

# Syringe Driver Guidelines

## 1. Scope

These guidelines are to assist registered nurses at Phyllis Tuckwell Hospice Care, both inpatient unit (IPU) and community, who are caring for adults 18 years onwards, to promote procedural uniformity, for when it has been identified that the patient requires a syringe driver to administer medications via the subcutaneous route, to help control distressing symptoms, in a safe and effective way.

At Phyllis Tuckwell Hospice Care (PTHC) the **McKinley T34** Syringe Driver is primarily used, with the exception of the Medfusion 3500 V6 Syringe Pump which may be used for larger volumes over 34mls/24hrs within PTHC Inpatient Unit (IPU). The Medfusion 3500 would only be used if the patient were not agreeable to having two McKinley syringe drivers in use at one time, or where a greater diluent volume is required over 34mls within a 50ml and lockbox.

These Guidelines should be read in conjunction with the Phyllis Tuckwell Medicines Management, Clinical Waste and Infection Control, Risk Assessment and Management of Patient Related Incidents Policy and Procedures.

## 2. Definition

The McKinley T34 Syringe Driver is a small portable, battery-driven driver, which slowly administers medicine via an infusion set into a subcutaneous site, over a given length of time, and has a 'Lock ON' mode which is set to deliver the infusion over a period of time i.e. 24 hours at PTHC. There are now two versions of the T34, 2<sup>nd</sup> and 3<sup>rd</sup> edition, which vary slightly in appearance on front screen, differences with alarms and the battery life (see appendix 1)

The McKinley T34 Syringe Driver has safety features including; three point syringe detection to highlight the syringe is securely placed, keypad lock and event log, with an internal memory that records activity. It can detect the syringe size and brand, and calculates the delivery in mls/hour. There is an alarm and alert sound to highlight what needs addressing and a lock box to protect each device.

## 3. Criteria for use in Palliative Care

- The oral route for administering medication is not suitable
- The rectal route is inappropriate
- There is a need for regular parenteral administration, avoiding frequent injections
- Provide a stable plasma level of medications

### 3.1 Indications

Ongoing assessment of the patient's physical and psychological needs is required prior to initiating and continuing delivery via the McKinley T34 Syringe Driver. Symptoms indicating use of the syringe driver include:

- Persistent vomiting or nausea
- Dysphagia
- Oral or pharyngeal lesions
- Intestinal obstruction, poor absorption of oral medication
- Diminished level of consciousness

### 3.2 Contra-indication for syringe driver use

Severe Thrombocytopenia (platelets less than 10); patients will need to be individually reviewed and for patients on the IPU intravenous infusions may need to be considered.

## 4. Responsibility

### 4.1 Responsibility of Managers

- To ensure registered nurses have attended training and competency assessment within six months of starting at PTHC, and that ongoing training and competency assessment is updated in line with PTHC requirements
- To ensure that each syringe driver is serviced annually and that in the event of any syringe driver mal-functioning, this is taken out of use immediately, an incident form completed (if applicable) and explicit feedback reported on the Maintenance reporting paperwork.
- To ensure that if a patient be required to attend an outpatient appointment outside of PTHC, the following checks are made:
  - ascertain whether or not the receiving department are confident in managing the syringe driver should a problem arise
  - ensure an up to date prescription chart for the syringe driver medications accompanies the patient
  - ensure the appropriate ambulance is booked for transporting a patient with a syringe driver
  - follow the medication procedure (see 10.2) for TTOs or PRNs that may be required whilst the patient is at the appointment.

If either the receiving department or the ambulance crew are not competent in managing the syringe driver, a Registered Nurse from PTHC must accompany the patient on their appointment and must take with them a replacement Saf-T-Intima and red bung in case the site occludes or the cannula needs to be removed for a procedure. Also ensure that the syringe driver has been changed within the last 8 hours and that there is at least 30% battery life, to ensure that the infusion does not run out.

### 4.2 Responsibility of the Registered Nurse

It is the responsibility of the Registered Nurse (RN) to provide a high standard of care and safe practice for patients, who need access to a syringe driver, in line with NMC Code (2018).

Nurses who have received training, completed their competency, are confident with the use of the syringe driver and have knowledge about medication to be administered can then undertake this single nurse administration process.

New staff to be trained and previous level of competency must be established during induction.

Nursing staff administering medication via the McKinley T34 Syringe Driver must:

- Have knowledge and skills for safe and effective practice when working without direct supervision; be able to recognise and work within own professional capacity and limitations
- Keep knowledge and skills updated and seek support, advice or further training if concerned regarding syringe driver management
- Document rationale and information provided to the patient/lasting power of attorney (LPA), for verbal consent and agreement. If the person lacks mental capacity, complete mental capacity assessment within electronic records. Discuss aim of treatment with the next of kin and document
- Ensure correct prescription chart in place and record on drug chart or community administration chart, when commenced, and throughout the delivery time, the monitoring of the infusion and the patient. Only use the PTHC syringe driver if it has been serviced within the year, otherwise give to PTHC Estates to arrange servicing.
- The servicing of syringe drivers is undertaken by CME. Syringe drivers are serviced annually on site at PTHC. The proactive planning of servicing schedules is managed by the PTHC Estates Department. Community syringe drivers are will be serviced locally within EME/CME.
- Have a broad and appropriate knowledge of medications and calculation/ conversion skills
- Seek advice and discuss with PTHC senior clinician if support needed in making incremental changes to medicines prescribed
- Attend the 'Assessment and Symptom Management' study day within PTHC after six month induction.

### 4.3 Responsibility of the Health Care Assistant

- Health Care Assistants (HCAs) are not permitted to participate in the preparation, checking, trouble shooting or documentation of syringe drivers.
- The HCA must report any concerns about a patient with a syringe driver to a registered nurse in charge ensuring timely escalation in the IPU or in the community setting.

### 4.4 Responsibility of the Prescriber

The prescriber must ensure that written instructions are documented on the prescription chart (IPU) and instruction chart (Community), legibly, including date, signature, medication, diluent, dose, range, route and duration, checking name and Date of Birth (DOB) is clear. That compatibility of medication and diluent has been checked before prescription.

## 5. Competency and Training

#### Registered Nurses must:

- Attend a competency based McKinley T34 Syringe Driver training session, (to be delivered by PTHC staff who have completed training and competence assessment for McKinley T34)
- Gain practical experience in the management of syringe drivers, initially using water in a simulated setting, to gain agility of setting up McKinley T34 Syringe Driver safely, and then with the support of a practice supervisor who is competent prior to assessments
- Complete both a formative and summative practical competency assessment, with practice assessor who has completed their competence, so to perform this activity with understanding of theory and practice principles without assistance and/or direct supervision, at an appropriate pace and adhering to evidence based practice
- Sign practice declaration and continue self-assessment of personal competency each year
- Attend 3 yearly update or before if knowledge and skills require updating.

## 6. Equipment and Method of setting up McKinley T34 Syringe Driver

#### Obtain Equipment required:

- McKinley T34 syringe driver 2<sup>nd</sup> edition with foam pad in battery compartment
- Duracell battery 9V **6LR61**. Do not use any other type of 9V battery, even if it looks similar. The 6LR61 is the only battery recommended by the manufacturer for use with this syringe driver.
- BD Saf -T- Intima 24 GA 0.75" 0.7 X 19mm
- BD syringe extension set, luer lock, anti siphon 100cm, Diameter 0.5x2.5mm line
- **'Saflo 90' 9mm x100cm needle with line, for use with Clonazepam**
- Appropriate size BD Plastipak luer-lok syringe 20ml, 30ml, (50ml/60ml with risk assessment if no lock box available – see below.)
- Blue needle to draw up from glass ampoule or red filter needle
- Needle site dressing (semi permeable) e.g. IV3000 (IPU)
- Skin prep - 'Fastaid' 70% IPA alcohol wipe
- Equipment - Clinell 70% isopropyl alcohol wipes, for non- invasive medical devices. If visibly dirty use Clinell Universal or Clos difficile use clinell sporicidal, as per policy, finish with 70% Clinell
- Medication(s) and diluent
- Patient's prescription
- Drug additive label
- Sharps disposal box
- Lockable syringe driver cover used for all syringes (NPSA 2010) with a key in IPU or coin/key in community to open. On the IPU, there are 2 lock boxes which are capable of accommodating a T34 syringe driver with a 50ml syringe in situ.
- Safety Gel sachet to place in the bottom of empty sharps bin
- CD Denaturing kit (DOOM or DOOP) for over 2ml of CD disposal (IPU)
- Red bung (for infection control if line unattached from syringe)
- Exceptional situations (IPU): **Use of the Medfusion 3500 syringe pump. Vygon Lectro-spiral polyethylene extension tube to be used with this pump only.** Safe to use with clonazepam.

## Initial set-up of the McKinley T34

Action	Rationale
<b>7.1 Communication, rationale and consent</b>	
<p>Discuss with patient and family the need for the syringe driver</p> <p>Gain verbal consent from the patient and document on electronic records and shared communication sheet in community</p> <p>In the event of the patient being unconscious or lacking mental capacity, ensure that the action is being taken in the best interests of the patient and document</p> <p>Check prescription for drug, dose, route and date, patient's name, date of birth, allergies and doctor or non-medical prescriber signature</p>	<p>To ensure the patient has understood the reason(s) for using a syringe driver in order to ensure compliance and reduce anxiety</p> <p>To comply with legal regulation and PTHC consent policy</p> <p>To protect the patient from harm in line with medicine management policy</p>
<b>7.2 Pump</b>	
<p>Identify components – and functions of each button. (Appendix 2)</p> <p>Understand coloured keys are active when keypad locked</p> <p>Include position serial number</p> <p>Check the date the syringe driver has been serviced. Annual servicing is required, (PTHC have a servicing contract with CME) and the date should be recorded on a sticker within PTHC</p> <p>Report to the maintenance department if servicing has not taken place within the last year or if there is a deviation of delivery causing a near miss or incident. Do not use the driver if it is out of its service period or there are concerns leading to malfunction</p>	<p>To ensure the staff member understands what each component/key function relates to, to ensure safe use of equipment and able to troubleshoot. Aware of the differences with T34 2<sup>nd</sup> and 3<sup>rd</sup> edition</p> <p>Appreciate that they can be tampered with which will stall the infusion delivering the medication</p> <p>So this can be matched with administration chart</p> <p>To ensure that the syringe driver is working correctly and to maximise patient safety</p> <p>Accurate completion of incident of event allows review of learning action plans and efficacy and safety of device</p> <p>This could lead to harm to the patient</p>
<b>7.3 Medication and compatibility</b>	
<p>Check the compatibility and dilution of the medication combination using the PCF latest edition date (available on the ward), 'The Syringe Driver' (2016) by Andrew Dickman 4<sup>th</sup> Edn. or Palliative Adult Network Guidelines (PANG) 4<sup>th</sup> Edn. (2016).</p> <p>Generally a <b>syringe should not contain more than 3 medicines</b>. If a 4<sup>th</sup> medication is needed, explore if this can be given via stat. injection. Discuss with the Pharmacist within IPU, and if patient under the direction of PTHC, discuss with the CNS and lead Consultant in the community, and consult the relevant supporting compatibility data This will lead to a decision as to whether it is possible and safe to increase the number of medications in the syringe driver.</p>	<p>To avoid drug interaction</p> <p>To reduce breakdown of the subcutaneous area</p>
<p>Dilute as much as possible (Dickman &amp; Schneider 2016), by using the larger syringe, with prescribed diluent. Consider the PH level of medications and diluent and concentration.</p>	<p>Consider PH of the medication, many are hypertonic solutions. Therefore Sodium Chloride 0.9% (NaCl) may reduce site breakdown. Also review volume of diluent and use of larger syringe size.</p>

Action	Rationale
<p>There is evidence to support the use of both Water for injection (WFI) and Sodium Chloride 0.9% <b>as a diluent.</b></p>	<p>To reduce the possibility of incompatibility- requires individual assessment</p>
<p><b>On IPU: Sodium Chloride 0.9%</b> is the diluent of choice for diluting infusions. <b>The exception</b> being all Cyclizine solutions or solutions of Diamorphine above a concentration of 40mg/ml. In both these cases WFI rather than saline is used as the diluent.</p>	<p>All compatibility must be checked before mixing of syringe driver contents</p> <p>To avoid precipitation</p>
<p>When mixing Cyclizine together with Diamorphine, the combination shows concentration dependant compatibility. Both are stable together in WFI up to concentrations of 20mg/ml. However if either exceeds this concentration then, depending on the exact concentration of the other, crystallisation may occur.</p> <p><b>Community - Water for injection (WFI)</b> is often used unless indicated for compatibility of medication or skin reaction.</p> <p>Check the mixture for signs of incompatibility between the drugs: discolouration, cloudiness or crystallisation and refer back to the evidence for compatibility.</p> <p>If any of these occur, the solution should not be used and further guidance sought regarding the combination and diluents.</p> <p>A medicine incident form should be completed and reported to the pharmacist, prescriber, consultant and ward manager/ or community leads.</p> <p>Temperature and direct light can also affect the stability of solutions; being aware of increased temperatures under bedclothes, and light (sunlight or close to indoor light, or when the patient outside); therefore protecting the solution by covering with a bag for protection is required.</p>	<p>Assess patient's tolerance and compatibility</p> <p>(See Dickman &amp; Schneider 2016, p24 &amp; p63)</p> <p>For patient comfort and efficacy of delivery of medication</p> <p>PTHC learning for prescriber and nurse. Safe practice; External reporting.</p> <p>Reduce photodegradation of medication.</p> <p>When being used in direct sunlight may deliver an unintended bolus and then stop infusing,(MHRA MDA/2016/002)</p>
<p><b>7.4 Cannula and Giving Sets</b></p>	
<p><b>Cannula:</b> Use a BD Saf -T- Intima 24GA 0.75IN 0.7 X 19mm for all subcutaneous infusions.</p> <p>This system cannot be primed (See Appendix 3 for insertion guidance).</p> <ul style="list-style-type: none"> <li>• Discuss with the patient taking into account their activity levels and enough subcutaneous tissue before deciding where to insert and site the Saf-T-intima</li> <li>• Clean site with alcohol wipe 30 seconds, then leave for 30 seconds to dry</li> <li>• Insertion is at 45 degrees</li> <li>• Semi permeable, needle site dressings are to be used to cover the site of needle or BD Saf -T- Intima insertion. IPU uses IV 3000; similar semi breathable product is used within the community.</li> </ul> <p>It is recommended that cannula are checked, being aware that sites can remain satisfactory for up to 7 days (discretion to be used). The site should be rotated.</p>	<p>Reduce risk of needle stick injury</p> <p>Choose site to enable independence and comfort.</p> <p>Avoiding areas such as lymphoedema, bony prominences Gaining consent for placement of cannula</p> <p>To reduce risk of infection</p> <p>Ensure absorption of medication - See appendix 2</p> <p>The product is semi permeable which lessens the risk of inflammation or infection at the needle site</p> <p>Encourage sustainable sites and independence for the patient and reduce inappropriate needle insertion</p>
<p>If the medication is changed then ideally the cannula should be re-sited and line should be changed.</p>	<p>Reduce compatibility errors</p>

Action	Rationale
<b>Lines:</b>	
<p><b>Lines</b> used with the Saf-T Intima cannula <b>include the CME Syringe Extension Set for the McKinley T34</b>, which is 100cm extension set. (PVC)</p> <p><b>CME Syringe Extension Set for the McKinley T34</b> ideally changed every 3 days</p>	<p>This extension set has up to 0.5ml priming volume and an anti-kink line with anti-syphon valve, placement should still be below site of insertion. The volume is 0.5mls which reduces loss of prescription administration delivery.</p> <p>As per BD/CME guidance</p>
<p>The Vygon Lectro-spiral line which requires 3.7mls priming volume, is only to be used with the <b>Medfusion 3500 V6 syringe pump</b>. This line is safe with Clonazepam. This pump automatically takes into account the priming volume within the line when it calculates the time for infusion.</p> <p><b>The Saflo 90 administration set</b> should be used <b>only</b> when a Clonazepam CSCI is required with a T34 McKinley Syringe driver, due to the PVC content of the BD lines.</p> <p>The Saflo 90 lines require 0.2ml to be primed, therefore if the insertion site is patent and viable, and an increase to the patient's dose of clonazepam is required via syringe driver, there is no requirement to insert another Saflo 90.</p> <p><b>Warning:</b> Do not insert the Saflo 90 device into the scapula or chest wall site on a patient as devices are inserted at a 90 degree angle.</p>	<p>For complex high volume regime, whilst in IPU.</p> <p>Product code: 1159.60 is manufactured from Polyethylene (PE) not PVC.</p> <p>Clonazepam is not compatible with PVC lines as the drug 'clings' to line.</p> <p>As the line has minimal volume, therefore prescription continues to be therapeutic.</p> <p>Can potentially cause damage to lung tissue if inserted in the scapula or chest wall</p>
<b>7.5 Syringe size and volumes</b>	
<p>Select appropriate sized '<b>BD Plastipak</b>' luer-lok syringe for the volume required and draw up the medication Draw up drugs into 20ml, 30ml or 50/60ml BD Plastipak luer-lok syringe.</p> <p>The concentration of the medications can increase the rate of degradation i.e. cyclizine and diamorphine 20mg/ml</p> <p>Draw up a total volume of 18 mls in a 20ml BD syringe. The rate will be determined by the driver and will vary slightly – approx. rate delivery of 0.75ml/hr</p> <p>Draw up a total volume of 23mls in a 30ml BD syringe. The rate will be determined by the driver and will vary slightly – approx. 0.95ml/hr.</p> <p>Draw up a total volume of 34mls in a 50/60ml BD Syringe. The rate will be determined by the driver and will vary slightly – approx. 1.4ml/hr.</p> <p>If a larger volume is required either use two McKinley T34 syringe drivers or the Medfusion 3500 V6 syringe pump (detailed later)</p>	<p>Maintain safe and consistent practice</p> <p>Dilute the solution as much as practical, <b>hence use of 10ml syringes are no longer recommended.</b></p> <p>Read page 24 Dickman &amp; Schneider 2016</p> <p>Calculate that rate setting is set up correctly by checking: Volume ÷ by hours. <math>18 \div 24 = 0.75</math> mls</p> <p>Allow up to 2% variance on the LED screen only to ensure prescription delivered i.e. <math>18\text{mls} - 2\% \therefore 18 - 0.36 = 17.64\text{mls}</math>. <math>23\text{mls} - 2\% \therefore 23 - 0.46 = 22.54</math> mls.</p> <p>When using 50 ml syringe – ensure that an appropriately sized lock box is available. If not, complete a risk assessment to include low, medium, high risk from patient harm and environment/ relatives etc. Discuss with manager. Use lock box (NPSA 2010).</p>

Action	Rationale
<p><b>NB. All doses of medication to be given must be drawn up into a syringe by required volume and not by ampoule volume.</b></p>	<p>Ampoules and vials of medication for injection have a “fill volume” and an “extractable volume”. This may mean that vials and ampoules contain slightly over the volume of drug as stated on the ampoule label.</p>
<p>In the case of drawing up medications to be mixed and administered via syringe driver, all medications must be drawn up to the required volume in separate syringes (one medication to one syringe). Only once all of the required medications are drawn up separately may they then be mixed in the same syringe and diluent added as prescribed.</p>	<p>To help prevent accidental overdose and maximise safety.</p>
<p><b>Diluent</b> should be clearly prescribed on the prescription chart along with the medication to be administered. Water for injection (WFI) is hypotonic and Sodium chloride 0.9% (NaCl) is isotonic, therefore NaCl is recommended with exception for cyclizine and high concentration of diamorphine (Dickman &amp; Schneider 2016).</p> <p>NaCl is recommended in the inpatient unit <b>but it is recognised that the community usually use water for injection.</b></p>	<p>To ensure that the solution is as close to physiological tonicity as possible.</p> <p>Many solutions have the same or less as NaCl. (NaCl has pH of 5.5)</p>
<p><b>7.6 Commencing a new infusion</b></p>	
<p><b>a)</b> Draw up medication as prescribed, using blue or filter needle, checking ampoules for drug, strength and expiry date. Use single syringe for each drug before mixing within 20ml, 30ml or 50/60ml.</p> <p><b>b)</b> Complete a label (with name, date, time, medication, dose &amp; signature) and attach to syringe - avoid folding under the barrel clamp arm</p> <p><b>c)</b> Attach the BD Syringe Extension Set to the syringe and prime it fully, taking care that the priming volume is less than 0.5ml</p> <p><b>d)</b> Check lead screw has no white plastic debris</p> <p><b>e)</b> Place battery in compartment correct way, checking that foam pad in place in 2<sup>nd</sup> edition T34, checking connection, and replace back to cover. Take care not to force the battery into the compartment and to insert the battery flat end first, rather than contact end first.</p> <p><b>f)</b> Before placing the syringe in the driver, place barrel clamp down</p> <p><b>g)</b> Turn ON syringe driver, holding down Grey On/Off button, watch for ‘PRELOAD’ on screen and you see that the actuator moves.</p>	<p>Using a blue needle avoids uptake of glass or filter needle.</p> <p>Reduce medication errors, avoiding ‘overflow’ of ampoules and be accurate with prescription</p> <p>Label required to reduce error Placing label so not to interfere with sensors which may lead to mismatch of syringes used</p> <p>Important to minimise reduction of prescription ordered and subsequently administered</p> <p><b>Field Safety notice MMS-19-1572 Feb 2020</b> If there is white plastic debris on the lead screw, this is an indication of wear on the syringe mechanism. Therefore, discontinue use and send the pump for servicing.</p> <p>Ensure connection and battery secure (MDA 2018/010). Inserting the battery contact end first may damage the contacts.</p> <p>To ensure that the driver is able to preload when turned on.</p> <p>To ensure that the last memory is cleared, and that delivery is over 24 hours.</p>
<p><b>h)</b> Press info (Blue) button and check battery level is 30% or above (2<sup>nd</sup> Edition T34 only) (2<sup>nd</sup> Edn. change if battery less than 30%).</p>	<p>For 24 hour delivery 3<sup>rd</sup> Edition requires daily change of battery until they are recalled and amended (2020)</p>

Action	Rationale
<p><b>i)</b> Then check that the actuator is at the furthest position to accommodate the syringe, using the backward arrow key press and hold until you hear a beep.</p> <p><b>j)</b> Secure the syringe in the driver ensuring that the syringe is placed correctly in the three sensors; the actuator, collar and plunger sensors, before attaching to patient.</p> <p><b>k)</b> Ensure that the driver has detected the correct syringe type (BD Plastipak) and size – you may need to scroll through the options, confirm correct type using the up and down arrows.</p>	<p>To take the actuator back to the maximum length the RN has control of the starting point to ensure 'gold standard' and starting volume on LED within the 2%</p> <p>This ensures that the patient is not accidentally injected with a bolus dose.</p> <p>To avoid delivery errors of prescription, as the wrong type of syringe delivers a different volume to complete in 24 hours</p>
<p><b>l)</b> A summary will be displayed on the front of the driver – if correct – connect giving set to cannula, press yes to confirm, attach to cannula and then press start</p>	<p>Check before commencing to ensure safe to do so.</p>
<p><b>m)</b> Note the time the infusion started (and hence time it will finish) on the syringe driver checklist within the medication chart.(IPU) and administration checklist (community)</p> <p><b>n)</b> Check rate setting is correct; Volume ÷ by time = rate per hour e.g. 18mls/ 24 hours = rate setting</p> <p><b>o)</b> Check light is flashing every 30 seconds and that the wording is passing along screen, checking &lt;&lt;&lt; syringe type and delivery &lt;&lt;&lt;&lt;</p>	<p>The finishing time should be 24 hours later, so forward planning is important to assess the patient and amount of PRNS and prescription chart.</p> <p>Calculate to ensure that the device is delivering correctly.</p> <p>To ensure it is on and working</p>
<p><b>p)</b> Press keypad lock (blue button), holding down until scroll bar across. Check if locked by pressing a grey button/key. Coloured buttons still work and machine can be stopped.</p> <p><b>q)</b> Secure in lock box.</p> <p><b>r)</b> Ensure the syringe driver is placed <b>below</b> the site of the cannula, and not in high temperature.</p> <p><b>s)</b> Complete documentation on prescription chart checklist including SD serial number, found on bar code or within battery area (IPU)</p>	<p>Safety as the machine will alarm if tampered with.</p> <p>To ensure that risk reduced for manipulation of syringe driver.</p> <p>This is to prevent syphonage of the syringe for 2<sup>nd</sup> edition as it does not have soft wear to avoid this in sunlight.</p> <p>Communication for delivery and tracking of syringe driver with each infusion</p>
<p><b>7.7 Stopping of the infusion</b></p>	
<p>In the event that the 'battery needs to be changed', an 'occlusion has occurred mid programme' or the infusion has to be stopped for any reason, the programme must be resumed once the event has been dealt with.</p> <p><b>Battery to be changed:</b> slide back off, remove and replace with new battery. Press ON button and then resume. Recheck calculation of time</p> <p><b>If driver alarms and highlights Occlusion:</b> The site needs changing, replacing the saf-t-intima. Do not continue in same site as the driver has a mechanical slack which causes a 15 minute delay to retry forcing solution into site, which then postpones delivery.</p> <ul style="list-style-type: none"> <li>• Consent to where to site new Saf-T-intima cannula and fix with IV semi permeable dressing.</li> </ul>	<p>Resume ensures the infusion continues delivering within the initial time period.</p> <p>So lock box remains in situ to maximise patient safety.</p> <p>The pressures within the driver are sensitive and occlusion will appear again.</p> <p>Aim to deliver medication on time and optimise symptom control.</p> <p>Replace away from deteriorating site to allow this to settle.</p>
<ul style="list-style-type: none"> <li>• Disconnect line from old site cannula and reattach to new cannula.</li> </ul>	

Action	Rationale
<ul style="list-style-type: none"> <li>Resume driver and check the end time is within 24 hours</li> </ul> <p>If occluded ensure that the infusion end time is highlighted i.e. if early then staff to plan new times. If late still use expected 24hr due time</p> <p>Assess patient's symptoms due to delay and may need PRN.</p> <p>The pump will ask you if the infusion is to <b>RESUME – Press YES</b></p>	<p>If a delay still change within the 24 hours due to medication pharmacology.</p> <p>As there may have been a delay in infusing the medication.</p> <p>This is the only time that the option to resume should be confirmed so we can ensure delivery of the prescribed medications.</p>
<p>If accidentally pressed NO then you need to start again by making up new syringe and deliver over 24 hours.</p>	<p>If you press NO you reset the infusion to deliver over 24 hours rather than resuming the delivery in just the few hours left, therefore the patient would experience increasing symptoms.</p>
<p><b>7.8 Replenishing/renewing syringes</b></p>	
<p>Within 30 minutes prior to end of infusion assess patient and check PRN doses given and efficacy.</p> <p>Draw up prescribed medication in appropriate sized syringe as described previously</p> <ul style="list-style-type: none"> <li>Stop the infusion</li> <li>Disconnect the line from the syringe</li> </ul> <p><b>(If leaving the line unattended then use red bung at end)</b></p>	<p>Assess patients symptoms so medication can be recalculated and syringe driver can be set up before it has completely run out</p> <p>Bung for infection control measures</p>
<ul style="list-style-type: none"> <li>Turn off the infusion and remove the syringe. Ensure barrel clamp arm down</li> <li>Turn ON to start driver, watch for PRELOAD</li> <li>Check battery more than 30%</li> <li>Press 'back button' to take actuator back till you hear alarm</li> </ul> <p>Fit the replenished syringe as previously described in <b>Number 7.6 from (a)</b></p> <p>If the prescription has been changed, replace the infusion set, or if it has been up for 72 hours</p> <p>If increased dose, assess patient and give a PRN dose as required</p>	<p>So the driver recalculates for next set up</p> <p>Preload ensures last memory wiped</p> <p>If 2<sup>nd</sup> Edition T34</p> <p>Using the maximum length of the driver for infusion</p> <p>To reduce incompatibility</p> <p>'BD' advice</p> <p>To allow for efficacy of infusion.</p>
<p><b>7.9 Safety</b></p>	
<p><b>Lock Mode</b> is set on the McKinley T34 syringe driver to infuse over 24 Hours. This is pre-set.</p> <p><b>Lock boxes:</b> Are available for the 20ml, 30ml and 50ml syringes and should be used for all patients with a syringe driver. When the syringe driver is being stored, when not in use, keep within lock box.</p> <p>MHRA CME guidelines advise unless a specific risk assessment has been completed, there is a need to justify why a lock box is not being used during delivery of medication.</p> <p>When using a 50 ml syringe, complete a risk assessment and discuss with manager, if a lock box is unavailable.</p>	<p>To reduce errors</p> <p>To reduce breakages</p> <p>Reduce tampering, but be aware that the buttons are accessible at the opening so the pump could be accidentally stopped</p> <p>If required for large volumes risk assessment of patient capacity, family and environment to be assessed for low to high risk</p> <p><b>NB.</b> There are 2 available lock boxes stored on IPU which will accommodate a 50ml syringe. For the community liaise with the District Nurses for advice.</p>
<p>Need to ensure key or coin opening device is available for the lock box</p>	<p>So the community or hospital team can open</p>

Action	Rationale
<p><b>Keypad lock:</b> The McKinley T34 syringe driver has a key pad lock facility; this should be in operation at all times. (Only locks the grey buttons). It may be paused if stop button pressed.</p> <p><b>Label:</b> The syringe once filled with the correct drugs should have detailed label fixed to the barrel, including name, DOB, medication, dose, date and time and signature.</p>	<p>To reduce risk of wrong administration. To prevent any tampering of the rate (accidental or otherwise) VTBI is still accessible with info button/key</p> <p>To ensure the label refers to what is being administered; right patient, dose, drug, route and time</p>
<p><b>Serial number</b> of the driver should be documented on the subcutaneous syringe driver section on prescription chart and checklist (appendix 5 &amp; 6)</p> <p><b>Recording:</b> The nurse should record the start time on the prescription chart and complete the checklist.</p>	<p>To reduce errors and to identify the driver that was used at a later date if there is any query or any data needs to be retrieved</p> <p>To create an audit trail</p>
<p><b>Battery:</b> The T34 2<sup>nd</sup> edition driver has a battery life monitoring function, which should be checked at the beginning to show the battery life is above 30%. If below the battery must be replaced.</p> <p>No need to check the level if at 30% through the 24 hour period.</p> <p>3<sup>rd</sup> edition T34 requires daily battery change</p> <p>BD recommends that T34 2<sup>nd</sup> edition syringe drivers are protected from sunlight through the use of carry bags/ pouches when patients are outside (or inside but in direct sunlight). Also prevents photo degradation.</p>	<p>To ensure that the infusion is delivered within 24 hours Whilst placing battery check connection intact (MDA 2018/010). There should be a foam pad in the compartment.</p> <p>Not to waste battery charge; already aware battery holds charge for 24 hours when at 30%</p> <p>Due to the design it expires quickly, so until recalled they need changing daily.</p> <p>To ensure timely delivery of medication and prevent photo degradation. 3<sup>rd</sup> Edition T34 have been built to avoid incidents with sunshine. However use pouch/ carry bag to maintain patient's dignity and independence.</p>
<b>Alert and Alarm</b>	
<p><b>T34 2<sup>nd</sup> edition has an Alert;</b> where green LED continues to flash activates 3 bleeps every 3 minutes, with infusion still administering to warn near end of infusion or battery life:</p> <p><b>T34 2<sup>nd</sup> edition Alarm</b> will continuously bleep, LED red, infusion stops as:</p> <ul style="list-style-type: none"> <li>• Pump paused too long</li> <li>• End of infusion</li> <li>• End battery</li> <li>• Syringe displaced</li> <li>• Occlusion</li> </ul> <p><b>T34 3<sup>rd</sup> edition Alarms vary (no alerts)</b>, however LED light varies between red and yellow, and the bleeps vary according to situation. (see appendix 1)</p>	<p>To adhere to CME recommendations and remain responsive to alert recommendations.</p> <p>To highlight a problem that needs addressing now. Preparation by educating the patient to call the nurse is key to fix the problem</p> <p>Highlights priority and assists in importance to which it needs to be addressed.</p>
<p><b>Occlusion</b></p> <p>In the event that the pump occludes, always site a new Saf-T-Intima cannula.</p>	<p>Must re-site due to the sensitive pressure within T34; which will alarm again if tried to recommence without change of cannula.</p>
<p>Disconnect the line from the old cannula and attach to new cannula. You will have the option to resume the programme.</p>	<p>RESUME allows the continual delivery the medication within the 24 hours.</p>

Action	Rationale
<p>Press yes to <b>resume</b>.</p> <p>If accidentally pressed NO you must draw up new 24 hour dose of medication and start again.</p>	<p>If NO pressed this then recalculates driver back to 24 hour infusion, which would lead to under prescribed delivery of dose.</p>
<p><b>Clinical Waste</b> should be discarded within the sharps bin. Note preassembly with safety gel sachet.</p>	<p>To follow policy and protect environment and reduce risk of harm to others Label or sign box so that other staff know that safety gel sachet within, so to absorb excess medication added.</p>
<p>Add a safety gel sachet to a new Sharps Bin and add 1cm of water and mix into a gel, (this absorbs 600mls). Assemble bin and sign, and add sachet within If CD (schedules 2, 3 &amp; 4) more than 2ml then content must be denatured in CD denaturing Kit</p>	<p>(See Medicines Management policy/disposal of waste). (RPS 2017)</p>
<p>In community follow their waste disposal policy</p>	<p>Community teams' policy may vary from PTHC. Carry DOOP kit for emergency disposal.</p>
<b>7.10 Monitoring</b>	
<p>After the initial set up or when changing the syringe, the McKinley driver and patient should be checked after 15 mins, then within the IPU 4 hourly, and in the community at every visit aiming at least twice a day</p> <ul style="list-style-type: none"> <li>• Delivery of infusion - &lt;&lt;&lt; pump delivering &lt;&lt;and Light flashing</li> </ul>	<p>To ensure infusion has been initiated correctly and that the family are fully supported with the situation.</p>
<ul style="list-style-type: none"> <li>• Infusion rate</li> <li>• Volume remaining (press blue button VI)</li> <li>• Solution appearance</li> <li>• Check the patient's symptom management and adverse effects</li> <li>• Check the prescription chart against the label on the syringe driver</li> <li>• Site reactions, such as leakage, pain.</li> </ul> <p>This should be recorded on the prescription chart checklist/ community administration chart</p>	<p>Check manual calculation is the same as the machines. for safety To ensure correct volume has been infused</p> <p>To preclude crystallising within the infusion line</p> <p>Tolerating the medication and no toxicity</p> <p>Maintain patient safety</p> <p>Identified and site changed, and review the cause</p> <p>To create an audit trail and comply with documentation requirements</p>
<b>7.11 Completion</b>	
<p>Check infusion has delivered to time, and assess patient and medication administered 30 mins prior to finishing time. The syringe driver will alarm when the infusion is complete. Follow 'step 7.6' if further infusion required</p> <p>When infusion complete, document volume and time completed and infusion finished. Remove syringe and discard in medicines waste container if syringe empty If the infusion stopped prior to the end:</p>	<p>Prepare next syringe before the end of infusion, to ensure seamless delivery of medication and medication effective for patient's symptom management</p> <p>According to waste policy</p> <p>To create an audit trail for management of risk</p>
<ul style="list-style-type: none"> <li>• Document volume remaining in the syringe (VTBI)</li> </ul>	

Action	Rationale
<ul style="list-style-type: none"> <li>• Stop the infusion: remove keypad lock, press STOP, press and hold the ON/OFF key until bleep and driver switches off</li> <li>• Remove battery by using flick of wrist; Not scissors</li> </ul>	To reduce damage of syringe driver
<ul style="list-style-type: none"> <li>• Empty syringe contents into a pharmaceutical sharps bin if under 2mls. Ensure that the empty sharps bin has safety gel sachet to absorb contents. Otherwise CD denaturing kit.</li> </ul>	Clinical waste policy (PTHC) To protect the environment Follow medicines management policy
<ul style="list-style-type: none"> <li>• For patients whose death was expected; leave medication and syringe in situ in the driver until verification of expected death (VoED) is completed and final VTBI recorded on the chart by VoED competent RN or Dr.</li> <li>• For those unexpected deaths infusion to be stopped, VTBI recorded, and only when instructed can syringe driver be removed and medication discarded</li> </ul> <p>If no further infusions required: turn off driver and remove the battery. Clean plastic cover and syringe driver with 70% isopropyl alcohol wipe.            If the syringe driver is visibly dirty use a more substantial wipe containing more moisture such a Clinell Universal wipe. If clinically indicated e.g. patient has clostridium difficile or norovirus use Clinell Sporicidal wipes, finish by using an alcohol wipe.            Store in the plastic lock box.</p> <p>Loosen dressing and withdraw cannula, and discard in appropriate waste container</p>	Follow national/local guidance RN can remove the battery to stop the infusion, however syringe needs to be left in situ in the driver so that the verifier can record the final volume infused. Please refer to Responsibility section 4, page 2 and 3  As this will be a coroners case which the doctor has to discuss.  To maintain syringe driver and prevent malfunction.  Excessive moisture can cause fluid to ingress into the pump and damage syringe drivers. Therefore syringe drivers should NOT be washed with water. In general use 70% alcohol wipes e.g. fast aid should be used. This is because the alcohol evaporates.  Following disposal of medications policy
Cover infusion site with a plaster if needed.  Dispose of battery according to waste guidelines	To prevent infection  Aim to recycle battery waste

<b>8. Initial set up Medfusion 3500 (for IPU only)</b>	
Action	Rationale
If the total volume of diluted medication comes to more than 34ml and the patient is not consenting to two syringe drivers, use the Medfusion 3500 pump.	To reduce the likelihood of skin reaction
Use a 50/60ml BD syringe and draw up medication and diluent as prescribed to the maximum volume  Attach and prime the Vygon Lectro-spiral  Place syringe in the Medfusion 3500 driver, ensuring that all the clamps are in situ and that the equipment is plugged into the mains.	To ensure the infusion is given safely and effectively, whilst preserving skin integrity  Safety of delivery and working of device, with cover if antiemetic within infusion, to prevent pharmacological changes from light.
Prime the line according to the Medfusion 3500 instructions. This is achieved by pressing the 'bolus' button until a drop of fluid appears at the end of the line.	To ensure prescription is administered

Action	Rationale
<p>Connect the line to cannula once checked identity of patient and start infusion. Note - Will finish earlier than 24hrs due to volume of medication in the line.</p> <p>Ensure the pump is locked (see instructions).</p>	<p>As line has been primed so need to identify when the infusion will have completed to enable timely assessment and set up for the next day</p>
<p>Monitoring is the same as for the McKinley pump</p>	<p>4 hourly monitoring is required of the infusion and the patient. NB the pump has an individual alarm system</p>
<p><b>Near completion of infusion</b></p>	<p>Be prepared to assess patient and prepare medication</p>
<p>Check infusion has delivered to time, and assess patient and medication administered (PRN and Syringe dose) 30 mins prior to finishing time.</p> <p>Follow above steps, apart from priming the line, if further infusion required.</p> <p><b>When infusion complete:</b></p> <p>Document volume and time completed and infusion finished.</p> <p>Remove syringe and discard in medicine waste container</p> <p><b>If the infusion stopped prior to the end of infusion:</b></p> <p>Document volume remaining in the syringe VTBI</p> <p>Stop the infusion:</p> <p>Turn OFF</p> <p>Discard medicine and syringe in CD denaturing kit if over 2mls, otherwise in Medicines waste with safety gel sachet within.</p>	<p>Evidence of administration of medication and waste.</p> <p>Empty content as per waste disposal policy</p> <p>Aware what has been infused</p> <p>Follow waste policy</p>

## 9. Maintenance of Syringe Drivers

Action	Rationale
<p>Clean plastic cover and syringe driver with <b>Clinell 70% isopropyl alcohol wipes, for non- invasive medical devises.</b></p> <p>If the syringe driver is visibly dirty use a more substantial wipe containing more moisture such a Clinell universal wipe. If clinically indicated e.g. patient has clostridium difficile or norovirus use Clinell sporicidal wipes, finish by using an alcohol wipe.</p> <p>Store in the plastic lock box.</p> <p>PTHC staff to check <b>annual</b> servicing dates and inform maintenance team if servicing is due. Be aware that new drivers will not have a service date, but should be called for servicing before the year.</p>	<p>To prevent cross infection.</p> <p>NOT be washed with water. In general 70% alcohol wipes e.g. Clinell 70% isopropyl alcohol wipes, for non- invasive medical devises should be used. This is because the alcohol evaporates.</p> <p>Following infection control policy</p> <p>To protect the syringe driver when in storage.</p> <p>To ensure that syringe driver is in working order</p>

## 10. Discharging a Patient with a Syringe Driver to the Community/OPA

Action	Rationale
<b>10.1</b> Agree plan with patient and family and involve community team	To meet PPC and ACP Ensure continued assessment and delivery of medication
Contact the district nurse, who will be caring for the patient in the community to advise that the patient will be discharged with a syringe driver. Finalise when the patient will be expecting a visit from the team to assess and replenish the syringe driver  Record on transfer letter	To ensure that the patient receives the medication as required and has been accepted and to be assessed by the community team.  Continuity of care
Confirm with team to see if a key will need to be sent with the driver  Arrange for the syringe driver to be sent back to PTHC with self-addressed jiffy bag, liaising with the nurse in charge to arrange safe handover of the syringe driver Sign out serial number in ward reception booklet and document DN team involved.  Ensure doctor has prescribed the medication on the community syringe driver prescription form and updates the GP  If the patient requires an ambulance, advise the ambulance service that a syringe driver is in use, to prepare paramedic  If receiving a patient from another unit with a syringe driver, ensure key available and remove and setup new prescribed medication through PTHC driver immediately after assessment of symptoms  Always clean the syringe driver before sending back to the unit, notifying them of this happening, and documenting communication with specific person.  Complete checklist on appendix 4	Ensure PTHC receive their T34 syringe driver  To ensure the community team is clear about the patient's prescription  To comply with the ambulance service guidelines  To ensure that we are using medication that we know has been prescribed, using regulated PTHC equipment to reduce errors.  To confirm that the ward/unit know that it is in the BRAKE and they to expect delivery, or if they would rather pick it up.  To audit communication and safe transfer of patient
<b>10.2</b> Management of syringe driver if patient is attending an OPA	To ensure safe delivery of medication via syringe driver whilst patient attends appointment
See PTHC Medicines Management Procedure, Nov 2018, (Policy no. C01B Version 1.0)	Prepare TTO prescription prior to OPA

## 11.Troubleshooting

### Common problems

Problem	Possible Cause	Resolution
Pump won't start	No battery present Battery inserted incorrectly Battery is depleted/very low Driver is faulty No foam pad in the 2 <sup>nd</sup> edition battery compartment	Fit a battery Re-align battery terminals Fit a new battery Service required Liaise with maintenance
Infusion ended early/going too quickly	Wrong syringe brand confirmed during set up/incorrect volume measured by pump	Stop infusion and discuss with doctor or non-medical prescriber  A medicine incident form should be completed and reported to the pharmacist, prescriber, consultant and ward manager/ or community leads.
		Set up a fresh infusion
Problem	Possible Cause	Resolution
		Ensure correct understanding of user and reflect on learning
	Driver faulty or incorrectly calibrated	Service/calibration required
The driver has stopped before emptying syringe	Exhausted battery	Fit new battery, turn driver on, confirm syringe size and brand select to resume infusion
	Faulty driver	Return for service
Alarm sounds - driver reports an occlusion	Cannula tip has become kinked (usually due to incorrect insertion)  Blocked or kinked infusion line (unusual unless Saflo 90 used)	Replace Saf- T-Intima cannula with a new cannula in a new site  Check if the line is trapped or the patient is lying on it Replace whole line and needle
	Site inflamed	Check nurse training needs Change cannula Consider lowering concentration by increasing volume of diluent
	Precipitation of syringe contents	Complete medicine incident form and follow process  Check contents of syringe for signs of precipitation – replace
Patient has not received prescribed medication to time due to reasons above	Hardness at infusion sit  Assess cause and patient	Replace cannula Complete incident form to learn from situation Review patients symptoms and address needs.

## 12. Site Problems

Sites can remain satisfactory for many days (discretion to be used). Close observation the site should be rotated.

Problem	Possible Cause	Resolution
Infusion site inflamed	<p>Do not use sites if patient had radiotherapy to the site?</p> <p>The site is infected</p> <p>Drug concentration is too high</p> <p>The patient has had a reaction to the medication (Cyclizine frequently causes a reaction)</p>	<p>Use an alternative untreated site</p> <p>Relocate the cannula. Observe for signs of advancing infection.</p> <p>Report to medical team</p> <p>Make up solution at a lower concentration by using increased volume of diluent</p> <p>Change prescription or dilute further</p>
Problem	Possible Cause	Resolution
Pain at site	<p>Incorrect cannula insertion.</p> <p>The site is infected.</p> <p>Drug concentration too high.</p>	<p>Remove and re-site. Check training need</p> <p>Relocate the cannula. Check insertion technique and observe site for signs of advancing infection</p> <p>Make up solution at a lower concentration</p>
Leakage at site	Unstable cannula	Re-site and apply semi permeable dressing
Bleeding from cannula site	Trauma or clotting problems	Remove cannula and apply pressure to the site. Re-site cannula or consider whether subcutaneous syringe driver infusion is appropriate for the patient
Hardness at infusion site	Fluid is not being absorbed from the site	<p>Re-site cannula</p> <p>Observe old site for signs of infection and report if suspected.</p>

## 13 Managing administration of one or more regular PRN medications

Action	Rationale
<b>13.1 PRN via subcutaneous route as a stat injection</b>	To manage symptom management
Assess if any psychological concerns i.e. needle phobia  Explain and discuss the procedure with the patient Gain consent	To pre plan and discuss a care plan in a timely way Consider CBT intervention Prescribing local anaesthetic gel Consider cannula (see below)
Assess the persons availability of sites for s/c prn injections i.e. oedematous/ cachectic	Medication absorbed slowly as reduced supply of blood vessels in subcutaneous tissue
Assess recommended sites being free of infection, skin lesions, bony prominences and large underlying muscles or nerves. Abdomen in the umbilical region, rotate sites within the abdomen by at least 3 cm Lateral or posterior aspect of the lower part of the upper arm Lateral aspect of thigh	To direct appropriate sites for the individual, avoiding any contraindications Rotate to decrease the likelihood of irritation and ensure improved absorption
The maximum volume tolerable using this route for injection is <b>2ml</b> and medication should be soluble	To prevent irritation (Royal Marsden Manual)
Write care plan with problem with PRN as an action	For all RNs to understand where to site PRN
Gather consent Check medication in line with 5Rs (right patient; right drug; right dose; right route; right time). Dilute if appropriate Check validity of prescription/ instruction sheet Wash hands Assess sites	Dignity and consent; Safety  To prevent errors occurring Infection control To identify where to administer injection
Wash hands and apply non sterile gloves	To prevent cross contamination
Skin preparation to be individually assessed and caution with immunocompromised patients. Only use alcohol if deemed necessary; cleaning 30 seconds and 30 seconds drying time.	This is a decision on inspection and knowledge of the individual.
Grasp tissue and gently pinch up into a fold. Insert 25G needle (orange) at 45 degree angle	To elevate the subcutaneous tissue and lift the adipose tissue away from the underlying muscle The length of the needle should be selected by pinching the skin tissue and selecting the needle one-half the width of the skinfold. (Royal Marsden Manual page 731 & Quan K. 2014)
Hold the syringe and insert into the skin and release grasped skin (unless insulin when 90 degree must be used)	To avoid discomfort at 45 degrees.
Withdraw needle and apply pressure. Not massaging  Discard in sharps bin	Massaging can injure underlying tissue. Ensure safe disposal

13.2 PRN via a cannula	
Action	Rationale
<p>If person is:</p> <ul style="list-style-type: none"> <li>• Requiring multiple injections a day</li> <li>• Has a phobia towards needles</li> <li>• Refusing a syringe driver</li> </ul> <p>Consider using a cannula</p>	<p>To meet individual needs and dignity and symptom management in a safe manner</p> <p>To reduce distress for patient Reduce needle stick injury</p>
<p>A Saf-T-Intima may be used as long as the total volume is less than 2mls to the site (Royal Marsden Manual 2015)</p>	<p>This is a subcutaneous injection and therefore absorption is limited if more.</p>
<p>Consider the volume of the medication prescribed to ensure that there is enough volume for 0.2ml to flush the cannula and total volume does not exceed 2ml.</p>	<p>0.2ml is the length of the line of the Saf-T-Intima and ensures that the medication has been delivered to the site</p> <p>To reduce irritation</p>
<p>The Nurses will need to check the compatibility of the medication.</p> <p>Read the medication guidance, i.e. clonazepam 1ml with 1ml of diluent within box</p> <p>Add up the volume of each medication and review alternatives with the medical and specialist palliative care teams.</p>	<p>Not to mix different medications which are not compatible</p> <p>To decrease the likelihood of irritation and ensure improved absorption Would need to consider using other medication i.e. diamorphine over morphine, as volume restriction. Using medication that has more than one therapeutic indication (e.g. Haloperidol)</p>
<p>If needing to administer a further PRN injection to manage symptoms, reassess the cannula site for absorption.</p> <p>If the medication has not absorbed after this time (i.e. presence of palpable “bump” indicating incomplete absorption)</p> <p>The line can be left in place up to 7 days as long as the condition of the site is patent</p>	<p>The time for absorption of the medication subcutaneously for analgesia is approx. 20 minutes</p> <p>PCF 6<sup>th</sup> Edition to review titration of morphine</p> <p>The medication needs time to absorb, therefore be cautious giving follow up PRN too soon.</p> <p>Use same cannula as long as monitored and documented that site is not red, nor hard, nor painful at each use.</p>
<p>Remove bung at each PRN administration or use needleless bung (Bionector vygon 896.02)</p> <p>Replace with new bung or place in clean receiver and non touch technique</p>	<p>To work in line with needleless system and infection control measures</p>

## 14. Related Policies and Documents

Consent Policy and Procedure  
Infection control Policy  
Medicines Management Policy C01A, C01B, C01C, C01D  
NMC Code 2018  
The Management of Patient Related Incidents Policy

## 15. References

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## 16. Appendices

Appendix 1: Differences between 2<sup>nd</sup> and 3<sup>rd</sup> edition T34

Appendix 2: Body chart for sites

Appendix 3: Insertion of Saf-T-intima

Appendix 4: Discharge checklist with 'Instruction chart' for Syringe Driver

Appendix 5: ICON links for: - Community administration chart, PRN and syringe driver community charts for G&W, SH, Farnham, Competence which is to be completed by Registered Nurses following training, Patient information leaflet.

Appendix 6: PTHC view of Drug Chart

Reviewed by	Sian Williams
Consulted for comments	Jayne Holland Alison Vivian Ursula Pert Caroline Rogers Alison Oakley (Pharmacist) Katherine Gilbert
Approved By (name and job title)	Jayne Holland Director of Patient Services (DOPS)
Approval date	March 2020
Version number	Version 2.0
Next Review Due	March 2023
Minor Amendments made within the review period	
Amendment details Include paragraph & page number	Updated competency document (v1.3)
Amendment date	April 2020
New version number	2.1

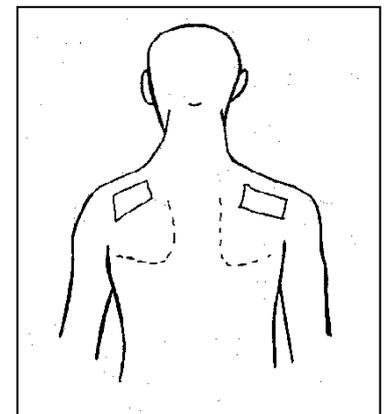
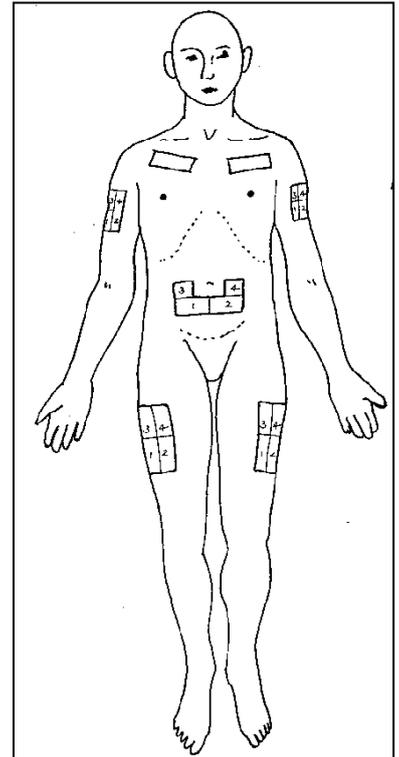
## Appendix 1 T34 2<sup>nd</sup> and 3<sup>rd</sup> edition differences

2 <sup>nd</sup> edition	3 <sup>rd</sup> Edition																					
	 <p>Note there is NO text on the keys</p>																					
<p><b>Battery</b></p> <p>Lasts for around 3-5 days</p>	<p><b>Battery</b></p> <p>Lasts 25 hours (running at 1ml an hour.)</p>																					
<p><b>Alert: Led is green</b></p> <p>Warning that the device is near end of infusion or battery life.</p>	<p><b>NO Alert</b> there is only varied level of risk alarms</p>																					
<p><b>Alarm</b></p> <p><b>Led is Red</b></p>	<p><b>Alarm x 3</b></p> <p>Note the audio changes and led colour</p>																					
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## Appendix 2: Insertion Sites

### Choosing a suitable infusion site

1. Choose a suitable subcutaneous site (see diagrams). Where possible involve the patient in this choice. Both the outer arm and upper thigh are commonly used, but avoid the upper arm in bedbound patients who require frequent turning. In other patients, the chest or abdomen may be more suitable. The scapula may be considered for confused or delirious patients who may pull on the line.
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2. Areas which should **not** be used for needle placement are:
  - Sites over bony prominences: the amount of subcutaneous tissue will be diminished, impairing the rate of drug absorption
  - Lymphoedematous limbs. The rate of absorption would be adversely affected. Furthermore the needle may cause infection in a limb which is already susceptible
  - Previously irradiated skin. Skin perfusion may be reduced due to sclerosis of small blood vessels following radiotherapy.
  - Sites where there is cutaneous tumour
  - Sites near a joint
  - Abdomen, if ascites is present
  - Near an inflamed, previously used site
  - Areas that a bed-bound patient will be lying on for a period of time
  - The chest wall in cachectic patients (danger of pneumothorax).
3. If inflammation occurs at the needle site, a new site should be selected, at least 3cm away from the problem site.



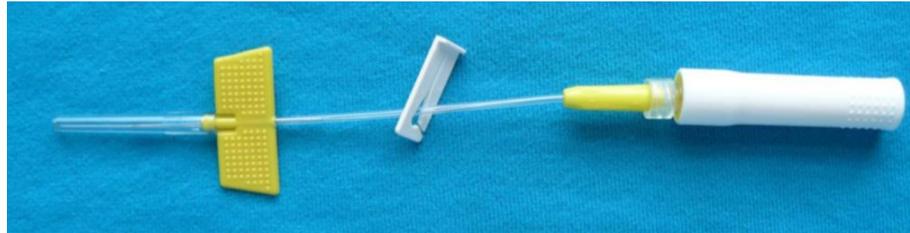
### Appendix 3: Insertion of Saf-T-Intima Cannula

Action		Rationale
1	Use a BD Saf -T- Intima 24GA 0.75IN 0.7 X 19mm	Maintain a low needle stick injury To deliver infusions with more comfort to the patient over longer periods (Ross et al 2002)
2	Take sharps box to the bedside.	To ensure safe disposal of the introducing needle.
3	Check identity of the patient against the prescription sheet, by asking his/her name and DOB, or checking wrist band with information	To ensure the correct patient.
4	Choose an appropriate site for insertion, avoiding wounds and irradiated sites, oedema, ascites and bony prominence:  <b>Outer aspects of upper arms</b> Ensure the cannula is placed so that the patient will not be lying on it. <b>Thigh</b> (under the greater trochanter rather than mid-thigh) <b>Anterior abdominal wall</b> within the umbilical region <b>Anterior chest wall.</b> There is a risk of causing a pneumothorax in patients with cachexia. (Kaye, 1996) <b>Upper back</b>	To ensure the safety of the site without restricting the mobility and independence of the patient. Discuss preference with patient and following assessment of skin and patients function  This is a useful location for confused patients, but may be uncomfortable to lie on.
5	Reposition the patient and expose the area where the cannula will be located. Clean with alcohol skin prep	To ensure safe access to the site. To reduce risk of infection
6	Open IV dressing	So that dressing is ready as soon as the cannula is inserted
7	Peel back the packaging of the Saf-T-Intima, keeping the clear section downwards. Do not pick up the cannula by the white cylinder.	To ensure that the introducing needle is drawn back into the cannula.
8	Rotate safety barrel to loosen needle (see illustration). Ideally bevel down (Mitrea et al 2015).	To facilitate easy removal of introducing needle. Improved absorption of fluid.
9	Remove white clamp from cannula tubing as it is not needed.	To maintain patient comfort, by preventing the opportunity to lie on the clamp.
10	Grasp pebbled sides of cannula wings and pinch together firmly.	To ensure that the cannula is inserted in the correct position.
11	Remove needle cover and check that the needle is visible at the end of the cannula, with its bevel uppermost. If it's not, gently rotate the white shield until needle is correctly oriented.	To facilitate successful insertion.
12	As highlighted above grasp 1-2" of skin, insert Saf-T-intima cannula at an angle of 45 degrees and advance to the hilt.	To ensure the cannula is best placed to infuse the medication.
13	Open the wings, pebble sides down, flat against the skin.	To ensure patent cannula
14	Place a narrow strip of tape (supplied with the Tegaderm IV dressing) over each wing and apply dressing with the transparent part over the insertion site.	To ensure air flow and reduction of moisture retention beneath the cannula. To secure the cannula. In order to view the infusion site.
15	Hold onto the cannula and the yellow bung, grasp white needle shield and pull in a straight continuous motion. Discard the white shield in the sharps box.	To remove the introducer from the cannula without dislodging it. . To ensure safe disposal of the introducing needle.

## Appendix 3 continued

**We are using this winged cannula in PTHC to reduce errors of compatibility, so no scope to prime this cannula as no Y port.**

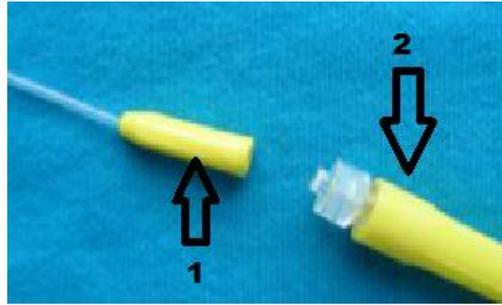
1. Open dressing pack and put on apron. Wash hands again as per Hand washing policy and put on gloves.
2. Clean the chosen site with a chlorhexidine/ alcohol wipe for 30 seconds. Wait another 30 seconds for alcohol to dry (Fraise & Bradley 2009).
3. Take cannula out of packet. You cannot prime the cannula if using the recommended device as below for subcutaneous, and not to draw back once sited.



4. Rotate white safety barrel to loosen needle and remove the needle cover (ensure bevel facing down).
5. To insert the cannula, gently pinch the skin into a fold to elevate the subcutaneous tissue which lifts the adipose tissue away from the underlying tissue away from the underlying muscle (RMH 2015 9<sup>th</sup> edn.).
6. Pinch together the wings of the “butterfly” and remove the clear plastic needle cover. Make sure the “pebble” side of catheter wings is in contact with your fingers.
7. Hold skin at insertion site tightly, and insert the needle at a 45 degree angle into the skin up to the wings, then tape wings into place, pebble side down, with clear dressing.
8. Hold the wings firmly in place with one hand and yellow bung at end of cannula; pull back on the white introducer with the other. This will pull the wire back through the plastic tubing and trap it in the yellow plastic case. (See photo)



9. Grip the narrow yellow plastic piece (1) at the end of the catheter firmly with one hand, and unscrew the clear plastic screw connector (2). This will detach the wide yellow plastic case from your catheter. Dispose of in a safe container.



10. If blood appears in the line on insertion of the needle, withdraw immediately and discard. Change the cannula and repeat the process using a different site previously cleaned with alcohol wipe.
11. Connect your primed McKinnley anti-syphon line (for syringe drivers) or standard giving set (for subcutaneous hydration) to the narrow yellow plastic piece with a twisting motion, and tape the tubing to the skin. Or leave bung in place if using for PRNs.
12. Commence the infusion/syringe driver with correct setting/rate.
13. Complete the patient's prescription chart and/or care plan and Infusion Administration Record.
14. Discard waste, making sure it is placed in the correct containers e.g. sharps bins

## Appendix 4: Discharge of a patient with a Syringe Driver in situ

This checklist is to be completed and sent to the place of discharge with the patient, so as to ensure effective communication with the receiving nursing team.

<b>Patient Details (Name, NHS Number)</b>		
<b>Name of Nurse discharging patient</b>		
<b>Discharged to (place of discharge)</b>		
	<b>Completed by</b>	<b>Date and Time</b>
1. DN or nursing home nurse informed in advance of the discharge that patient will have a syringe driver. Follow up via email via nhs.net. Log at ward level location address.  Name of Nurse.....		
1. Serial Number of driver(s) being sent  .....		
3. Self-addressed jiffy bag (to hospice) included for the return of the syringe driver		
4. <b>Ensure the discharge envelope contains the following:-</b> a) lock box key (spares kept in CD cupboard) b) Copy of syringe driver pages from patient's prescription chart, so that receiving nurse is aware of contents and replenish time ( <b>print on A3</b> ) c) Community prescription charts ( both for syringe driver and PRN meds) d) T34 Syringe Driver patient information leaflet (kept in wall racks on ward) e) <b>this checklist</b> (take a copy for filing in the patient's PTHC notes)		
5. Inform the patient and family of the process for changing over to a different syringe driver and who will be replenishing the driver each day.  Names of those informed:		
6. Provide 3 day supply of equipment as appropriate (needles, cannula, syringes and vapour permeable dressings)		
7. Ensure a minimum of 3 days' supply of the prescribed medication is sent, to include diluent, PRN medication, anticipatory medicines and enough medicines to cover bank holidays.		

## Appendix 5

Community administration chart for Virgin Care



T34\_Daily\_Administr  
ation\_and\_Checklist\_

Community instruction charts for Virgin Care = Surrey Heath and Farnham area



Syringe\_Driver\_Instru  
ction\_Chart\_March 20



PRN\_Instruction\_Char  
t\_Sept\_2015.doc

Community instruction for FHFT

*Add when finalised with ICS group*

Community Instruction charts and admin checklist for ProCare/RSFT = Guildford & Waverley



ProCare PRN  
Instruction chart Jar



Procare Syringe  
Driver Administratio



ProCare Syringe  
Driver Instruction ch

Competence document including formative and summative assessment for Registered nurse to have completed following training with PTHC



syringe driver  
competence V1.3 .px

PTHC patient leaflet



McKinley T34 Syringe  
Driver.pdf

## Appendix 6 Phyllis Tuckwell Syringe Driver Check List (prescription) needs



PTHC SD  
monitoring & prescr