



Western Health
and Social Care Trust

**POLICY FOR THE USE OF THE CME MCKINLEY
T34 AMBULATORY SYRINGE PUMP FOR ADULT
PALLIATIVE PATIENTS**

FEBRUARY 2013

Title	Policy for use of the CME McKinley T34 Ambulatory Syringe Pump for Adult Palliative Patients.
Reference Number	Corp13/003
Implementation Date	1 st April 2013
Review Date	1 st April 2016
Responsible Officer	Assistant Director of Nursing - Workforce Planning & Modernisation

This policy has been adapted from the South Eastern Health & Social Care Trust Guidelines for use of the CME McKinley T34 syringe pump for adult palliative patients.

Table of Contents

SECTIONS	PAGES
1. Introduction	4
2. Purpose of this Policy	5
3. Syringe Pumps – What are they?	5
4. Consent	6
5. Prescribing and Monitoring of Medications	8
6. Labelling the Syringe	11
7. Starting Syringe Pumps in relation to stopping Opioids by other routes of administration	11
8. Risk assessment guidance prior to procedure	14
9. Site selection	16
10. Decontamination of the care environment and equipment – guidance and principles	17
11. In the event of suspected equipment malfunction	19
 Appendices	
Appendix 1 Procedure for setting up a Subcutaneous Infusion of Medication using the CME McKinley T34 Ambulatory Syringe Pump	20
Appendix 2 Alarms	28
Appendix 3 Removal and Disposal of Infusion Set and Syringe Pump	29
Appendix 4 In the Event of an Expected Patient Death	30
References	31

1. INTRODUCTION

- 1.1 This policy has been designed to provide evidenced based guidance on the safe use of the CME McKinley T34 ambulatory syringe pump (McKinley T34 syringe pump) within the Western Health and Social Care Trust (Western Trust). It has been designed as a reference resource and is available to all medical and nursing staff.
- 1.2 It is the responsibility of managers and supervisors to ensure that this policy has been brought to the attention of all relevant staff and it is the responsibility of staff to read and adhere to the contents of it.
- 1.3 This policy is an integral component of a wider Proficiency Programme aimed at supporting staff to enhance their knowledge and skills in the nursing management of the McKinley T34 syringe pump.
- 1.4 All registered nurses working within the Western Trust must complete the Proficiency Programme which involves the following:
 - Attendance at a face to face teaching session provided by an advanced trainer followed by a period of practice using the McKinley T34 syringe pump
 - Completion of the on-line tutorial on setting up a McKinley T34 syringe pump
 - Completed a proficiency based workbook

It is the responsibility of all Ward Sisters, Charge Nurses and Team Leaders to ensure training records are kept up to date.

2. PURPOSE OF THIS POLICY

The purpose of this policy is to serve as a reference resource to medical and nursing staff to ensure the safe and effective use of the McKinley T34 syringe pump. The policy is designed to provide the following assurances:

- Ensure a consistent approach to use of syringe pumps throughout the Western Trust
- Ensure the safety of patients who are receiving medications subcutaneously via a syringe pump
- Ensure all nursing staff is competent in the administration of medication subcutaneously via a syringe pump

3. SYRINGE PUMPS

3.1 Ambulatory syringe pumps are battery operated devices used to continuously deliver drugs into the subcutaneous tissue of patients for whom oral medication is problematic. Their use has greatly enhanced symptom management for palliative care patients in the latter and difficult stages of their illness.

3.2 Indications for use are as follows:

- Intractable pain or other symptoms in the absence of adequate absorption of oral medicine
- Persistent nausea and/ or vomiting
- Inability to swallow
- Intestinal obstruction
- Unconsciousness
- If other routes such as the rectal or transdermal route are inappropriate or unacceptable to the patient
(Cooper and Mitten, 2000)

3.2 Benefits for use are as follows:

- Combinations of drugs may be given simultaneously permitting appropriate control of symptoms
- Stable plasma serum levels of medication can be maintained
- Reduces need for repeated injections
- Infusion time is accurate
- Does not limit mobility

(Mallett & Dougherty, 2000. Mitten, 2001)

3.3 Disadvantages are:

- Inflammation or infection may occur at the site of the cannula insertion
 - If not managed and set up correctly mistakes can happen
- (Kennedy et al, 1999. Mallett & Dougherty, 2000. Mitten, 2001)

4. CONSENT

4.1 It is essential that informed consent is obtained before a syringe pump is used. If the patient is able to give their consent it can be given either verbally or implied. This should be recorded clearly in the patients' notes in accordance with the Guidance on Record Keeping (NMC 2008).

4.2 **No one (not even husbands, wives, partners or close relatives) can give consent to treatment or care on behalf of another adult.**

Relatives and friends are vital in the care and support of all patients. They may be able to tell health and social care professionals about the patient's beliefs and values. For example, they may know whether they have accepted or refused treatment in the past or have strong views on some health questions (DHSSPS, 2003).

Informed consent can only be obtained when the patient has:

- All the relevant information
- The opportunity to ask questions
- Made an informed decision

In most cases, informed consent can be either implied by the patient or verbally expressed.

In the case of patients who are unable to give consent, however the patient's General Practitioner or Consultant can make a clinical decision regarding the course of action to be taken in the best interests of the patient.

The decision must be informed by holistic patient assessment, discussed fully with the patient's next of kin and documented in full within the patient's notes.

The DHSSPS Guidelines on 'Good Practice in Consent, Consent for Examination, Treatment or Care' (2003) should always be observed.

4.3 Informed Consent - in respect of the administration of unlicensed medications via the syringe pump.

The Association for Palliative Medicine and the Pain Society (2002) suggest that the use of drugs beyond licence in palliative care and pain management practice is both necessary and common, and should be seen as a legitimate aspect of clinical practice. The association recommends that choice of treatment requires partnership between patients and health care professionals, and informed consent should be obtained, whenever possible, before prescribing any drug. Patients should be informed of identifiable risks and details of any information given should be recorded.

5. PRESCRIBING AND MONITORING OF MEDICATIONS

5.1 All drugs being delivered must be prescribed on the appropriate Western Trust prescription and administration chart for McKinley T34 pump. Staff need to ensure they also adhere to relevant Trust and NMC policies/ guidance, including:

- NMC Standards for Medicines Management (2008)
- NMC Guidance on Record keeping (2009)

5.2 **All medicines administered via the syringe pump should be clearly and correctly prescribed according to local policy and procedures. The following information must be included:**

- Patient demographic details
- Any known allergies
- Medicine name (generic in CAPITALS)
- Dose over 24 hours
- Diluent
- Route of administration
- Duration of subcutaneous infusion
- Prescriber's signature

5.3 **The person preparing the medication should check the following:**

- Prescription
- Compatibility of medicines prescribed
- Diluent
- Infusion volume required
- Size of syringe required

5.4 **Practitioners administering a medicine that they have not previously used by the subcutaneous route should be aware that:**

- Absorption may be slower than the intramuscular (IM) route
- Irritant medicines may cause a greater inflammatory reaction

subcutaneous than IM

Additional 'as required' subcutaneous breakthrough doses of medication should always be prescribed on the appropriate prescription chart and be available for administration when required.

When a maintenance 24 hour opioid dose is changed, the breakthrough dose should also be adjusted accordingly.

It remains the responsibility of each individual practitioner to ensure that the medicine(s) prescribed are suitable for continuous subcutaneous infusion and are stable under these conditions.

5.5 Guideline for Discharging Adults using a 'McKinley' syringe driver from WHSCT and Foyle Hospice

Background

When patients are discharged from hospital on a syringe driver there can be delays in administration/ renewal of the medicines within the driver. This is mainly due to the delay in the district nurse having to drive a considerable distance on many occasions to get the GP to prescribe on the syringe driver drug administration chart. This presents additional problems when the discharge is late in the day, or out of hours (includes weekends and bank holidays).

Processes

Following examination of these issues and from a governance perspective the following processes have been agreed:

1. All patient's discharged on the McKinley syringe driver must have a completed 'Prescription and Administration Record of Medicines Chart' before leaving the hospital. The doctor must document the start and stop date for the prescription

The form is titled 'Prescription and administration record of medicines via subcutaneous McKinley T34 syringe pump'. It includes a header with 'HSC' and 'Western Health and Social Care Trust'. The form is divided into several sections:

- Special instructions/Additional notes/Pharmacy notes:** Contains a list of instructions for prescribing and administering medicines via subcutaneous syringe pump.
- Prescription:** A table with columns for 'Medicine', 'Dose', 'Start date', and 'Stop date'. It includes fields for 'Start time', 'Stop time', 'Prescriber's signature', and 'District nurse's signature'.
- Preparation and Administration:** A table with columns for 'Medicine', 'Dose', 'Start date', and 'Stop date'. It includes fields for 'Preparation and administration', 'Prepared and commented by', and 'Date'.
- Allergies / Medicines sensitivities:** A section for recording allergies and medicines sensitivities, including fields for 'Medicine/signature/allergies', 'Type of reaction (eg. rash)', and 'Signature/date'.
- Patient details:** A section for recording patient details, including 'Surname', 'First name', 'Patient number', 'DOB', 'Address', 'Hospital', and 'Consultant/Team/OP'.

2. If the patient is medically stable, the chart should be written for a minimum period of 48 hours (up to a maximum of 72 hours if the patient is discharged over a bank holiday weekend). If, however the patient is likely to require clinical review at any time within the first 48 hours following discharge, the discharging medical team must contact the GP Surgery to discuss this with the GP.
3. If any patient is being discharged on a syringe driver, the district nurse must be informed of the discharge and of the time when the syringe driver is due for change. It is good practice to inform the GP also if any patient is going home on a syringe driver. If however the patient is likely to need medical review at any time within the first 48 hours, it is essential (as stated above) that the GP also be contacted.
4. An original Prescription and administration record must always be issued – not a photocopy, in accordance with the NMC (2008) on the Standards for Medicines Management.
5. Provision of this chart will allow the community nurse to administer the medicines as prescribed under The NMC Standards (NMC, 2008).
6. If the district nurse is concerned at any time that the patient requires clinical review they must contact the GP immediately.

6. LABELLING THE SYRINGE

6.1 Ensure the label does not interfere with the mechanism of the syringe pump for example where there is contact with the barrel clamp arm. When attaching the label, ensure it does not obscure the visual scales on the syringe which may require to be viewed during the infusion.

6.2 The following details are required on the label:

- Patient name
- Health & Social Care number
- Medicine name(s)
- Dose of each medicine
- Diluent name
- Total volume in millilitres (mls)
- Date and time prepared
- Initials of the individual preparing the syringe

7. STARTING SYRINGE PUMPS IN RELATION TO STOPPING OPIOIDS BY OTHER ROUTES OF ADMINISTRATION

7.1 If the syringe pump is commenced when the patient's pain is well controlled then a loading dose of opioid may not be necessary. If the patient's pain is not well controlled, consider giving a subcutaneous breakthrough dose of opioid at the same time as starting the syringe pump. This should be approximately 1/6th of the 24 hour dose prescribed in the syringe pump. This will be agreed by the medical Practitioner.

(Dickman, 2005; Pang, 2011)

Start the syringe pump immediately if:

- the patient is not currently on any opioid OR
- the patient is receiving opioid on an `as required` basis OR

- the patient is receiving immediate release oral opioid preparation e.g. Sevredol®

7.2 Patients on modified release oral opioid preparation e.g. MST

Ideally, start the syringe pump 4 hours before the next dose of modified release preparation would be due (do not give oral preparation).

Ensure oral opioid preparation is withheld and discontinued following commencement of the syringe pump. Also ensure that appropriate breakthrough analgesia is prescribed.

In the community setting a decision on an appropriate time to start the syringe pump should be based on the clinical status of the patient.

7.3 Patients on Fentanyl Patches / buprenorphine

Refer to local palliative care guidelines for details, or consult a pharmacist or palliative care specialist for advice.

7.4 When oral treatment is to be re-started

If an oral modified release preparation is being commenced, the continuous subcutaneous infusion should be stopped when the first dose of modified release oral opioid is administered. The patient may require breakthrough medication more frequently until therapeutic levels are reached. If further advice is required, seek guidance from a palliative care specialist.

7.5 There are various problems associated with mixing medication in the same syringe, which include:

- Degradation of the drug(s) which can lead to decreased efficacy. The rate of degradation may be increased by other drugs which can alter the pH of the mixture. Direct sunlight and heat can also cause degradation of the drug

- Crystallisation/precipitation. This can occur through formation of an insoluble product of a drug interaction, or because a drug alters the pH of the solution rendering a 2nd drug insoluble, or because of an interaction between the drug and the diluent

7.6 Drugs combinations

Where drug combinations (commonly an analgesic and an antiemetic) are used, further criteria must be met:

- The drugs must be compatible with each other
- The diluent must be compatible with the drugs used

Information about the stability and compatibilities of drug combinations which can be administered via the McKinley T34 syringe pump are available from local guidelines

(Dickman 2005, PANG 2011, www.palliativedrugs.com).

Drug combinations in the Palliative Care Guidelines should only be used on the recommendation of a palliative care specialist, or on the advice of a pharmacist. The advice given should be documented clearly in the patient's notes.

If in doubt about compatibility/stability of medicine combinations, consider using an additional pump or an alternative route of administration. Refer to local guidance for recommendations on the maximum number of medicines which can be mixed in one syringe and their compatibility.

7.7 Medicines NOT suitable for subcutaneous use

The medicines listed below must **not** be administered by the subcutaneous route as they may cause tissue necrosis:

- Antibiotics
- Diazepam
- Chlorpromazine

- Prochlorperazine

7.8 Number of drugs to be administered in one syringe:

No more than **THREE** drugs should be mixed in a syringe unless agreed by the Specialist Palliative Care Team.

Please note: Dexamethasone added for site reaction constitutes another drug and must be counted as such.

If the prescription requires the mixing of **TWO** or **MORE** medicines in the syringe, compatibility should be confirmed prior to administration using reference texts and other information services. Contact the Specialist Palliative Care Team or Pharmacy if there is any uncertainty.

In event of more than one syringe pump being used a separate prescription sheet **must** be utilised and numbered accordingly.

8. RISK ASSESSMENT GUIDANCE PRIOR TO PROCEDURE

- 8.1 Staff should not operate a syringe pump unless they have completed Proficiency Training, have undergone a period of supervised practice and deem themselves proficient and confident in setting up a syringe pump.

To practise proficiently, you must possess the knowledge, skills and abilities required for lawful, safe and effective practice without direct supervision. You must acknowledge the limits of your professional proficiency and only undertake practice and accept responsibilities for those activities in which you are proficient.

- **You** are personally accountable for your practice. This means you are responsible for your acts or omissions, regardless of the advice or directions from another professional.

- **You** have a duty of care to your patients and clients, who are entitled to receive safe and competent care.

8.2 Identify potential risks:

- Ensure that the syringe pump is fully functional prior to use. Do not use it if it appears faulty in any way.
- Ensure that annual maintenance and servicing arrangements for syringe pumps are observed as per Western Trust operational policy and manufacturers' recommendations McKinley (2007).
- Do not modify or adapt the device for any use other than those recommended by the manufacturer.
- Following hospital / Hospice discharge ensure the device is replaced with Western Trust stock (see 'Details of how to return McKinley T34 syringe pump' on palliative care site on Trust Intranet) as soon as possible. Contact with discharging unit should be made promptly to agree a plan which facilitates the return of the device.
- Each area must maintain their own local register which ensures that information on location, asset numbers, records of faults/ repairs/ transfers is kept up to date.

8.3 Questions to ask before going to the patient:

- Do I have the knowledge, skill and proficiency required to erect the Syringe Pump?
- Is the drug regime correctly prescribed and are all the drugs in the mix compatible?
- Have I fully addressed the fears and concerns of the patient / carer?
- Have appropriate drug conversions been made?
- Have PRN bolus (STAT) medication(s) been prescribed in the event that the patient experiences breakthrough symptoms?
- Have I got everything I need to erect the syringe pump?

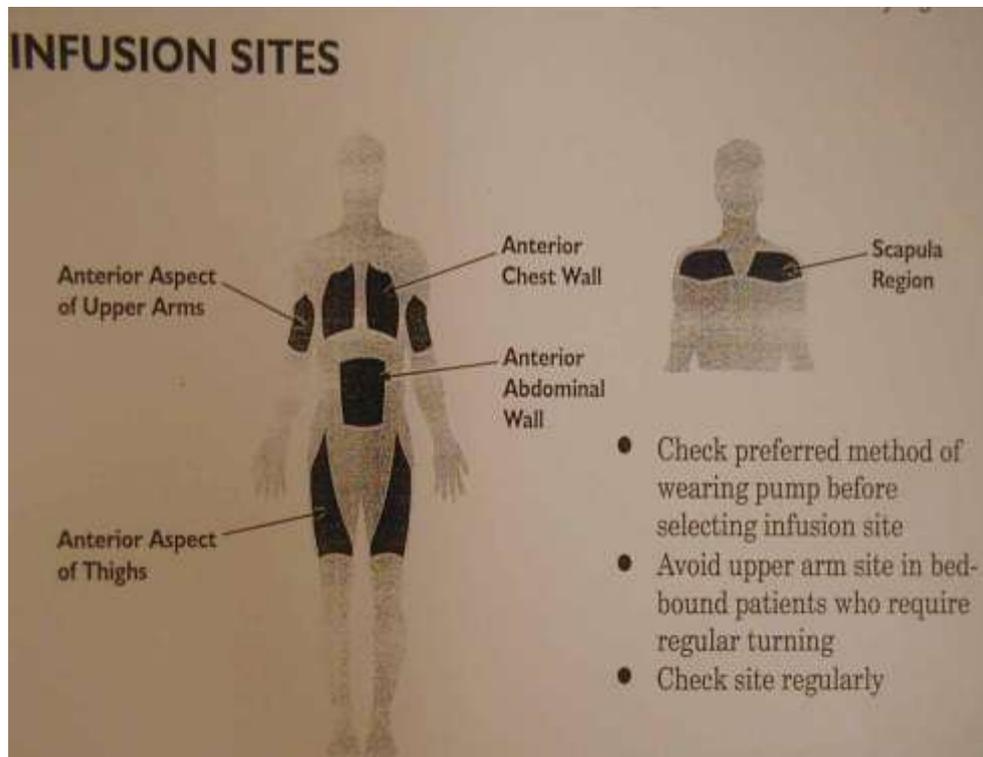
9. SITE SELECTION

9.1 **Undertake Risk Assessment** – choosing an appropriate site should be informed by the patient’s choice and level of mobility.

<u>Appropriate Sites</u>	<u>Sites to Avoid</u>
Anterior chest wall	Sites over a bony prominence
Scapula	Areas of scar tissue
Anterior abdominal wall	Areas of inflamed / infected skin
Anterior/Lateral aspects of upper	Broken skin
Anterior aspects of both legs	Lymphoedematus limbs

(cited Mitten, 2001)

Body map of sites of subcutaneous infusion



9.2 When to change the infusion set/ site

- Sites can be left intact if satisfactory for up to 3-4 days (NHS Lothian 2003; Royal Marsden 2008)
- Subcutaneous sites should be changed if there is pain, swelling, inflammation, bruising or bleeding at the site (RCN, 2010)

OR

- If either the dose of drugs, or the combination of drugs in the syringe change (Mitten, 2001. Morgan, 2004)
- Information specific to site should be recorded in the patient's notes in accordance with NMC (2008) Guidance on Record Keeping

9.3 To avoid the potential risk of syphonage:

- Ensure Syringe Pump is placed at the same level as or lower than the infusion site.
- If an infusion is to be stopped before the syringe is empty disconnect the syringe from the patient and apply a sterile universal bung. A syringe that is not empty must never be taken off a pump while connected to the patient.

10. DECONTAMINATION OF THE CARE ENVIRONMENT & EQUIPMENT - GUIDANCE & PRINCIPLES

10.1 Cleaning issues

Every syringe pump must be cleaned after patient use in accordance with manufacturer's guidance.

- The outside surface should be cleaned between patients by wiping with a soft lint free cloth dampened either with a solution of mild detergent, ensure any sticky residue from temporary labels applied to the Syringe pump have been removed. This should be followed

by disinfection using a 1000ppm solution of a chlorine releasing solution e.g. Actichlor/ Haz tabs (McKinley, 2007).

- The threads of the screw that the actuator moves along can be cleaned with a small dry bristled toothbrush soaked in detergent and water to remove debris or other particles. This should be followed by disinfection if contaminated with body fluids or used in the care of a patient with a known infection /communicable disease. It is important that any disinfectant is thoroughly rinsed off and the equipment dried prior to storage or reuse.
- On completion of decontamination the equipment prior to being placed into storage or reused should be marked that it has been decontaminated as above and signed & dated by the individual who undertook the decontamination.
- DO NOT clean the syringe pump with surgical spirit or abrasive cleaners.
- DO NOT immerse in water.
- Following patient use batteries should be removed and discarded in household waste.
- When not in use the syringe pump should be stored in a dry place.

10.2 Patient, Family/ Carer Education

Any patient requiring medications via a syringe pump in Western Trust should be given a verbal explanation of the following:

- Reason for using this route.
- Information on the general care of the pump.
- Safety checks, which he/she can carry out.
- WHO, WHEN and HOW to contact a member of staff if an alarm sounds or the light stops flashing.
- Advice on showering or bathing.
- The need to avoid mobile phones in the vicinity of the pump.
- Patient information leaflet available to download from palliative care website.

11. IN THE EVENT OF SUSPECTED EQUIPMENT MALFUNCTION

Stop the syringe pump IMMEDIATELY

- Ensure patient safety –undertake holistic patient assessment.
- Using the McKinley T34 Syringe Pump– Alarms – Tips on problem solving (appendix 2) – try to establish the cause – if none evident – remove the device.
- Liaise with the patients GP/ Consultant (regarding the patient’s condition especially if the infusion has over -infused or under-infused) for advice re further medical management.
- Replace the suspected device with another syringe pump from Team Stock.
- Maintain contemporaneous records.
- Complete an incident form.
- The McKinley T34 device should be taken out of general use, kept safe and contact made with line manager.
- If appropriate – a HAZARD Warning will be issued to other staff
- The Syringe Pump Register details will be updated for future reference

Depending on the nature of the fault, Senior Nurse Managers may forward a report to the Northern Ireland Adverse Incident Centre (NIAC).

Appendix 1

PROCEDURE FOR SETTING UP A SUBCUTANEOUS INFUSION OF MEDICATION USING THE MCKINLEY T34 SYRINGE PUMP

Action	Rationale
<p>Prior to procedure – ensure that all equipment necessary is available and in good working order.</p> <p>That the syringe pump is a McKinley T34</p> <ul style="list-style-type: none"> - It has been cleaned prior to use as per Western Trust Policy. - It has received its annual maintenance check as recommended by McKinley (2007). - That the Team register re: pump location is maintained. 	<p>To avoid unnecessary stress to the patient and family.</p> <p>To ensure that Western Trust Policy is adhered too.</p> <p>To reduce transmission of micro-organisms.</p> <p>To ensure that the devise is in good working order.</p> <p>To ensure syringe pump stock can be accounted for.</p>
<p>Prepare the patient/family by explaining the benefits of using the syringe pump in relation to patient comfort and optimal symptom control.</p> <p>If the patient is unable to give consent the procedure should be discussed with the GP and consent obtained as per Western Trust and DHSSPS (2003) Policy.</p>	<p>To obtain informed consent and co-operation by:</p> <ul style="list-style-type: none"> - Opening sensitive channels of communication. - Offering explanations. - Answering questions. - Giving instruction. - Providing opportunity for patient/carers to share feelings and concerns.
<p>Undertake an individualised Holistic Risk Assessment as per Western Trust Policy</p>	<p>To identify possible risk to the patient/ carer's.</p> <ul style="list-style-type: none"> - To reduce the likelihood of potential risk, injury, accident i.e. Needle Stick Injury - To safely manage identified risk factors - Maintain patient/carer safety.

Administration of Medications via Syringe Pump	
Action	Rational
Wash and dry hands thoroughly and put on protective powder free disposable gloves Latex or Nitrile gloves and plastic apron.	To comply with N. Ireland Regional Infection Control Manual (2008) and Best Practice for Aseptic Non Touch Technique (ANTT)
<p>All prescribed medications should be administered in accordance with</p> <ul style="list-style-type: none"> • NMC (2008) Standards For Medicines Management • All relevant Western Trust Policies & procedures. • Comply with ANTT principles and procedures in preparation and administration of drugs. <p>Specific considerations: Where Controlled drugs are prescribed: Western Trust policy states that a second checker is required in the administration process in the following circumstances:</p> <ul style="list-style-type: none"> • Administration of a Schedule 2 controlled drug • Complex calculations • Setting up of infusion pumps <p>In a hospital setting two registrants <u>must</u> always carry out checks.</p> <p>In a community setting this may not always be possible.</p>	<p>To ensure safe administration of medicines.</p> <p>NMC (2008) Standards for Medicines Management</p> <p>Re: Drug Calculations / Controlled drugs Some drug administration's can require complex calculations to ensure that the correct volume or quantity of medication is administered. In these situations, it is good practice for a second practitioner (<i>a Registered professional</i>) to check the calculation independently in order to minimise the risk of error – <i>where this is not possible a suitable person who has been assessed as competent may sign.</i></p> <p>The use of calculators to determine the volume or quantity of medication should not act as a substitute for arithmetical knowledge and skill.</p>

Action	Rationale
<ul style="list-style-type: none"> - Using a BD Plastipak syringe (20/30ml) Prepare new syringe with prescribed medication as per NMC Standards for medicines Management (2008). - Invert the syringe mix, observing for precipitation or discoloration of medication. - Once syringe is filled – attach the adhesive label detailing contents as recommended by the DHSSPS (2007). 	<p>Dickman (2005) recommend a 20ml Luer Lok syringe (minimum). If the length of fluid exceeds 20ml, or to reduce the concentration of the drugs – a 30ml - 50ml syringe may be used if recommended by Specialist Palliative Care Team).</p> <p>This could indicate incompatibility of medications and/or solution. <u>DISCARD – if this occurs as per Western Trust Policy</u> Re-check compatibility and mixing technique.</p> <p>To promote patient safety in event of transfer between community/hospital.</p>

Action

PRIMING THE INFUSION LINE

Butterfly



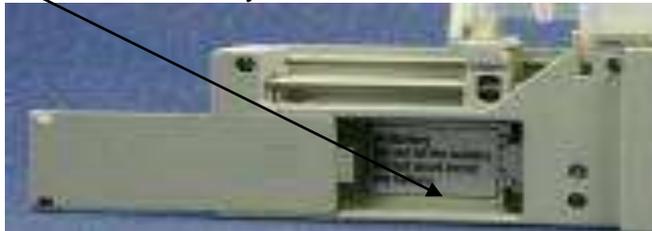
Sofset



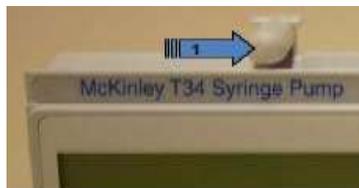
Within the Western Trust the infusion lines used both have a low priming volume

- The CME McKinley butterfly giving set will use 0.3ml
- The minimised Sof-set giving set will use 0.3 ml

Install a new sealed 9V Alkaline battery.



Before powering up the pump, ensure the barrel clamp is down.



Depress the **ON/OFF** button

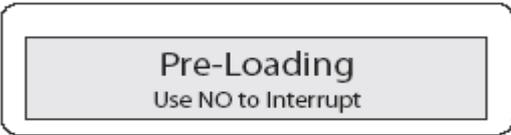


Then press the **ON / OFF** key until the 'Self-Test' screen appears.

- The screen will identify the pump model.
- Reference to ownership: Western Trust.

Action

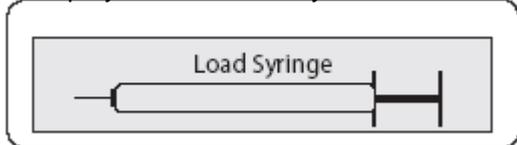
The LCD display will show 'Pre-loading'



During the Pre-loading the actuator always returns to the start position of the last infusion programmed.

(If the actuator is not in the correct position to accommodate the newly filled syringe, leave the barrel clamp arm down and use the **FF** and **BACK** buttons on the keypad to move the actuator).

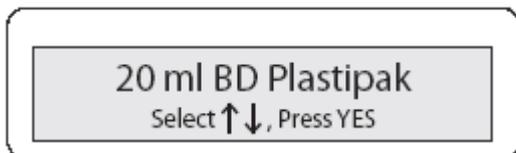
The Display Screen will ask you to **LOAD the SYRINGE**



- Lift the barrel clamp arm, seat the filled syringe into position
- Barrel clamp arm – (detects size and width of barrel / secures)
- Syringe ear/collar sensor – (detects secure loading of syringe collar)
- Plunger sensor (detects secure loading of syringe plunger)



The pump will recognise the size and brand of syringe



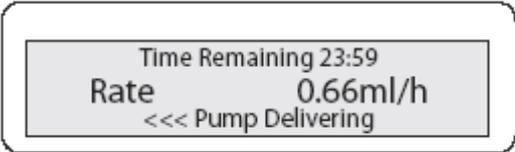
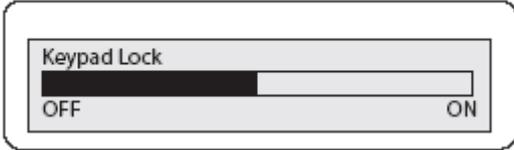
And ask you to confirm - If details correct - Confirm by pressing the **YES** button

The pump will automatically calculate the volume / rate – the infusion time is pre-set at 24hrs. Summary Screen will appear

Volume	20.3ml
Duration	24.00
Rate	0.85ml/h
Confirm, Press YES	

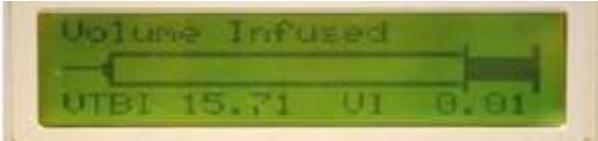
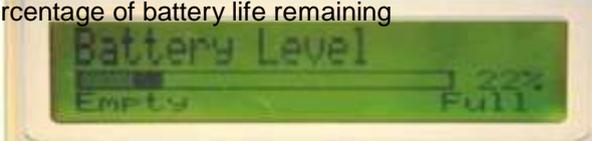
This confirms the volume to be infused
Duration of infusion
Rate in mls/hr.
Press **YES** to confirm

<u>DO NOT ATTACH THE INFUSION LINE TO PATIENT UNTIL MEASUREMENTS / FULL INSTALLATION COMPLETE</u>	
Action	Rationale
<p>Expose and cleanse the chosen site with an alcohol wipe – <u>allow the skin to dry for 30 seconds</u> (Royal Marsden, 2008). Do not retouch the site.</p> <p>Be guided by - (Information re site selection)</p>	<p>To reduce the risk of contamination</p> <p>To reduce the incidence of pain on needle insertion, this may be caused by introducing alcohol.</p> <p>To promote patient choice</p> <p>To facilitate evidenced based decision making</p>
<p>Insert infusion (butterfly) needle into the subcutaneous tissue at an angle of 45 degrees with the bevel facing downwards</p> <p>When using a sof-set – insert the cannula at a 90 degree angle and remove the insertion needle</p>	
<p>Secure the infusion wings firmly to the skin. Loop part of the tubing over the wing of the infusion set and secure with a sterile transparent adhesive dressing e.g. Opsite – Tegaderm- IV 3000 (Mitten 2001)</p> 	<p>To ensure free flow of fluids</p> <ul style="list-style-type: none"> - Prevent displacement - Allows visualisation of the site - Protects the site from infection.
<p>Ensure safe disposal of SHARPS, directly after use into an approved sharps box as per N. Ireland Regional Infection Prevention and Control Manual (2008)</p>	<p>To reduce the incidence of NEEDLE STICK INJURY</p>

Action	Ration
<p>The summary screen will prompt to – START Infusion?</p>  <p>Press YES to confirm</p>	
<p>Summary screen will provide information on</p> 	<p>The time remaining The rate And confirm that the pump is delivering</p>
<p>The Green LED indicator flashes every 64 seconds</p>	
<p>To activate the Keypad lock – <u>press and hold</u> the INFO key until a chart is displayed showing a 'progress bar' moving from left to right.</p>  <p>Hold the key until the bar has moved completely across the screen and a bleep is heard to confirm the lock has been activated.</p> <p>Although the keypad lock is on, the following buttons are still active NO/ STOP, YES / START, INFO</p> <p>To deactivate the keypad lock – Repeat the procedure above. The bar will move from right (LOCK) to left (UNLOCK) and a bleep will be heard.</p>	
<p>Where the decision has been made to use a plastic locked box ensure that the protective plastic cover is correctly in position</p> 	

<p>Ensure that the single patient use holster is utilised</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	
Action	Rationale
<p>Following procedure, remove protective powder free disposable latex/nitrile gloves Wash and dry hands thoroughly</p>	<p>To comply with N. Ireland Regional Infection Control Manual (2008).</p> <p>To comply with safe technique and practice.</p>
<p>Ensure the patients comfort Provide CME McKinley Patient Reference Guide</p>	<p>To offer further reassurance, alley fear / anxiety. Create an opportunity for patient / family to recap pertinent information.</p>
<p>In a hospital setting the first monitoring check should be carried out 30 minutes after starting the syringe pump then monitoring check should be carried out 4 hourly.</p> <p>In the community setting a minimum of two monitoring checks daily.</p> <p>NB this is dependent on the individual patient assessment carried out by the caseload holder and may be negotiable following discussion with medical, nursing team. Any decision should be documented in the patient's notes.</p> <p>Observe for complications such as-</p> <ul style="list-style-type: none"> - Pain, swelling, redness, infection, bruising or oedema. - Blood in the infusion line. - Crystallisation - Disconnection - Infusion not progressing - Infusion progressing too quickly <p>Encourage and educate the patient / carer on how to monitor the devise and infusion site 4hrly – as well as – ACTION to be taken in event of any of the above.</p>	<p>To ensure timely, efficient intervention as / when required re:</p> <ul style="list-style-type: none"> • Optimal symptom control. Site maintenance ▪ Drug compatibility. ▪ <p>To promote patient / carer empowerment and shared care.</p>
<p>Ensure the patients comfort Provide Western Trust Patient Information leaflet</p>	<p>To offer further reassurance, alley fear / anxiety. Create an opportunity for patient / family to recap pertinent information.</p>

Monitoring Checks – McKinley T34 Syringe Pump

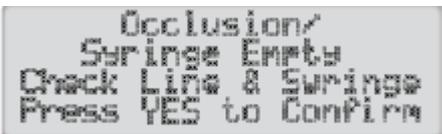
Action	Rationale
<p>Ask the patient about - The effect and side effect of prescribed medication/s</p> <p>Observe</p> <ul style="list-style-type: none"> (a) The subcutaneous site of infusion for abnormalities or signs of infection (b) That the drugs are clear and there is no evidence of crystallisation (c) That the infusion line is clear, and unobstructed. 	<p>To promote adequate symptom control.</p> <p>To ensure that the site is absorbing the drugs</p> <p>To ensure drugs are compatible</p> <p>To ensure the infusion line is free from 'kinks'</p>
<p>Examine the Summary Screen on the pump</p> 	<p>It will provide information on</p> <ul style="list-style-type: none"> (a) The infusion time remaining (b) The rate in millilitres (mls) per hour
<p>Depress the blue INFO key <u>Once</u></p> 	<p>It will provide information on</p> <ul style="list-style-type: none"> (a) The volume to be infused (b) The volume infused 
<p>Depress the blue INFO key <u>Twice</u></p>	<p>The screen will display information about the percentage of battery life remaining</p> 
<p>If problems evident –</p> <ul style="list-style-type: none"> - Low battery - Site issues - Uncontrolled symptoms - Infusion not progressing - Infusion progressing too quickly 	<p>Ensure the comfort and safety of the patient and ensure appropriate interventions are implemented promptly.</p>
<p>IMPORTANT SAFETY ISSUE TO CONSIDER <u>If an infusion is to be stopped before the syringe is empty, disconnect the syringe from the patient and apply a sterile universal bung.</u></p>	<p><u>To avoid an inadvertent bolus dose</u></p>
<p>Complete Documentation to include:</p> <ul style="list-style-type: none"> - Patient Daily assessment record - Syringe Pump Monitoring Chart 	<p>To comply with NMC (2009) record keeping</p>

Appendix 2

Alarms

When an alarm is activated:

- The infusion stops
- An audible alarm sounds
- The operation LED turns from green to red
- The LCD screen displays a text message and instruction to help identify/ resolve the cause

Alarm	Possible Cause	Action
Occlusion or syringe empty 	Kinks in tubing, obstruction of infusion set	Remove occlusion – restart – inform the person in charge of care.
	Actuator has reached minimum travel position	End of program – switch off pump and inform the person in charge of care.
Syringe displaced 	Syringe has been removed or displaced	Check and confirm syringe seated correctly and resume – Inform the person in charge of care.
	Stop button pressed for more than 2 minutes	To re- start – press Yes.
Near end of infusion	15mins from the end of infusion	Nurse / Dr to prepare to change syringe.
End of program	Infusion complete	End of program – switch off pump and inform the person in charge of care.
Low battery	Battery is almost depleted	Prepare to change battery.
End battery	Battery is depleted	Change battery.

Appendix 3

Removal and Disposal of Infusion Set and Syringe Pump

Action	Rationale
<p>The infusion set should be removed by</p> <p>(a) A Registered Nurse OR (b) A competent Nursing Auxiliary under the supervision of a Registered Nurse.</p> <p>In accordance with N. Ireland Regional Infection, Prevention and Control Manual (2008)</p>	<p>To prevent Needle-Stick Injury, to ensure the procedure is carried out safely.</p>
<p>Empty syringes should be discarded in the blue-lidded Sharps container.</p> <p>RE: Disposal of Controlled Drugs Any medication remaining in the syringe should be measured – volume to be discarded should be recorded before being ejected - from the syringe into the blue-lidded sharps container. BOTH nurses to witness the action and sign appropriate documentation as per Western Trust Policy on (a) Disposal of Controlled Medications (b) NMC Guidance (2008)</p>	<p>To ensure the drugs are rendered irretrievable and prevent leakage of medication from the blue lidded container.</p> <p>To account for unused Medications Particularly - Controlled Medications.</p>
<p>The needle site should be inspected</p> <ul style="list-style-type: none"> - If necessary cover with a dry sterile dressing or plaster (If patient has no allergies) - Document the condition of the needle site on removal 	<p>To reduce the risk of infection and wound leakage.</p>
<p>If the syringe pump is no longer required – the battery should be removed and discarded via house hold waste (<i>it should not be discarded in the blue lidded container</i>)</p>	<p>To reduce the risk of cross infection</p> <p>To reduce the risk of combustion during incineration</p>
<p>The device and associated equipment should be cleaned as per manufacturer's instructions – see above.</p>	<p>To reduce the risk of cross infection.</p>
<p>Ensure that the Syringe Pump Register has been amended</p>	<p>To ensure transparent tracking of each devise. To ensure annual maintenance checks.</p>

Appendix 4

In Event of Expected Patient death

Action	Rationale
Doctor to be informed of the death and consent for removal of syringe pump obtained	To gain Doctor consent to discontinue medical treatment.
Remove the battery from the syringe pump as soon as possible. EXCEPT If the patient has to undergo post mortem examination. (see below)	To prevent family distress from the 'whirring' noise made by the device whilst in operation.
After the death unless there is going to be a post mortem – remove the infusion set and syringe pump and dispose of contents of syringe and equipment as above.	To gain Doctor consent.
Ensure the device and associated equipment is decontaminated (see section 10.1) Register has been amended as before.	To reduce the risk of cross infection To ensure transparent tracking and maintenance of the device
<p>If the patient has to undergo post mortem examination. Stop the infusion and switch the syringe pump off.</p> <ul style="list-style-type: none"> - Leave the body and all devices intact. (<i>The coroner considers the body and immediate area as a potential crime scene especially if the death is unexpected, accidental or unexplained</i>) - Inform the medical team promptly - Comfort and support the family and explain what is going to happen <p>In community setting</p> <ul style="list-style-type: none"> - Wait until the Police arrive Liaise and forward pertinent information / Documentation <p>Inform Line Manager – regarding location of equipment and patient documentation</p>	<p>To ensure evidence is not corrupted.</p> <p>So that he/she can begin the process of post mortem investigation and mobilise the Police/ Coroner.</p> <p>To help reduce family anxiety by offering information and explanations Re: post mortem examination</p> <p>To ensure that pertinent information /documentation/equipment is removed from the patient's home.</p> <p>To maintain open channels of communication</p>

In event of an unexpected patient death, Contact a Senior Nurse for support and professional guidance e.g. Northern Ireland Adverse Incident Centre advise retaining all equipment, even if not directly implicated in the death.

References

- Association for Palliative Medicine and the Pain Society. (2002), The Use of Drugs beyond Licence in Palliative care and Pain Management, (Available on line)
- CME McKinley. (2007), T34 Ambulatory Syringe Pump, Operation Manual.
- Cooper, J., Mitten, T. (2000), Continuous subcutaneous infusion. In Cooper, J. ed Stepping into Palliative Care. Radcliffe Medical Press, Oxford: 58
- Department of Health, Social Services and Public Safety. (2003), Good practice and Consent: Consent for Examination, Treatment or Care. DHSSPS.
- Department of Health, Social Services and Public Safety. (2007), National Patient Safety Agency.
- Department of Health, Social Services and Public Safety. (2008), N. Ireland Regional Infection, Prevention and Control Manual. DHSSPS.
- Department of Health, Social Services and Public Safety. (2009), Safe Management of Controlled Drugs a Good Guide to Practice in NI (DHSSPS) www.palliativedrugs.com
- Dickman, A. (2005), Devices for continuous subcutaneous infusion. Hospital Pharmacy Europe. November / December Edition. Campden Publishing Limited.
- Kennedy, C., Lockhart-Wood, K. and Fielding H. (1999), Use of the syringe driver in the community setting. British Journal of Community Nursing 4(5) 250-257
- Lothian Palliative Care Guidelines. (2008), 3rd Edition
- Mallet, J. & Dougherty, L. (2000), The Royal Hospital Manual of Clinical Nursing Procedures, 5th Edition, Blackwell Science. London.
- Mitten, T. (2001), Subcutaneous drug infusions: a review of problems and solutions International Journal of Palliative Nursing, 7(2) 75-85
- Morgan, S. Evans, N. (2004), A small observational study of the longevity of syringe driver sites in palliative care. International Journal of Palliative Care, 10(8) 405-412.
- Nursing Midwifery Council. (2008), Standards for Medicines Management. NMC. London.
- Nursing Midwifery Council. (2009). Record Keeping: Guidance for nurses and midwives. NMC. London.

Palliative Adult Network Guidelines. (2011), 3rd Edition (PANG)

Royal Marsden Manual of Clinical Procedures and Policies. (2008),
7th Edition. www.rmmonline.co.uk accessed July 2010.

Scottish Intercollegiate Guidelines network. (2008), Control of Pain in Patients
with Cancer. SIGN.

Twycross, R.G., Wilcock, A., Charlesworth, S. and Dickman, A. (2002),
Palliative Care Formulary 2nd Edition. Oxon: Radcliffe Medical Press Limited,
www.palliativedrugs.com accessed August 2011