug as a subcutaneous bolus injection if appropriate.
  - Seek advice from Specialist Palliative Care Team.
  - Keep away from sunlight and heat.
  - Advise patient on keeping syringe pump away from hot pack/heat pad or hot water bottle
  - Commence new infusion at a different site (at least 3cm away) with new McKinley T34 infusion set.

21.7 Syringe Becomes Dislodged

If syringe becomes dislodged whilst infusion running:

- The alarm will sound & the infusion light will turn red.
- Check Syringe Loaded Correctly. Window will be displayed
- Check that the prescription, syringe label and patient details match, to ensure that this is correct syringe for this patient.
- Replace syringe onto the syringe pump, as shown in 13.3.
- The next screen will request confirmation of syringe size and syringe brand.
- Press “YES” if correct.
- The screen will display:

  Press ‘YES’ to resume previous program.
  WARNING – If you press NO, the pump interprets this as a completely new 24 hour period and the remaining contents of the syringe would be delivered over the next 24 hours from confirming ‘Start Infusion’. The patient would not therefore receive the prescribed dose. If NO has been pressed in error, discard the remainder of the syringe contents, and prepare and set up a new syringe.
- The screen will display: ‘Remaining volume, duration and rate of infusion’
- Press ‘YES’ to confirm if this is correct prescription.
- Screen will display ‘Start Infusion’
- Press ‘YES’ to confirm.

21.8 Event Log
The McKinley T34 has an event log, which can store up to 512 pump events with date/time. The ‘Event Log’ can only be viewed when the pump is stopped (please contact Palliative Care Team). It is mainly used if a near miss or clinical incident has occurred. The information will be downloaded and analysed by EBME.

21.9 McKinley T34 Syringe Pump Alarm Conditions

When the syringe pump detects a problem four things occur:

- The infusion stops.
- An audible alarm is activated.
- A message appears on the display screen indicating the cause of the alarm.
- The Infusion Light Status Indicator turns red.

22.0 TRAINING & AWARENESS

All staff using the McKinley T34 syringe pump must be personally competent and accountable in the use and operation of this device. Staff must have attended a McKinley T34 pump training session and be signed as competent by either a member of the Medical device team or a competent core trainer.

When identified via the appraisal system, staff will undertake a self assessment against performance standards for using this device (appendix 4).

23.0 Equality & Diversity

The Trust recognises the diversity of the local community and those in its employment. Our aim is, therefore, to provide a safe environment free from discrimination and a place where all individuals are treated fairly, with dignity and appropriately to their need. The Trust recognises that equality impacts on all aspects of its day-to-day operations and has produced an Equality Policy Statement to reflect this. All policies are assessed in accordance with the Equality initial screening toolkit, the results for which are monitored centrally.

24.0 REVIEW

This policy will be reviewed in 3 years time. Earlier review may be required in response to exceptional circumstances, organisational change, or relevant changes in legislation of guidance.

25.0 FURTHER ENQUIRES

If there are any questions, queries or comments regarding this guidance and its components please contact Kate Hall Nurse Manager Palliative & End of Life Care.

26.0 REFERENCES


Nottingham Palliative Care Team Guidelines for the use of McKinley T34 Syringe Drivers in Palliative Care, University Hospitals Nottingham.


27.0 BIBLIOGRAPHY


28.0 USEFUL LINKS

www.palliativedrugs.com

www.pallcare.info
Palliative care

What is a syringe driver?

A syringe driver is a portable battery-operated pump with a syringe containing medication. It allows the medication to be delivered at a regular rate over 24 hours and is small enough to be carried in a pouch attached to a belt, a shoulder holster or large pocket.

What are the benefits of a syringe driver?

The benefits of a syringe driver are:
• It avoids you needing to have regular injections and is a much more comfortable way to receive your medication.
• It can give you your medications continuously over 24 hours to ensure you are receiving the correct dose of medication over the correct period of time.
• A number of medicines can be mixed and given through the syringe driver together.
• It can give you medicines that cannot be given by another route.
• The pump is portable, convenient and light to wear.
• Syringe drivers are beneficial for the following people:
  • Those who find it difficult to swallow their medication in tablet or syrup form.
  • Those who feel sick or vomit frequently which means they can’t keep their tablets in their stomach long enough for them to work.
  • People with symptoms that are difficult to control by tablets alone.

What are the risks of having a syringe driver?

The risks of having a syringe driver are:
• Sometimes people become psychologically dependent upon the pump.
• Inflammation or infection can occasionally occur at the needle site which can affect how well the medicines are absorbed and can cause some discomfort.

What are the risks of not using the syringe driver?

If you are offered a syringe driver because your doctor/nurse feels it is the most appropriate method of you receiving your medication and you choose not to use it your symptoms might not get better and you may need to have regular injections (every 2-4 hours).

Are there any alternatives to using a syringe driver?

There may be alternatives available depending on your symptoms and condition and these will be discussed with you by the doctor and/or nurses so that you can make an informed decision.
**Palliative care**

**Before using a syringe driver**

Before you start using your syringe driver the nurse will explain how it works to you and your carers and will answer any questions you may have about it.

**Using a syringe driver**

The syringe in the syringe driver is attached to a thin piece of tubing which has a fine needle attached at the other end. The nurse will insert this needle just under the skin on your chest, tummy or the top of your arm or leg, and will secure it in place with a clear dressing. He/she will fill the syringe with the correct medication and will set the rate that the syringe driver administers this. Do not alter the rate or press the boost button on the driver.

Once the needle is in place you should not feel it at all and it can stay there for a few days. The syringe driver should not be placed above the height of the needle site. Please do not disturb the dressing that has been placed over the needle.

The nurse looking after you will refill your syringe once everyday. If you are at home, a district nurse will come to your home to do this. At the same time they will:

- check that your machine is working properly;
- check that the needle site is not painful, leaking, red or swollen;
- replace the needle in a different part of the body every few days;
- record of the amount of each medication in your home.

**Alarms on the syringe driver**

There is an alarm on the syringe driver that will bleep if there is a problem. The alarm usually sounds because there is a blockage to the flow of medication caused by a kink in the long tubing or the syringe is empty. If the alarm bleeps please contact your nurse.

**Sleeping**

Some people find it useful to tuck the syringe driver under their pillow at night to keep it from falling out of bed.

**Bathing and showering**

Do not immerse the syringe driver in water. You can have a bath or shower but try to keep the needle site dry and keep the machine out of the water by putting it on a stool out of the water. If the syringe driver is accidentally immersed in water or contaminated by fluids in any way contact your nurse immediately as she/he will need to bring you a new syringe driver and return the other for inspection.
Palliative care

Moving around with and storing your syringe driver

Take care when moving around with the syringe driver, use the holster provided or put it in a pocket. The syringe contents must be kept out of direct sunlight and must not become too warm. Your nurse will be able to advise you on the best place to keep your syringe driver.

Keep all medicines out of reach of children, preferably in a locked cupboard.

How long will I need the syringe driver for?

You may only need to use a syringe driver for a few days or weeks. The nurse looking after you will give more detail about the amount of time you may need it for.

Storing medicines for your syringe driver at home

- Some of the medicines used in the syringe driver contain powerful pain-relieving agents which can seriously harm people they have not been prescribed for. Therefore it is very important that no one else takes or has access to your medication and that you only use them as prescribed.
- Store the medicines in their original packaging.
- Make sure they are all stored together in a cool, dry place.
- Store the medicines safely out of the sight and reach of children. It is not safe to keep them in an easily accessible fridge, cupboard, drawer, bedside cabinet or wardrobe etc.

Disposing of medicines

Any medicines that are no longer needed should be taken to your local pharmacy for safe disposal as soon as possible. If you are unable to do this, please speak to one of your nursing team who may be able to make alternative arrangements.

When to contact your nurse

Please contact your nurse if:

- the needle comes out
- the dressing becomes loose
- you have any concerns about your syringe driver or medication
- the alarm on the syringe driver bleeps
- the syringe driver is dropped
- you have any soreness, redness, irritation or swelling at the needle site
Syringe driver

Palliative care

Contact details

If you are in hospital and have any questions or concerns about your syringe driver, please contact the Palliative Care team on one of the following numbers, or ask a member of staff to contact them for you:

Palliative Care Team

Sandwell Hospital: 0121 507 2511
City Hospital: 0121 507 5296

If you are at home and have any questions or concerns about your syringe driver please contact your district nurse:

Sources used for the information in this leaflet

• ‘The Syringe Driver’, 2nd edition, Oxford University Press, 2005

If you would like to suggest any amendments or improvements to this leaflet please contact the communications department on 0121 507 5420 or email: swb-tr.swbh-gm-patient-information@nhs.net

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Incorporating City, Sandwell and Rowley Regis Hospitals
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ML3559
Issue Date: March 2012
Review Date: March 2014
Appendix 2

Prescription for Syringe Drivers used in Palliative Care via subcutaneous (s/c) route use only

**Adult**

This is a prescription for seven days only

If advice or support is required please contact Macmillan Palliative Care Team or Pharmacists

- Medicines for management of ‘breakthrough’ symptoms must be prescribed separately

**Special instructions / Additional notes / Pharmacy notes**

<table>
<thead>
<tr>
<th>DRUG</th>
<th>DOSE</th>
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<tbody>
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<table>
<thead>
<tr>
<th>DRUG</th>
<th>DOSE</th>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DILUENT</th>
<th>SYRINGE SIZE 20ml</th>
<th>ROUTE</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30ml</td>
<td>SC</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRESCRIBER SIGNATURE</th>
<th>DATE &amp; TIME</th>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRINT NAME &amp; DESIGNATION</th>
<th>PHARMACY</th>
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</tr>
</tbody>
</table>

**2 Registered Nurse to sign. Administration, changing syringe or rate**

<table>
<thead>
<tr>
<th>Date</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
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</tbody>
</table>

- Date
- Day 1
- Day 2
- Day 3
- Day 4
- Day 5
- Day 6
- Day 7

- Time
- Site Check
- Rate set in mls/hr
- Battery power remaining as a %
- Administered by
- Checked by

**If Diamorphine/ Morphine is prescribed above, please ensure that ‘As Required’ s/c Diamorphine/ Morphine equivalent to 1/6th of the daily dose for breakthrough pain is prescribed on the patients drug chart.**
Procedure for the use of McKinley T34 syringe driver to deliver a Continuous subcutaneous infusion in palliative care for adults

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
</table>

** Procedure for the use of McKinley T34 syringe driver to deliver a Continuous subcutaneous infusion in palliative care for adults **

<table>
<thead>
<tr>
<th>Drugs in situ</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Site of cannula</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>1hr</th>
<th>2hr</th>
<th>3hr</th>
<th>4hr</th>
<th>2</th>
<th>6</th>
<th>10</th>
<th>14</th>
<th>18</th>
<th>22</th>
<th>2</th>
<th>6</th>
<th>10</th>
<th>14</th>
<th>18</th>
<th>22</th>
</tr>
</thead>
</table>

** Syringe fitted, secure (Yes/No) **

** Volume left in mls **

** Duration left in hours **

** Rate set in mls/hr **

** Site satisfactory (Yes/No)**

** Solution clear (Yes/No)**

** Initials **

Battery should display 40% power or more on commencing infusion, if less than 40% replace battery.

** Site check: Location: Document insertion site of winged infusion devices e.g. Scapula region **

Condition: NP = No problem P = Pain I = Inflammation SW = Swelling B = Bleeding H = Hardening

** If contents of syringe look cloudy, precipitation has occurred. STOP infusion and refer to guidelines in the McKinley Syringe Driver Protocol **

14031355445000

<table>
<thead>
<tr>
<th>Date</th>
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</table>

** Procedure for the use of McKinley T34 syringe driver to deliver a Continuous subcutaneous infusion in palliative care for adults **

Page 29 of 41
Procedure for the use of McKinley T34 syringe driver to deliver a Continuous subcutaneous infusion in palliative care for adults

Page 30 of 41

Appendix 3 – Administration of Subcutaneous drugs via McKinley T34 syringe pump and as required bolus drugs for Sandwell

MEDICINE ADMINISTRATION FORM (MAF)

Authorisation to administer named medicines to an individually named patient in the community

Patient details:
Name of Patient: ............................................................. NHS Number: .............................................
Date of Birth: .................................................................................................................................
Address: ...........................................................................................................................................
...................................................................................................................................................... Telephone: ......................................................
GP name: ............................................................ Contact number: .............................................

Prescriber details:
Name of Prescriber (please print): ..............................................................................................
Title: .............................................................................................................................................
Address (practice, clinic): .............................................................................................................
Prescriber Contact Number: .........................................................................................................
The MAF form must be completed in indelible ink – please write drug names in CAPITALS

AUTHORISATION FOR ADMINISTRATION OF ANTICIPATORY OR AS REQUIRED MEDICINES

Please administer the drugs below to control the symptoms specified.

<table>
<thead>
<tr>
<th>DRUG NAME</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>FREQUENCY</th>
<th>TO CONTROL SYMPTOM OF</th>
<th>PRESCRIBER SIGNATURE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANALGESIC (please specify):</td>
<td></td>
<td>SC</td>
<td></td>
<td>Pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIDAZOLAM</td>
<td></td>
<td>SC</td>
<td></td>
<td>Agitation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEVOMEPROMAZINE</td>
<td></td>
<td>SC</td>
<td></td>
<td>Nausea/vomiting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HYOSCINE BUTYLBROMIDE</td>
<td></td>
<td>SC</td>
<td></td>
<td>Secretions</td>
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</tr>
</tbody>
</table>

If analgesic dose changes, the prescriber must cross through the previous analgesic authorisation to avoid potential confusion or duplication.

The above anticipatory and as required medicines may be administered for 28 days from the date of signature above.
**AUTHORISATION FOR ADMINISTRATION OF DRUGS VIA SYRINGE DRIVER**

Please administer the drugs specified below by continuous subcutaneous infusion over 24 hours via syringe driver.

The prescriber completing this form authorises the mixing of the drugs specified below into one infusion.

Initial doses (over 24 hours):

<table>
<thead>
<tr>
<th>DRUG NAME</th>
<th>DOSE</th>
<th>TO CONTROL SYMPTOM OF</th>
<th>PRESCRIPTOR SIGNATURE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Please prepare infusion with Water for Injection unless an alternative diluent is specified by the prescriber below.

Alternative diluent (if required): | Prescriber Signature: | Date:
<table>
<thead>
<tr>
<th></th>
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</table>

**ADDITIONAL INSTRUCTIONS:**

**PAIN:**
Please increase ................................ by one third of the ‘Total’ daily dose in the syringe driver, if required to control pain – please include all breakthrough pain doses in this calculation and round to the nearest 5mg

**AGITATION:**
Please increase **MIDAZOLAM** by the ‘Total’ daily dose of breakthrough medication over the last 24 hours up to maximum dose of **60mg** in **24 hours**.

**OTHER SYMPTOMS:**

Please increase ................................ by daily increments of ................................ to control ................................ up to maximum dose of ................................ in **24 hours**.

Please increase ................................ by daily increments of ................................ to control ................................ up to maximum dose of ................................ in **24 hours**.

_The medicines specified above may be administered via syringe driver for up to 28 days from the date of signature above._
Appendix 4 – Self Assessment / Competencies

McKinley T34 Syringe Driver
Self-Assessment / Competencies

These competencies are used in conjunction with:

- NMC Standards for Medicines Management 2010
- NMC. The Code: Standards for Conduct; Performance and Ethics (2008)
- Pan Birmingham: Syringe Drivers in Palliative Care: Guidelines (2005)
- SWBH: Procedure for using the McKinley T34 syringe driver to deliver a continuous subcutaneous infusion in palliative care (2008)

All staff using the McKinley T34 Subcutaneous syringe driver are expected to undertake a self-assessment of competence against the performance standards for using this device. The purpose of these competencies is to clarify the knowledge and skills expected, to ensure safe practice in using McKinley T34 syringe driver.

To complete the self-assessment put a number corresponding to your level of competence as indicated on the key (fig 1) in the appropriate column next to the competency standard listed. If you consider yourself competent to use product without further training sign at the bottom of this competency sheet. If you require further training attend syringe driver training, read, and complete formal assessment of competencies with an Assessor (fig 2). When self-assessment / competencies achieved you Line Manager should notify L&D by completing and submitting an updated Medical Devices competency check, a copy should be sent to L&D & a copy retained in your Personal Development File.

Responsibility for use remains with the user, so if you are in any doubt regarding your competence to use this device seek additional training.

Key for Self-Assessment

<table>
<thead>
<tr>
<th></th>
<th>No knowledge / experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>some knowledge / experience</td>
</tr>
<tr>
<td>3</td>
<td>Competent</td>
</tr>
<tr>
<td>4</td>
<td>Very Experienced and able to teach others</td>
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Competency Statement: Participant will demonstrate correct practical knowledge, theory of operation and clinical use of the McKinley T34 Syringe Driver

<table>
<thead>
<tr>
<th>Performance Standard – The participant will be able to:</th>
<th>1. Self Assessment</th>
<th>2. Formal Assessment</th>
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<td>Score (As Per Key)</td>
<td>Date &amp; Comments</td>
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1. Demonstrate pre-operational inspection and proper set up of the McKinley T34

A Define the reasons for usage of the Syringe Driver.
B Explain the equipment required.
C Explain the type & sizes of syringes that can be used.
D Explain the correct start up sequence (prime/load).
E Explain the battery type to be used, indications for battery change and the average battery life.
F Explain the two areas in the pump where you can verify the battery Life (%).
G Identify the correct infusion line to use and why the line priming volume is important.
H Explain the functions associated with the individual keys on the keypad.
I Explain the two purposes of pre-loading (automatic actuator movement).
J Explain how to confirm the infusion is running.
K Explain how to access information for pump monitoring; VTBI/VI, battery level.
L Explain how to apply the keypad lock.
M Explain how to recognise alerts and what actions to take when an alert is triggered.
N Explain how to recognise an alarm and what actions to take when an alarm is activated.
O Explain how to access the INFO menu.

2. Are you able to operate the McKinley T34?

A Draw up drugs into the syringe (prime/load).
B Ensure adequate mixing of drugs by inverting the syringe several times.
C Insert the battery.
D Power on and observe Pre-loading.
E Check battery level (%).
F Load and confirm the correct syringe brand.
G Review volume, duration and rate of infusion.
H Connect line to the patient.
I Start the infusion.
J Check and confirm the infusion is running.
K Attach the lockbox.
3. Monitoring an infusion in progress

| A | Identify and describe own professional accountability |
| B | Explain the importance of correct prescription / documentation following set up or change of syringe driver. |
| C | How often should checks be made & explain which checks are required? |
| D | Check volume infused (VI) / volume to be infused (VTBI) with infusion running. |
| E | Check battery level with infusion running. |
| F | Activate/deactivate keypad lock. |
| G | Access and view event log. |
| H | What action should be taken if drugs crystallise in the syringe. |

4. McKinley T34 maintenance / troubleshooting considerations & appropriate action

| A | When should a syringe driver be serviced? |
| B | State the conditions which will cause the syringe driver to alarm. |
| C | Explain possible causes for the following:  
  - The syringe driver will not start.  
  - The infusion ended early.  
  - The syringe driver has stopped before emptying the syringe.  
  - The infusion ended late/is running slowly. |
| D | What action would you take if the infusion ends early? |
| E | State the correct procedure to follow should a medication error occur? |

5. Has an understanding of commonly used drugs

| A | How can risk of drug incompatibility be reduced? |
| B | State who can be contacted for further drug information. |

*I have completed the self-assessment above and taken into account my personal appraisal of my competence with the product. I declare that I am competent to use this product without further training.

Signature: _______________________________ Date:

*I require further training before using this product.

Signature: _______________________________ Date
Appendix 5

COLLECTION OF CONTROLLED DRUGS FROM A COMMUNITY PHARMACY BY A NURSE ON BEHALF OF A PATIENT
(EXCEPTIONAL CIRCUMSTANCES ONLY)

This must remain in the nursing notes for 10 years

This procedure must only be undertaken in exceptional circumstances, routine collection of medicines should be arranged by the patient and their carers in conjunction with the supplying community pharmacy.

Name of Patient:

Address:

I give consent for (Nurse) ................................................. to collect my prescription for the controlled drugs listed below from the named community pharmacy and deliver the controlled drugs to the address above.

Signed (Patient or Representative): ...................... Date: ..............

To be completed by the nurse

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<thead>
<tr>
<th>Drug 1</th>
<th>Drug 2</th>
<th>Drug 3</th>
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<td>Strength (if known)</td>
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<td>Quantity (if known)</td>
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To be completed by nurse or pharmacist

Name of supplying Pharmacist

GPhC Registration Number

I have issued the above listed controlled drugs to the nurse named on this form on behalf of the named patient.

Signature of Pharmacist ............................................................

Pharmacy Stamp
# Administration Record - Community

Name of Drug/Diluent...........................................(One Chart Per Drug)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Stock Balance on Arrival</th>
<th>Batch Number/ Expiry Date</th>
<th>Drug Strength/ Diluent (e.g. Midazolam 10mg/2ml)</th>
<th>Dose Given</th>
<th>Dose Wasted</th>
<th>Stat</th>
<th>Syringe Driver</th>
<th>Route (Tick)</th>
<th>Site</th>
<th>Stock Balance Remaining</th>
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Identification

- The procedure may only be followed following an expected death.
- Only drugs prescribed for the named patient may be destroyed – this procedure does not apply to stock drugs.
- The patient’s family/representatives should be encouraged to return unwanted medicines to a community pharmacy for disposal unless there is a genuine reason not to do so.
- Where practical, the decision to destroy drugs in a patient’s home should be discussed with medicines management prior to the destruction process.
- The destruction must be done by two registered healthcare professionals and the name and professional details of both should be recorded in the destruction record (family members may wish to observe the destruction process but this should not be used to replace the second professional check).
- Neither of the health professionals involved in the destruction process should have been involved in the original prescribing of the drugs to the patient.

Destruction

- The agreement of the patient’s representative must be sought and documented before the drugs are destroyed.
- If the representative is not in agreement, nurses must not place themselves at risk but should report this refusal to medicines management and the local security specialist who will decide on any further action necessary.
- The balance of stock should be checked against the controlled drug record prior to destruction commencing to ensure there are no discrepancies – any discrepancy must be reported to medicines management before destruction takes place.
- The CD destruction must take place using an approved disposal kit to denature the controlled drugs (further supplies may be obtained by contacting the Head of Medicines Management on 07896 669 128).
- CD should be added to the denaturing kit according to the process below.

**Order of adding products to kit:**

i. Solid oral dose forms (e.g. tablets/capsules), powder containing injection vials/ampoules and transdermal patches
ii. Small volume liquids (e.g. injection ampoules/vials)
iii. Large volume liquids (e.g. oral liquids, larger volume injection vials) – these should be added ‘all at the same time’

**Preparing products before adding to kit (gloves should be worn in all cases):**

- Tablets and capsules should be removed from all packaging. Best practice is to grind or crush the solid dose formulation before adding to the CD denaturing kit to ensure that whole tablets or capsules are not readily recoverable but this may not be practical in a domiciliary setting.
- Injection ampoules/vials should be opened and the contents and glass added to the granules. Ampoules containing the CD in a powder form can be opened, water added to dissolve the powder and the resultant mixture poured into the CD denaturing kit.
- Transdermal patches should have the backing removed and the patch should be folded over on itself or cut in two and then placed in the CD denaturing kit. If scissors are used, these must be washed after cutting patches.
- Once ALL products being destroyed have been added to the kit, water should be added, as necessary, in accordance with the kit manufacturer’s directions.

The record should include the drug, form, strength and quantity of the product destroyed and must be recorded in the correct documentation at the time of destruction and retained in the patient notes.

Disposal

Filled disposal kits should be returned to a local pharmacy for safe storage and disposal at the earliest opportunity.
### Useful Contact Details

**100 Hour Pharmacies:**
The following pharmacies provide extended (100 hour) opening in Sandwell and offer additional late night and weekend opening compared with other pharmacies in the locality.

<table>
<thead>
<tr>
<th>Pharmacy Name</th>
<th>Contact Details</th>
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<tbody>
<tr>
<td>TESCO STORES LTD t/a TESCO EXTRA</td>
<td>01384 556447</td>
</tr>
<tr>
<td>Foxoak Street, Cradley Heath, B64 5HJ</td>
<td></td>
</tr>
<tr>
<td>MAHMOOD T, t/a HILLS PHARMACY</td>
<td>0121 423 3105</td>
</tr>
<tr>
<td>15 Hill Top Road, Oldbury B68 9DU</td>
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<tr>
<td>SAINSBURYS SUPERMARKETS LTD t/a Sainsburys Pharmacy</td>
<td>0121 541 1875</td>
</tr>
<tr>
<td>Freeth Street, Oldbury, B69 3DB</td>
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<tr>
<td>ASDA STORES LTD</td>
<td>0121 555 1530</td>
</tr>
<tr>
<td>Off Windmill Lane, Smethwick B66 3EN</td>
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<tr>
<td>CLINPHARM HEALTHCARE t/a AL-SHAFA PHARMACY</td>
<td>0121 448 8665</td>
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<tr>
<td>93 Shireland Road, Smethwick B66 4QJ</td>
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<tr>
<td>BOOTS THE CHEMIST, Unit 2 Great Bridge Retail Park, Great Bridge Street, West Bromwich B70 0EN</td>
<td>0121 557 6673</td>
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<tr>
<td>LLOYDS PHARMACY LTD t/a LLOYDSPHARMACY</td>
<td>0121 525 4928</td>
</tr>
<tr>
<td>19 West Gate Plaza, Moor Street, West Bromwich B70 7AR</td>
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**Other useful contacts:**

- Head of Medicines Management - **07896 669128**
- Local Security Specialist – **via switchboard, extension 2958**
### T34 Syringe Driver Observation Chart - Community

<table>
<thead>
<tr>
<th>Date</th>
<th>Syringe ID Number</th>
<th>Time</th>
<th>Rate Set (ML/24 Hrs)</th>
<th>Volume to be Infused (MLS)</th>
<th>Clear Fluid in Syringes (Tick)</th>
<th>Site</th>
<th>Condition (Tick)</th>
<th>Light Flashing (Tick)</th>
<th>Keypad Locked</th>
<th>Battery %</th>
<th>Signature</th>
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</table>
## Appendix 9 - CME Operating Procedure

### Alert and alarm conditions
When an ALERT is activated:
1. The infusion continues
2. 2/3 beeps are heard approximately every 1 to 4 minutes
3. A screen message indicating the cause of the alert displays intermittently with the infusion running screen

Alert activates approximately 15 minutes prior to infusion end

### Troubleshooting

<table>
<thead>
<tr>
<th>Screen</th>
<th>Description</th>
<th>Implication/Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Battery</td>
<td>Alert: Battery is almost depleted</td>
<td>Prepare to change battery</td>
</tr>
<tr>
<td>Program Nearly Complete</td>
<td>Alert: Infusion will end soon</td>
<td>Prepare to change syringe or turn pump off</td>
</tr>
<tr>
<td>Pump Paused Too Long</td>
<td>Alarm: Pump has been left in STOP mode (on hold) for 2 minutes</td>
<td>Either start the infusion, continue pause or turn the pump off</td>
</tr>
<tr>
<td>End Battery</td>
<td>Alarm: Battery is depleted</td>
<td>Change battery</td>
</tr>
<tr>
<td>End Program</td>
<td>Alarm: Infusion is complete</td>
<td>Close down or start new infusion</td>
</tr>
<tr>
<td>Syringe Displaced, Check Syringe</td>
<td>Alarm: One or more of the syringe detection sensors is not detecting</td>
<td>Check screen messages for assistance; Check the syringe and re-seat as necessary</td>
</tr>
<tr>
<td>Occlusion Check Line &amp; Syringe</td>
<td>Alarm: PT access device is either blocked, occluded, clamped or kinked</td>
<td>Flush/replace access device, release the clamp or un-kink tubing</td>
</tr>
</tbody>
</table>

### Technical problem/error and failure identification

Two examples of system failure screen messages are shown here.

- The pump alarms if an internal system fault has been detected and the unit will be inoperative.
- Power the pump off and then power on again.
- If the problem cannot be rectified, power off the pump and remove from patient use.

Follow local policy and contact your authorised Medical Engineering Department for advice if necessary.

If possible, record the code number and a summary of the fault.

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**NOTE:** Screen information is representational only
Refer to Operating Manual for details on keypad lock.

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The information contained in this guide is a summary only, based on default settings, refer to operating manual for full operating instructions. Users must have undertaken training before operating this device.

Screen information is representative only and some text/wording on screen information may vary slightly with different software versions. You must refer to local policy and procedures for specific guidance on pump settings set-up and use of accessories (e.g. cannula and administration sets).

Always follow screen prompts. Before pressing keys to proceed, ensure selections made correspond with what is required.
Starting an infusion Lock ON (Load and Prime)

**Scenario**

- **Pump settings:** Lock ON, default duration 24 hours
- **Syringe:** Using a 20ml BD Plastipak syringe
- **Infusion required:** Deliver syringe contents (24ml) over 24 hours
- Decrease syringe delivery time to account for priming volume of 0.5ml

1. Ensure barrel clamp arm is down and no syringe in place
2. Press ON/OFF key to power up. The actuator moves (pre-loading) and the first four screens display automatically
3. Software version and pump identification displays
   - The actuator is moving to the position of the syringe that was in place at the start of the previous infusion
4. Pump default settings display
   - Check battery level: press INFO key then YES
   - Load the syringe (If necessary, align syringe to sensors and use the FF/BACK keys to move the actuator for syringe placement)
5. Infusion summary displays. DO NOT CONFIRM, remove syringe
6. Manually prime the line
7. Reload the syringe, use the FF key to adjust actuator
   - Use +/- keys to select the matching syringe if necessary
8. If the syringe size/brand displayed matches the one used, confirm by pressing YES
9. Press YES to resume (to decrease delivery infusion)
10. Check all settings and confirm by pressing YES. If purging, press FF key before pressing YES and follow screen prompts)
11. Press YES to start the infusion when ready to do so
12. Infusion running

**Pump features and functions**

- **Purge option (if enabled):**
  - To reduce or eliminate slack (visible spaces at the syringe collar and plunger loading point) and ensure a faster start-up time (time to reach the programmed infusion rate). The user can purge the system (once only) up to a configured volume limit.

**Accessing the info menu**

- With no infusion running, press the INFO key.
- **Options for viewing are:**
  - Battery Level / Exit / Rate Setting / Event Log / Charge Set-up
  - Scroll menu using +/- keys and press “YES” to view the option selected

**Pre-loading and Automatic Actuator Movement**

- Pre-loading and automatic actuator movement commences when the pump is powered up with the barrel clamp arm down and no syringe is in place. **NOTE:** These sequences will not occur if the barrel clamp arm is raised when the pump is powered on.
- During Pre-loading, the display screen displays pump information and the actuator moves automatically.
- These simultaneous sequences clear a programme if still in the pump memory.
- At the end of Pre-loading, the actuator returns to the start position of the last infusion programme.

**Programme Protection: Resume or New Syringe?**

Programme protection applies specifically to the m/hour rate.
- This screen prompt displays if the programme is interrupted by alarm or if the syringe is empty.
- The user has the option to press “YES to Resume” to continue the programme (m/hour rate).
- Pressing “NO for New Syringe” deletes the current programme and starts a new programme, using a new syringe volume at that time.

**Monitoring whilst infusion is running**

- Press INFO key once:
  - Volume Infused
  - VTBI 1.5 to 1.0
- Press INFO key twice:
  - Battery Level: 90%
  - Empty to Full

The important feature to remember is that “Resume” protects the calculated infusion rate for the current syringe:

- If you increase the syringe volume and resume the programme, the duration of delivery will increase.
- If you decrease the syringe volume and resume the programme, the duration of delivery will decrease.