Guidance for the use of subcutaneous medications for specialist symptom management and end of life care - Royal Hospital for Children Glasgow

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Approved by & date	
Version	1
Effective from	01/11/2024
Review date	01/11/2027

NHS Greater Glasgow & Clyde: Guidance for the use of subcutaneous medications for specialist symptom management and end-of life care in the Royal Hospital for Children Glasgow. Author: Caroline Porter Diana Children's Nurse West of Scotland, Paediatric Supportive and Palliative Care Team.

Contents

AIM

The aim of this guidance document is to support high-quality, safe practice across NHS Greater Glasgow & Clyde and thereby maintain and when necessary improve the standard of care provided to children requiring specialist symptom management and end-of-life care.

This guidance provides guidance for registered nursing and medical staff in the administration of subcutaneous bolus medication and continuous subcutaneous infusions (CSCI) using the ambulatory BD BodyGuard T pump and upgraded version 3 CME T34 pumps. This guidance is underpinned by Healthcare Improvement Scotland's 'Guidelines for the Use of the CME T34 Syringe Pump for Adults in Palliative Care (2019)'.

All nursing and medical staff are accountable for their own sphere and scope of practice. In recognition of their own role, staff will be aware of which competency needs to be met and maintained before undertaking that specific clinical practice. **This guidance outlines the expected processes and requirements for the four elements of CSCI administration:**

1. **Subcutaneous device insertion and maintenance**
2. **Subcutaneous bolus administration**
3. **24 hour CSCI administration**
4. **Ward nursing monitoring and troubleshooting of continuous subcutaneous infusion medication administration**

STATEMENT AND SCOPE

NHS Greater Glasgow and Clyde is committed to meeting the needs of all children receiving end-of-life care and recognises that the administration of subcutaneous medication may be an essential component of their symptom management.

The Guidance is intended for identified Nursing Staff once trained in the correct processes to have the correct knowledge and skills to monitor, troubleshoot and competently set up and discontinue a continuous subcutaneous infusions (CSCI). This includes the administration of bolus subcutaneous medication.

This guidance has been adapted from 'Guidelines for the use of the T34 Ambulatory Syringe Pump by CME Medical for adults in palliative care,' with permission from its original developers (NHS Greater Glasgow & Clyde, NHS Highland and NHS Education for Scotland) and Children's Hospice Association Scotland (CHAS) CAF/CLIN/SOP06.

Hospital wide consultation was undertaken during the development of this guidance including RHC Pharmacy, Nurse Education Leads, Chief and Lead Nurses and Ward Nursing Teams.

REQUIREMENTS

In order to achieve control of distressing symptoms subcutaneous bolus administration and/or CSCI may need to be commenced. Timely referral to the Paediatric Supportive and Palliative Care Team will support this process.

Before inserting a subcutaneous device and setting up a syringe pump it is important that discussions take place with the child, young person and their family as to the reasons for its use, how it works and when at home, how to respond to any incidents that may occur**.**

Existing enteral and buccal routes should be utilised wherever possible, however, when gastrointestinal absorption or prolonged vomiting becomes problematic subcutaneous medication delivery may offer improved, sustainable, effective medication absorption and delivery. Families may associate the use of syringe pumps with `the end of life`. It is vitally important to explain the use of the syringe pump as an alternative means of delivering medication and address any concerns they may have. CSCIs can be discontinued if symptoms stabilise or if the enteral route recovers to enable effective absorption.

LearnPro module

All staff who administer and deliver continuous subcutaneous infusions must complete the NHSGGC LearnPro module:

This module is in addition to, and does not replace, face-to-face training. It is useful as a reminder after face to face training has taken place.

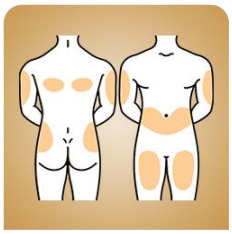
Log on to http://nhs.learnprouk.com search for 't34' then ADD.

PROCEDURES

1. Subcutaneous device insertion and maintenance

Choosing a suitable site

Where possible, involve the child in the choice of a suitable site. Both the outer aspect of the upper arm and upper thigh are commonly used but avoid the upper arm in children who require frequent turning when unable to get out of bed. In other children, the abdomen, chest or scapula may be considered.

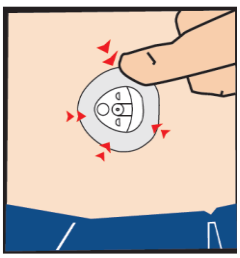


In NHS Greater Glasgow and Clyde the neria guard 6mm is the preferred indwelling subcutaneous device for babies, children and young people. The neria guard device is a needle-safe then needleless system once inserted. A neria guard device should be inserted for CSCI and a secondary neria guard device inserted for intermittent subcutaneous bolus medication administration.

Neria guard Insertion procedure:

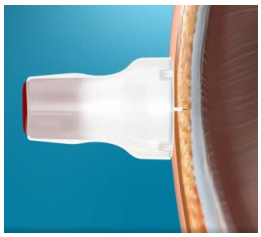
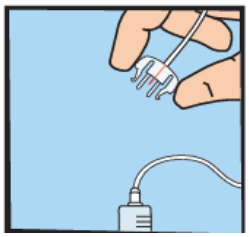
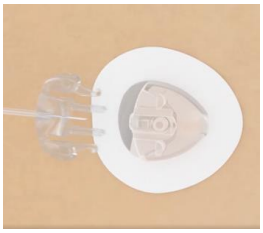
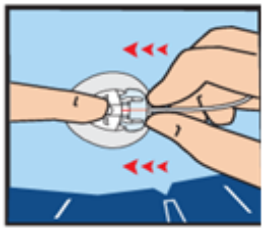
- wash your hands and ensure the skin site selected is clean and dry
- prepare the child for the procedure letting them know what you are going to do
- remove the device from the sterile packaging and remove the clear plastic safeguard that sits within the red applicator button by gently squeezing the sides of the safeguard and pulling it straight out





- carefully remove the paper backing of the adhesive dressing on the base of the device
- the arrows on the side of the applicator indicate which direction the infusion line will be positioned within the device. Consider the most appropriate direction for the chosen body site

- reassure and explain to the child that you will gently place the device onto the chosen skin area with the dressing side to skin and the red applicator button to the top
- press the red button and you will hear a click to confirm the device has been inserted and then needle has retracted safely back into the device
- press the adhesive tape onto the skin
- discard this applicator in line with normal sharps procedures
- neria guard device is supplied with a dedicated 110cm infusion line. The infusion line will require primed with ~0.15ml of infusion solution. Once primed place a finger on the cannula housing while pushing the site connector straight in until you hear a click

- if the neria guard system is for intermittent bolus medication administration prime the infusion line with ~0.15ml of sterile water for injection and apply a primed smart-site connector
- neria guard does not require an additional occlusive dressing to secure in place to the skin but it may be helpful to secure the uncoiled infusion line to a lateral area using an occlusive dressing. Careful consideration must be made that a secured coiled infusion line will not cause any pressure damage to the skin site selected

Subcutaneous device maintenance and monitoring

If the neria guard device is being used for intermittent bolus medication delivery it should be checked before each use to ensure site integrity and skin condition. Use the device insertion site window to view the site skin. Remove and replace with a new device to an alternative subcutaneous site if concerned regarding redness, swollen, broken or irritated skin.

If the neria guard device is being used for continuous subcutaneous infusion delivery, check the device prior to administration and then at least 4 hourly to ensure site integrity and skin condition. The 4 hourly check is part of the monitoring chart contained within the NHSGGC pink continuous subcutaneous infusion prescription and administration chart.

If a local reaction occurs i.e. swelling, inflammation or redness a new neria guard device should be re-sited. If this reoccurs then consider asking a prescriber to check if the medication can be diluted further (a new prescription and medication syringe and infusion line would be required).

Neria guard devices are licenced for use for up to 72 hours but have previously been optimally utilised for up to 7 days with good skin site integrity. In some exceptional circumstances, for example extreme cachexia, close to end-of-life, it may be appropriate to leave the device in place longer provided the skin site integrity is satisfactory. This should be dynamically risk assessed and discussed with the Paediatric Supportive and Palliative Care team.

Monitoring will include regular site assessments, which will be documented in the appropriate section of the CSCI pink chart and will ensure timely observation and action regarding any concerns.

The following sites should be avoided:

▪ oedematous areas due to poor drug absorption and increased risk of infection/exacerbation of oedema

▪ abdominal ascites

▪ areas lacking in subcutaneous fat

▪ bony prominences – poor absorption and discomfort

▪ irradiated sites- may have poor perfusion and hence poor drug absorption

▪ skin folds, sites near joints and waistband area – movement may cause discomfort and may displace the neria guard device cannula

▪ broken skin

2. Subcutaneous bolus medication administration

Children requiring specialist symptom management and or end-of-life care may benefit from subcutaneous medication administration to achieve optimal symptom control. The subcutaneous route is not preferred over the enteral route, however it may provide improved efficacy of medication absorption where GI absorption is compromised if vomiting is ongoing. The parental route may be preferred if the child is experiencing rapidly escalating symptoms.

Rather than use repeated subcutaneous injections for 'as required' subcutaneous medications, the child must have a neria guard device inserted that is used only for intermittent bolus medication administration. If the child has a CSCI running then a second neria guard device must be inserted for bolus administration use. **DO NOT USE A DEVICE BEING USED FOR CSCI TO ADMINISTER A SUBCUTANEOUS BOLUS DOSE.**

All nurses administering medicines via the subcutaneous route must be aware of the standards for practice of administration of medicines. These include checking the identity of the child, allergies, weight, prescription, expiry dates. Clear accurate and timely records must be maintained when medicines are administered.

Follow the guidance form Specialist Pharmacy Service (2020) which states:

- Injectable medicines should not be prepared in advance of use as there is a significant risk of microbial contamination with added proliferation over time
- Injectable medicine prepared in clinical areas should be prepared using an aseptic non-touch techniques and be administered immediately (within 30 minutes).

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 route
- irritant medications may cause a greater inflammatory reaction subcutaneously that intramuscularly
- the recommended maximum total volume for an episode of bolus injection (including flushes) is 2ml for adult and 1ml for a small child
- absorption will be severely limited in children who are shocked, hypovolemic or oedematous

Subcutaneous bolus medication administration procedure:

See **Insertion and maintenance of the neria guard device** (above) for procedure to insert a neria guard device:

- two registered nurses to check CSCI or bolus injection prescription and administration
- wash hands and apply required PPE for a non-touch technique
- check prescription for allergies and right child (CHI), right medicine, right time, right dose, right route
- draw up subcutaneous medication as prescribed
- draw up sterile water for injection flush(s)
- explain to and reassure the child and their family regarding the procedure
- undertake skin integrity check of the relevant subcutaneous site and device
- access smart site connector and Curos caps as per NHSGGC policy for parenteral devices
- ensure the infusion line has been previously primed (if not disconnect and prime with sterile water for injection ~0.15 ml)
- administer bolus medication as a slow bolus followed by a slow flush with 0.2 ml sterile water for injection (recognising that this procedure will deliver the remaining volume of prescribed medication to the child) Both should take a combined minimum of 60 seconds of delivery

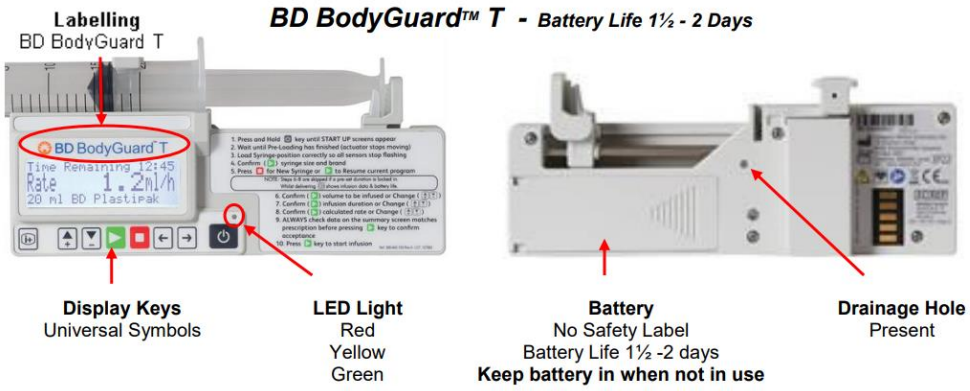
- deliver any additional prescribed and required medications as a slow bolus with 0.2ml sterile water for injection flush between each medication, ensuring that once all medication delivery is completed the line receives a slow flush of 0.2ml of sterile water for injection
- the recommended maximum volume of a bolus subcutaneous injection at one episode (including flushes and all required medications) is 2ml for a young person and 1ml for a child
- observe child for signs of pain on administration
- discuss with the child and family that subcutaneous absorption may take up to 30 minutes to provide good effect
- document and record medication delivery requirements in electronic and paper systems as used in that ward area
- reassure the child and family and continue to closely assess the efficacy of the administration for next 15 to 30 minutes
- it is important to recognise and acknowledge that the administration of a bolus medication at end of life, may be adjacent with the timing of death of the child. Nursing and medical staff should remain assured that the doses of the drugs which have been prescribed and administered are to relieve distressing symptoms and not to shorten or end life. Failure to administer the dose may increase the distress at the time of death

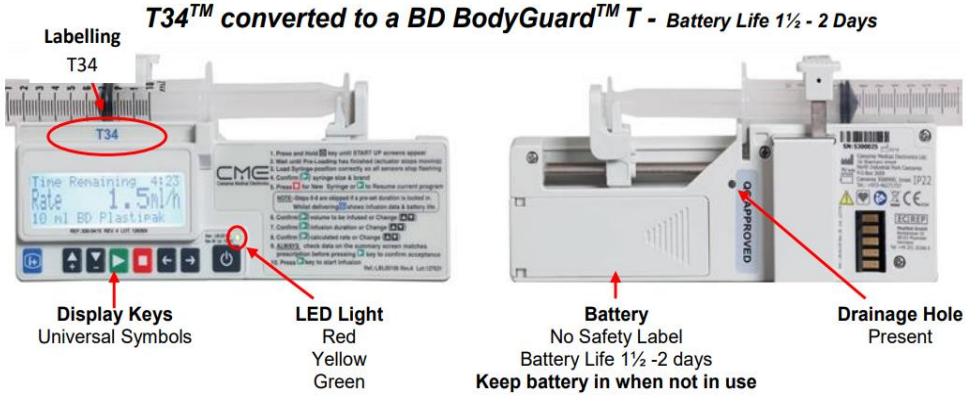
3. 24 hour CSCI preparation and administration

3.1. Equipment and personnel required

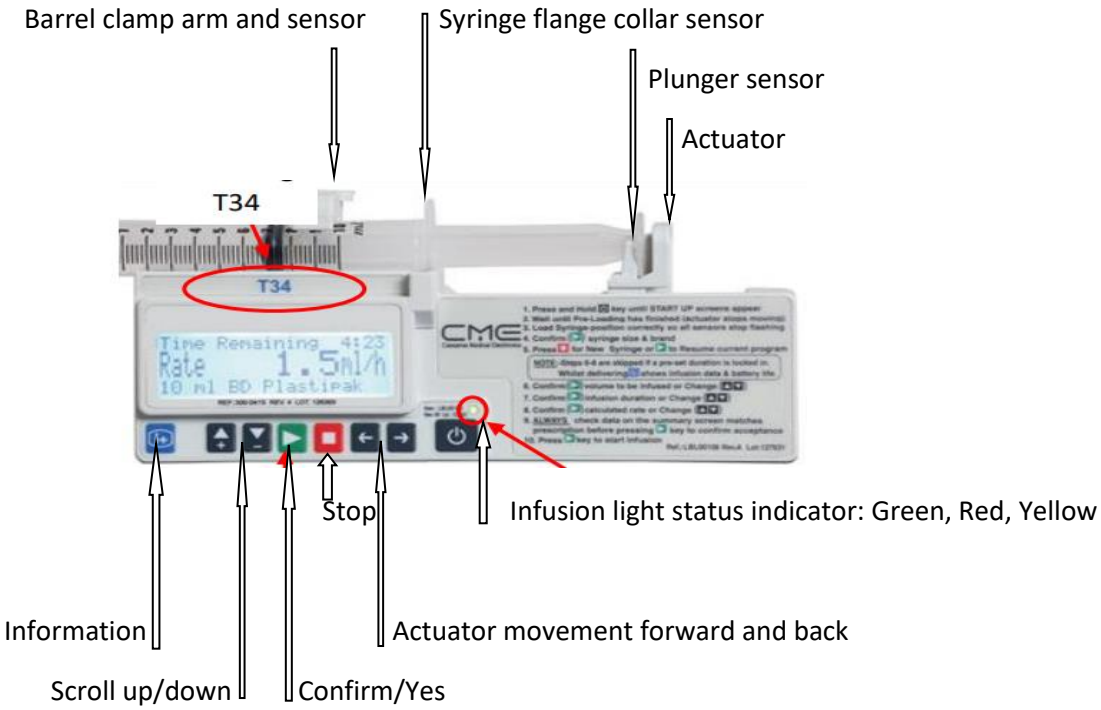
- two Registered Nurses are required to independently check and then prepare the solution for administration over 24 hours. Only in exceptional circumstances should this be undertaken independently
- BD BodyGuard T pump or Version 3 CME T34 pump, alkaline 9V batteries and key. Both pumps have the same BodyGuard T software installed, the same keypad buttons and the same on-screen messaging
- most up-to-date Medication compatibility books such as 'The Syringe Driver' (Dickman), 'Scottish Palliative Care Guidelines' and Association for Paediatric Palliative Medicine (APPM) Master formulary. Where a higher dose is prescribed than is stated in the Medication Compatibility books a printed document should be provided by Medical staff and/or Pharmacists. This should indicate the drug name, the higher dose, stating it is safe for use and the source the data was taken from. This should be filed along with the Child's CSCI and Medication prescription sheets as a reference

- HEPMA medication prescription and the pink NHSGGC Palliative Care Subcutaneous Infusion Prescription and Monitoring Chart for Syringe Pumps
- CSCI pink drug label identifying patient and prescribed medicines
- clean tray and surface for preparation
- neria guard device including anti syphon line for mobile children
- Braun Omnifix luer lock syringe 20 or 30 ml only
- appropriate-sized luer slip syringes (luer lock not required to add medication to diluent) and needles
- transparent surgical dressing (if required to coil and secure excess line)
- prescribed medicines including the correct diluent
- PPE
- sharps box
- plastic lock box and key
- blue canvas ambulatory bag





The pump above labelled T34 should display Bodyguard T on the start-up screen. If it does not the pump should be returned to the medical physics department to receive a software update. A pump not displaying this screen has a battery life of **less than 1 day**



All nurses administering medicines via the subcutaneous route must be aware of the Standards for Practice of Administration of Medicines (NMC 2018). These include checking the identity of the child, allergies, weight, prescription, expiry dates. Clear accurate and timely records must be maintained when medicines are administered.

Follow the guidance form Specialist Pharmacy Service (2020) which states:

- injectable medicines should not be prepared in advance of use as there is a significant risk of microbial contamination with added proliferation over time
- injectable medicine prepared in clinical areas should be prepared using aseptic non-touch techniques and be administered immediately (within 30 minutes)
- infusions prepared in clinical areas must be administered immediately and be completed within 24 hours

Nursing and medical staff administering a medicine that they have not previously used by the subcutaneous route should be aware that:

- absorption may be slower than the intramuscular route
- irritant medications may cause a greater inflammatory reaction subcutaneously that intramuscularly
- the recommended maximum total volume for an episode of bolus injection is 2ml for a young person and 1ml for a child
- absorption will be severely limited in children who are shocked, hypovolemic or oedematous

3.2 Preparing the syringe

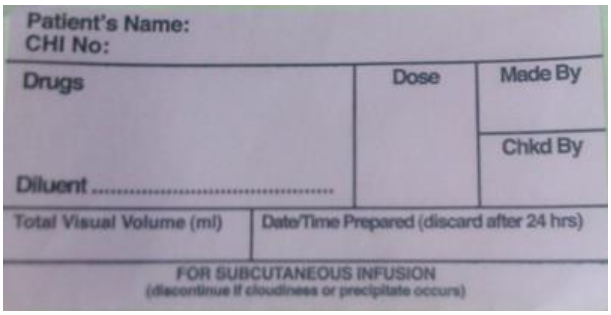
It is considered good practice to make the solution as dilute as possible to reduce the likelihood of drug incompatibility and minimise site irritation. Check prescription to ensure final volume has been prescribed. It is NHSGGC policy to dilute to a total volume of 17ml or 22ml depending on concentration requirements.

- it may take 3 to 4 hours for medications within the infusion to reach a steady state of absorption within this period children may require bolus medication to achieve optimal symptom management
- check prescription for allergies and right child (CHI), right medicine, right time, right dose, right route
- the prescription will state the medications, dose, diluent, final volume and the appropriate size of syringe. This information MUST be clarified by both professionals preparing the CSCI and any concerns or queries taken to the prescriber for clarification
- complete all relevant documentation including syringe labelling
- wash hands and apply required PPE for an aseptic non-touch technique
- establish the final volume required, then draw up all of the compatible diluent in the required size of Braun Omnifix luer lock syringe

- separately draw up the prescribed medication(s) in their own syringe(s). Pull back the diluent syringe to accommodate the medication(s) and after each medication added, gently rotate the syringe to mix
- carry out a visual inspection of the solution within the syringe at preparation, and at each monitoring check. Document the checks 4 hourly on the appropriate section of the pink CSCI chart and discard if evidence of crystallisation, colour change, precipitation or cloudiness. A new syringe would need to be prepared if any of the above are evident
- the luer lock neria guard infusion line should be primed at this time. If child is ambulant an anti-syphon line must be added and used

3.3 Labelling the Syringe

Ensure the label does not obscure the visual scale on the syringe or interfere with the mechanism of the syringe pump.



Complete all sections of the pink label

3.4 Battery Level

Always check the battery power before commencing the infusion. Press the blue Info key twice until the battery level option appears on the screen and then press YES green key to confirm.

The average battery life of the BodyGuard T pump, commencing at 100%, is approximately 1.5 – 2 days. If the battery power has less than 40% life remaining at the start of an infusion then you

should replace the battery with a new one. BD BodyGuard T pump and Version 3 CME T34 pump manufacturers advise that the battery should remain in place when not in use. See appendix 1

▪ check that the batteries have correct directional connection within the battery housing

▪ check the connections after each battery change

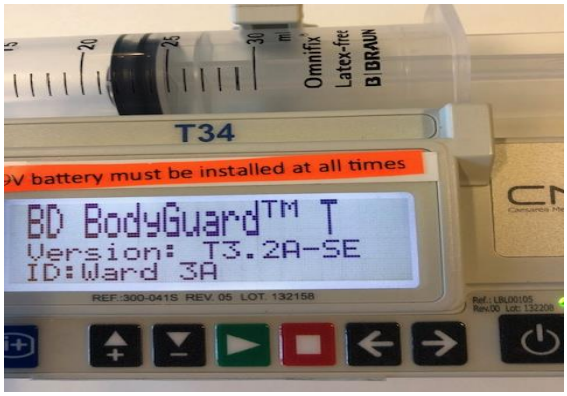
▪ report any problems with battery connections to Medical Devices department

▪replace if the equipment/battery is defective

3.5 Fitting the syringe to the pump

Before placing the syringe into the pump, ensure the barrel clamp arm is down then:

- press and hold the on/off  key until the 'pump identification' screen appears. The identification screen briefly shows the pump model, software version and location of the pump



- The pump then briefly highlights the background settings i.e. Maximum pressure - this should not be greater than 750mmHg
- The LCD display will indicate 'Pre-Loading' and the actuator will start to move. Wait until it stops moving and the syringe sensor detection screen (syringe graphic) appears

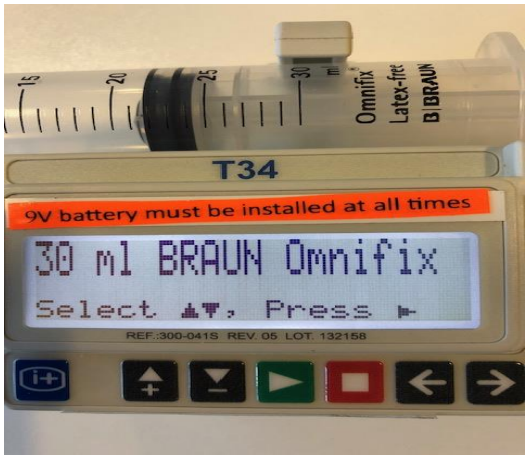
- During 'Pre-Loading' the actuator will return to the start position of the last infusion programmed. If the actuator is not in the right position to accommodate the syringe, leave the barrel clamp arm down and use the  keys on the keypad to move the actuator. Forward movement of the actuator is limited, for safety reasons therefore repeated depressions of the forward  key may be required when moving the actuator forward. Backwards movement is not restricted

When fitting the syringe to the syringe pump:

- again, check the child's name and CHI against the prescription
- to avoid an inadvertent administration of a bolus dose, the syringe must be attached to the pump before being connected to the child
- if not using a new infusion line, attach a sterile white syringe cap to the end of the syringe to aim to prevent loss of syringe volume contents whilst attaching to the pump
- lift the barrel clamp arm to seat the filled syringe. Ensure collar sits in the central slot and plunger in the actuator. The syringe collar should be vertical with the scale on the syringe, facing forward
- click the syringe plunger into the actuator, without losing any medication, this might require a little pressure. The syringe plunger should line up so that looking towards the tip of the syringe the plunger end shows as a '+' allowing for even pressure on the end on the plunger
- lower the barrel clamp arm

Serious incidents have been reported involving uncontrolled flow of medication when the syringe has not been correctly or securely fitted to the syringe pump

The syringe size and brand option will then be displayed as shown below



- select BRAUN Omnifix
- if the syringe size and brand match the screen message, press the green ▶ key to confirm

3.6 Connecting the CSCI Infusion line to the syringe

There are three different situations which can occur:

1. a new SC infusion line is required because a line is not currently in situ. Carefully prime the new line manually with 0.15ml infusion fluid before attaching syringe to pump but not whilst attached to child
2. the existing line needs to be replaced, e.g. if the line is damaged or leaks or a change in prescribed medication. Carefully prime the new line manually with 0.15ml infusion fluid before attaching syringe to pump but not whilst attached to child
3. an infusion line is already in situ and can continue to be used by cleanly connecting the existing infusion line to new syringe within pump.

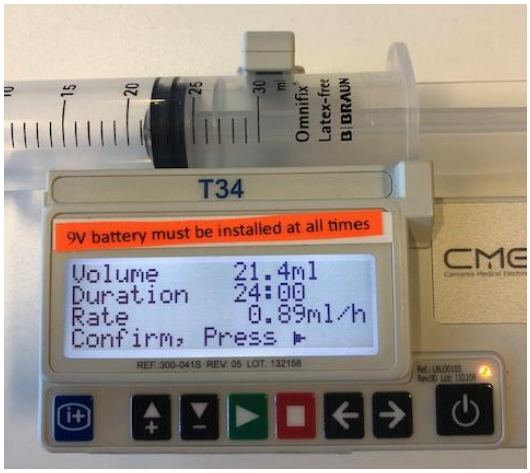
Attach the SC infusion line to the syringe and ensure the luer-lock is fully screwed onto the thread of the syringe tip.

Warning – To reduce the risk of syphoning, the syringe pump should be placed at the same level as, or lower than, the infusion site

3.7 Starting the infusion

- With the syringe loaded, after confirming the syringe type, the next screen message that appears is displayed below**:**

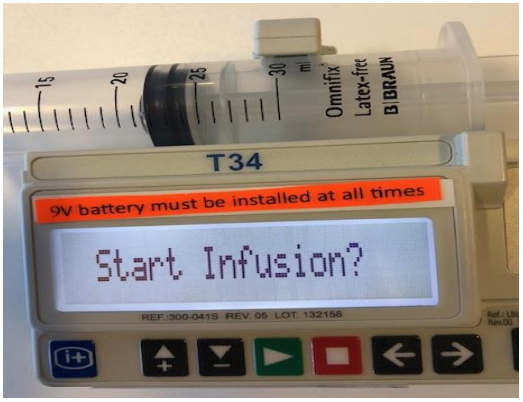
(example figures only)



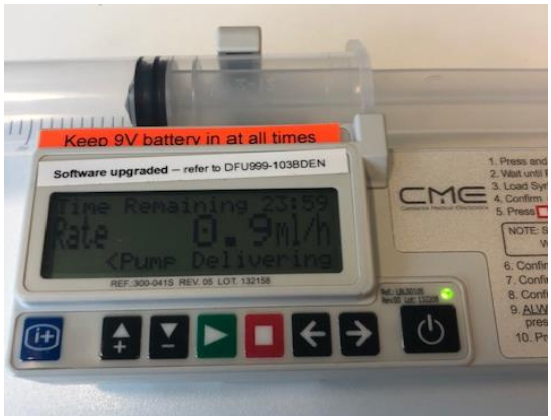
The pump calculates and displays the total volume, duration of infusion (24 hours) and rate of infusion (mL per hour)

The calculated volume, duration and rate should be checked by both professionals before pressing the green ▶ key to confirm, or ON/OFF ⏻ to return to the syringe options

- After pressing the green ▶ key the next message that appears will be:



- ensure that the syringe (plunger and barrel) is correctly located and secured
- position the syringe pump as close as possible to the infusion site level
- connect the infusion line to the child
- check the line is connected securely to the pump and the child
- press the green key to start the infusion



if the infusion has not been started and a button has not been pressed for more than two minutes, an alarm will sound. The message 'Pump Paused Too Long Confirm, Press green key will show on the LCD display. To stop the alarm, press green key and continue programming the infusion.

3.8 Keypad lock

The pump allows users to lock the operation of the keypad during infusion. **The function should be routinely used to prevent tampering with the device.** To activate the keypad lock, press and hold the INFO key until screen is displayed showing a 'progress' bar moving from left to right. Hold the key until the bar has moved completely across the screen and a beep is heard to confirm the lock has been activated.

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When the keypad lock is activated the blue  **info, green**  **triangle and red**  **square keys are still active.**

To deactivate the keypad lock, repeat the above procedure. The 'progress' bar will now move from right (lock on) to left (lock off) and a beep will be heard.

Every syringe pump will be supplied with a lock box. After starting the infusion, check the syringe pump is set correctly and place it in the lock box. A key is kept in the canvas bag with the pump.

3.9 Environmental considerations

- protect the pump from sunlight at all times, use the canvas bag provided or replacement bag
- avoid using in hot environments. CME Medical advises ambient air temperature should be between 15 – 45 degrees centigrade
- avoid mixing medicines in one syringe if compatibility data is not available
- do not mix more than three medicines unless on the advice of a palliative care specialist. Always add medication to the diluent not the other way around. This helps promote stability of the combined medications
- do not infuse the contents of the syringe pump over a period longer than 24 hours

3.10 Changing the syringe

- the infusion should be changed every 24 hours as compatibility data is only available for this timeframe
- when the infusion is nearing completion, a warning will be shown on the LCD display screen 15 minutes before the end of the infusion
- take final volume readings from the pump and record on the pink chart. If there is medication remaining in the syringe, the volume destroyed must be documented on the pink CSCI chart with a witness if it contains a controlled drug and counter signed in controlled drug record
- disable the keypad lock and press and hold the ON/OFF  key ensuring the pump is switched off
- **disconnect from the child before removing the syringe from the pump**, to avoid giving a residual bolus, keeping the end clean/capped off while attaching new syringe to the pump
- follow the guidance for 'fitting the new syringe to the syringe pump' as above
- check the child's name and CHI against the prescription and continue with the check

- check the calculated volume, duration and rate before pressing the green  key to confirm, and start the infusion
- **the syringe must be attached to the pump before being connected to the child**
- lock Keypad

3.11 Connecting a new CSCI line

When changing the neria guard infusion line:

- prepare medication as above in new syringe
- disconnect the CSCI line from the device **before** removing the syringe from the pump. This ensures that the child does not receive an inadvertent bolus dose when the syringe is removed
- attach the new CSCI line to the prepared syringe and ensure the luer-lock is fully screwed onto the thread of the syringe tip to prime the tubing with the syringe pump contents until the fluid just shows at the tip
- load syringe (as previously detailed)
- finally attach line to CSCI infusion device
- lock keypad as above
- if there is medication remaining in the syringe, the volume destroyed must be documented on the CSCI chart with a witness for a CD and counter signed in controlled drug record

When a neria guard infusion line is already in situ and re-siting is not required:

- disconnect the SC infusion line from the previous syringe before removing the syringe from the pump, normally the syringe will be empty, but occasionally it may not. (This ensures that the child does not receive an inadvertent bolus dose when the syringe is removed.)
- remove the previous syringe from the pump and attach the new one
- programme the infusion on the pump
- check the subcutaneous infusion line is full of fluid and connect it to the new syringe ensuring the luer-lock is fully screwed on to the thread of the syringe tip
- if there is a delay in re-attaching the syringe to the subcutaneous infusion line, the line should be capped to avoid contamination

3.12 Changing the subcutaneous device site

When a new site is required, e.g. due to inflammation or pain, **a new neria guard device must be used,** plus/minus new line, attaching them to the existing syringe.

- stop Infusion
- detach line from infusion site
- remove the syringe from the pump
- discard line (This will not be necessary unless the line is integrated into the device)
- prime new line if required, with syringe contents ensuring the luer-lock is fully screwed on to the thread of the syringe tip. **This means not delivering medication over the full 24 hr period,** however, the shortened time is appropriate in order not to waste the medication. If the syringe and medication are due changed, follow the usual procedure
- re-site a new neria guard device
- ensure the programme is set
- press the green ▶ key to **RESUME the previous programme**:

- the screen will display “volume, duration and rate” check against the monitoring chart that the rate is correct (duration will be reduced)
- press the green ▶ key to confirm and the screen will display “start infusion” press the green key ▶ to confirm
- lock keypad as above

- document the time the neria guard device and infusion line are changed on the pink Palliative Care Subcutaneous Infusion and Monitoring Chart Syringe

4. Ward nursing and troubleshooting of continuous subcutaneous infusion medication administration

Any child receiving specialist symptom management and/or end-of-life care remains under the nursing and medical governance of that ward area. Ward nurses and medical staff maintain the responsibilities of ensuring that medications are being delivered effectively and safely within their clinical area.

Please refer to the Paediatric Supportive and Palliative Care Team Resources Pack that are situated in every ward area for further information and resources when providing end of life care in the hospital environment.

Section 4 is designed to be printed out and used as a visual reference guide for ward nursing staff when a child has a CSCI in situ. Each member of ward staff should complete the CME BodyGuard T pump competency checklist when caring for a child with a CSCI in the ward environment, see appendix 6.

Children receiving CSCI's will have been commenced on the infusion by staff competent with the procedure (see section 3 above: 24 hour CSCI preparation and administration).

Initial start-up checks are performed when the infusion is commenced or replaced, within the first 15 minutes of administration. This is the responsibility of the staff commencing the infusion. These checks are recorded on the pink NHSGGC Palliative Care Subcutaneous Infusion Prescription and Monitoring Chart for Syringe Pumps CSCI prescribing and administration chart

Subsequently, ward nurses will carry out monitoring checks at 1 hour and then 4 hourly intervals. It is good practice where possible that the ward nursing staff have the opportunity to observe the procedure of CSCI administration and infusion commencement. Where this has not been possible, real time teaching sessions will be provided to the ward nursing team that are supporting the child. This session can be provided by the Paediatric Supportive and Palliative Care Team and then cascaded by ward staff at each shift handover.

The following guidance provides ward nursing staff with a stepwise approach to monitoring and troubleshooting a CSCI:Record on the pink NHSGGC Palliative Care Subcutaneous Infusion Prescription and Monitoring Chart for Syringe Pumps chart the time and date that the CSCI is checked and initial each of the following checks on the first hour and then 4 hourly, or sooner if required. Inpatient pumps require a check every four hours. The first ward nurse check should be completed on the first hour of set up and then every subsequent 4 hours. There are another 6 boxes for 4, 8, 12, 16, 20 and 24 hrs. Enter the time of each check.

At each nursing 4 hourly check observe and record:

- syringe and infusion line appearance (check for cloudiness, presence of air bubbles, precipitation, colour change), check the CSCI infusion line to ensure that it is securely attached to both the syringe and the child's neria guard device, check that the infusion line is not kinked, trapped or leaking
- observe that the pump is running by observing the green light that flashes intermittently every 32 seconds (above the power on/off button)
- check that the flow rate setting corresponds to pink chart flow rate setting (NB: do not alter, alert the on-call team if discrepancy noted)
- press the blue info key once, to check and record the volume to be infused (VTBI) and volume infused (VI). Check these totals are as expected. The screen will automatically return to the main screen after 5 seconds of releasing the blue info key. This should also be confirmed by a visual check of the syringe volume
- press the blue info key twice, to check and record the battery level
- check the pump is running to time (record as Y/N). Inform on-call team if any discrepancy noted
- check and record site appearance e.g. 'OK' (check for redness, swelling, discomfort/pain, leakage of fluid). Record 'resited' if this is required
- assess the medication is controlling the child's symptoms
- if the child is mobile ensure an anti-syphon line is in situ
- initial the bottom column once all checks are completed

If checks are not carried out within the 4 hourly interval e.g. site check not undertaken to prevent disturbing a child whilst asleep record this and the reason on the pink chart.

Escalate any concerns on 4 hourly checking (or before) **immediately** to the identified on-call team supervising the CSCI delivery.

Troubleshooting the CSCI pump

How to temporarily stop the infusion:

This is not normal practice and should only be carried out in exceptional circumstances e.g. for bathing or showering where the pump could not be effectively protected from water ingress or damage.

- press the red stop key, disable the keypad lock and press and hold the ON/OFF key
- do not remove the syringe from the syringe pump
- note the time the syringe pump was stopped, started and why, on the monitoring chart
- if the syringe pump contains opioids then it will be required to be locked in the CD cupboard for the duration of the bath session or placed in a safe place out of the reach of other children in the home setting

Note: for baths or showers, the manufacturer's guidance is to stop the infusion and use breakthrough as necessary while the child is in the bath or shower. This would interrupt the consistency of the medication cover for the child therefore, it is possible to keep the pump in the lockbox and in its blue canvas bag wrapped in a towel, not in a plastic bag and kept away from the water. If there is any concern about the pump becoming damp or wet replace it with another pump and send it to medical devices to be checked.

How to resume delivery if the infusion is interrupted

To resume the infusion, check the prescription and syringe label match the child's details

Press and hold the ON button until a beep is heard

The screen will request confirmation of the syringe size and syringe brand

If the syringe size and brand match the screen message press the confirm green key to confirm

The screen message will then display

Press the confirm green key to resume the previous programme: the screen will display "volume, duration and rate" Check against the monitoring chart that the duration and rate are correct

Press confirm green key to confirm and the screen will display "start infusion" press the green key to confirm.

LOCK KEYPAD

Note the time the infusion resumed and record on chart.

If there are any discrepancies then a new infusion must be prepared and commenced.

WARNING – If the red  square key is pressed, the syringe pump interprets this as a completely new 24-hour period and the remaining contents of the syringe would be delivered over the next 24 hours from confirming 'Start infusion' The child would not, therefore, receive the prescribed dose. If the red  square key has been pressed in error, discard the remainder of the syringe contents and prepare and set up a new syringe.

Stopping the infusion and removing the syringe pump

When the infusion is nearing completion, a warning will be shown on the LCD display screen 15 minutes before the end of the infusion. When the infusion is complete and the syringe is empty, the pump will stop automatically and an alarm will sound. If the syringe pump is no longer required for the child, press the green  key to confirm the end of the infusion, disable the keypad lock and press and hold the ON/OFF  power switch ensuring the pump is switched off.

Any medication remaining in the syringe must be destroyed and the volume documented on the CSCI chart with a witness 2nd signature for a CD

A syringe that is not empty must never be taken off the syringe pump whilst connected to a child. Stop the infusion and then disconnect the line from the child before removing the syringe from the pump.

Clean the pump and lock box using dish soap and water for lock box if soiled. 70% alcohol wipes if not soiled.

Do not immerse the syringe pump in water/liquid.

Return and store in the controlled drug cupboard of ward 3A RHCG clean, dry and with battery remaining in situ, pump in lockbox and in blue canvas bag with key.

Whilst the syringe is in use, the child and parent/carer should be aware of:

- How to take care of the syringe pump e.g. avoid spillages of liquids or dropping the pump and to report if the green light stops flashing or the alarm sounds
- Ensuring the battery is checked daily (responsibility of visiting nurses)
- Avoiding the use if mobile phone within one metre of the syringe pump
- Ensuing the syringe pump is well supported when the child is mobile e.g. placed in a pocket or ambulatory bag with anti-syphon line in place to avoid syphoning

What to do if a child dies when their syringe pump is running

Stop the syringe pump by pressing the red stop key

Switch off the syringe pump by disabling the keypad lock and then press and hold the ON/OFF key.

On the pink subcutaneous infusion monitoring chart, record the date, time and amount of solution (mL) remaining in the syringe. Any medication remaining in the syringe must be destroyed and the volume documented on the CSCI chart with a second signature for a CD.

Following the confirmation of death, in normal circumstances and in conjunction with the parent's consent remove the neria guard device, infusion line and syringe pump. If a post-mortem is required, do not remove the neria guard device without seeking advice.

Syringe pump maintenance

Syringe pumps must be serviced at least annually by Medical Devices, whether used or not, to ensure their function is maintained.

Sunlight affects the pump and may cause an under or over-infusion rate if affected. Keep the pump in the blue canvas bag at all times when not being changed/checked.

Keep the pump away from heat sources such as heat packs and hot water bottles.

If there is any doubt at all about the pump's operation whilst in use, remove it immediately and send to Medical Devices Department. Syringe pumps should be immediately removed from use and sent for maintenance checks if they have been dropped, suffered fluid ingress (e.g. had fluid spilt over them, been dropped in a bath) or show any signs of condensation within the unit. It is a nursing responsibility to action this.

Please be aware the Paediatric Supportive and Palliative Care currently only have access to 3 syringe pumps therefore careful maintenance must be observed at all times as they are a limited commodity.

Incident reporting

Any episodes where a child cannot receive a CSCI due to lack of capacity or competence of staff, must be reported and escalated urgently to clinical team and to nursing and medical management as appropriate in addition the incident should be reported through the Datix system.

Monitoring in the home setting

It is unlikely that monitoring checks can be carried out 4 hourly or regularly in the home setting. Monitoring as above, should take place at each nursing visit within the home setting. The frequency of these checks will depend on factors such as other nursing needs of the child, the willingness or ability of the parents/carer to assist in monitoring, and the risk of instability of the medicine mixture.

If any checks indicate a problem e.g. the infusion is not running at the expected rate, inform the Paediatric Supportive and Palliative Care Team or the designated on call team, so the appropriate action can be taken, and document in the child's nursing notes.

If an infusion is discontinued before it is complete e.g. because of a change in dose or medicine, document the amount of solution remaining and destroyed (mL) on the monitoring chart (2 signatures for a controlled-drug i.e. additional signature in witness box on the pink chart).

In the home setting the parents/carers must be given clear guidance on what to do and who to contact in the event of a problem arising. This will be documented in the child's Symptom Management Plan and Anticipatory Care Plan

Action must be taken and documented in the event of:

- significant discrepancies in the actual and expected infusion rate
- unforeseen side effects to the child
- signs of incompatibility
- blockage of the CSCI infusion line
- damage to the syringe barrel or tip, or the presence of a large amount of air, which may indicate the syringe barrel has cracked
- site reaction

References

End of life care for infants, children and young people with life limiting conditions: planning and management NG61 (2016). https://www.nice.org.uk/guidance/ng61

Guide for the use of the CME McKinley T34 Syringe Pump for Adults in Palliative Care (2019) https://www.palliativecareguidelines.scot.nhs.uk/media/71389/2020-cme-t34-guidelines.pdf

Syringe Pumps: Guidance for the use with babies, children and young people in the community setting within Worcestershire, Worcestershire Health and Care NHS Trust

Syringe Pumps Scottish Palliative Care Guidelines NHS Scotland (2024) https://www.palliativecareguidelines.scot.nhs.uk/guidelines/end-of-life-care/syringe-pumps.aspx

Medicines and Healthcare products Regulatory Agency (MRHA). Field Safety Notices https://www.gov.uk/drug-device-alerts

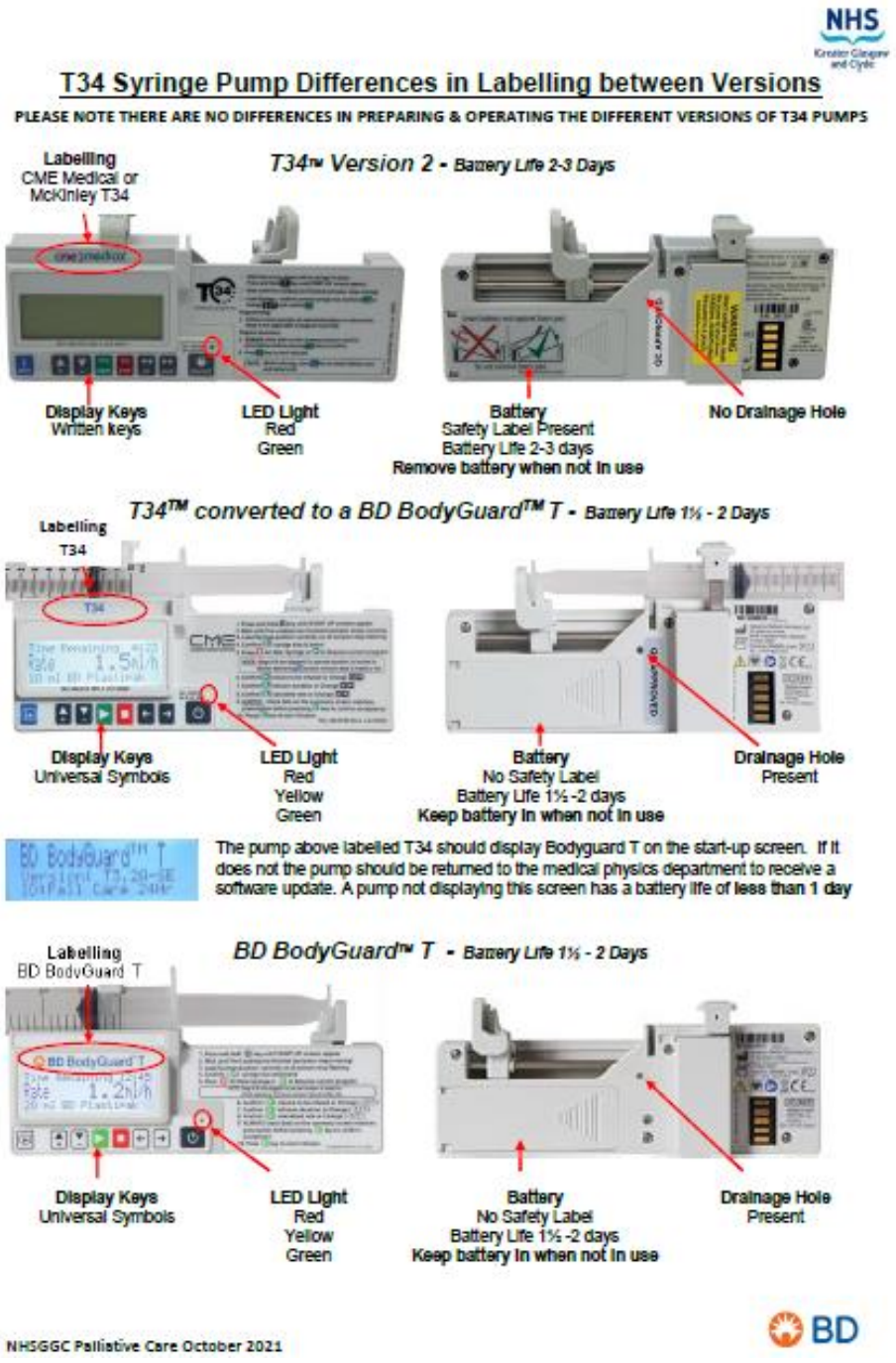
Twycross R, Wilcock A (2007) PCF3 Palliative Care Formulary. Oxford: Radcliffe Medical Press https://www.nursingtimes.net/clinical-archive/medicine-management/safe-practice-in-syringe-pump-management-30-03-2015/

Professional Guidance on the Administration of Medicines in Healthcare Settings on the Administration of Medicines in Healthcare Settings 2019 RPS/RCN

Competency Framework for all Prescribers RPS (2016) https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20standards/Prescribing%20competency%20framework/prescribing-competency-framework.pdf

Appendices

Appendix 1 - *T34 Syringe Pump Differences in Labelling between Versions*



https://www.palliativecareggc.org.uk/wp-content/uploads/2022/01/Pump-differences-Final.pdf

Appendix 2 – *Procedure for temporarily disconnecting patients from the BD BodyGuard syringe pump (Palliative Care use) e.g. when bathing*

Procedure for temporarily disconnecting patients from the BD BodyGuard syringe pump (Palliative Care use) e.g. when bathing

It is recommended that these pumps should not be taken into bathrooms and showers when patients are bathing. The pumps are sensitive to both steam and water ingress. Damage may occur which could result in pump failure. There have been some pumps which have had to be written off because of water damage.

- Disengage the keypad lock by holding down the 'INFO' key.  or
- Pause the infusion using the red 'STOP' button. 
- Switch the pump off using the 'ON/OFF' key 

↓

- Disconnect the line from the cannula.
- Attach a needle-free connector to the end of the cannula and a universal red bung to the end of the line.
- The syringe must be clearly labelled so that it can be easily identified.
- The pump, syringe and line should be stored safely while not in use e.g. in a patient's own lockable bedside medicine locker, in a CD cupboard in a ward/clinical area or out of the reach of children in the patient's own home.

↓

When the patient is ready to be re-connected to the infusion.

- Remove the red bung from the end of the infusion line and re-connect it to the needle-free connector on the cannula.
- Switch the pump on using the 'ON/OFF' key.
- Record the period of time that the patient has been disconnected from the infusion on the pink 'Palliative Care Subcutaneous Infusion Prescription and Monitoring Chart for Syringe Pumps'. Assess patient to determine whether a SC bolus of medicines may be needed if symptoms have become uncontrolled

↓

The following screen will appear:

- Select 'Press YES to Resume' as this will continue the previous program and allow the infusion to be completed.
- The user should check that the infusion rate has remained the same from the previous entries noted on the 'Palliative Care Subcutaneous Infusion Prescription and Monitoring Chart for Syringe Pumps' and record the details in the monitoring section.

Pressing 'NO for New Program' means that the pump re-calculates the remaining volume to be delivered over a new 24 hour period and the rate will change. This would result in the patient receiving less medication than prescribed and symptoms may become uncontrolled.

http://www.staffnet.ggc.scot.nhs.uk/Acute/Rehab%20Assessment/Palliative%20Care/PCRF/Documents/procedure_for_temporarily_disconnecting_patients_from_syringe_pump.pdf

NHS Greater Glasgow & Clyde: Guidance for the use of subcutaneous medications for specialist symptom management and end-of life care in the Royal Hospital for Children Glasgow. Author: Caroline Porter Diana Children's Nurse West of Scotland, Paediatric Supportive and Palliative Care Team.

Appendix 3 – *Guidance for completion of updated Palliative Care Subcutaneous Infusion Prescription and Monitoring Chart for Syringe Pumps*

NHS Greater Glasgow and Clyde

Guidance for completion of updated Palliative Care Subcutaneous Infusion Prescription and Monitoring Chart for Syringe Pumps

Note: use one chart per pump

[For all inpatients, all drugs must also be prescribed on a drug kardex]

Prescribing a Subcutaneous Infusion (page 1)

1. Enter the patient's details (a patient label can be used) and any known allergies / sensitivities
2. Enter the infusion number. For example, if the patient is using 2 pumps, then the infusion numbers will be **1 of 2** and **2 of 2**.
3. In first column enter the date and time of prescribing.
4. In next section enter the name of the drug(s). Number the drugs as shown below. Maximum of 3 drugs /pump in Primary Care and in exceptional cases within Inpatient units up to 4 drugs / pump.
5. In the next column enter the dose **per 24 hours** for each drug.
6. The prescriber **MUST** provide a full signature in next section.
7. The next column is included to ensure that the diluent (water or sodium chloride) has been authorised by a prescriber.
8. The source of compatibility information should be documented or if no information confirming stability locally the source of the recommended combination should be documented e.g. contacted hospice.

Date / Time	Drug(s)	24 hour dose (for each drug)	Prescribed by (full signature for each drug)	Diluent (tick and sign)	Compatibility † (Drugs and Diluent)	Date Stopped	Stopped by
	1..... 2..... 3.....	....	....	☐ Water for injection OR ☐ Sodium chloride injection 0.9% depending on compatibility *	Stable ☐ Source of information: No data ☐ Comment:		

NHS Greater Glasgow & Clyde: Guidance for the use of subcutaneous medications for specialist symptom management and end-of life care in the Royal Hospital for Children Glasgow. Author: Caroline Porter Diana Children's Nurse West of Scotland, Paediatric Supportive and Palliative Care Team.

9. To discontinue an infusion the whole prescription box is scored through.
   [note: for inpatients all discontinued infusions must also be discontinued on the patients kardex]

10. Enter the date of discontinuation.

11. The doctor discontinuing the infusion must sign the 'stopped by' section.

12. To prescribe a new infusion for the patient follow steps 3 to 8 in the subsequent prescription box.

Record of Administration (pages 2 – 8)

A new section should be started each time a new syringe is prepared.
There are 14 sections for preparation and administration.

Daily Set up

13. Document patient name and CHI number at top of each page.

14. Enter the make and model of infusion device being used.

15. Enter date and time of preparation.

16. Enter the asset/serial number of the device.

17. Enter the details of the diluent used i.e. name and batch number.

18. Enter the drug name with the batch number used against the corresponding numbers.

19. Enter the site used and comment on the appearance of site and syringe e.g. OK.

20. Record if site or line required changing.

21. The staff involved with the set-up of the infusion and pump must sign the record of administration. There may be one or two signatures depending on local policy.

22. Record the battery life status.

23. Once syringe has been loaded onto pump document the flow rate of the infusion and the total volume – ***this should also be visually checked.***

24. Document if the keypad has been locked at initiation of infusion.

DAILY SET UP			MONITORING								
	Date / time of preparation: Asset / Serial No:	Flow Rate in ml/hr: Battery life % :		Time (4 hourly checks for in-patients)	Initial check within 1 hour						
	Diluent: Batch No.:	Keypad lock on: Yes ☐ No ☐		Syringe appearance e.g. 'Clear'							
	Drug name and batch number(s): 1..... 2..... 3..... Total volume:			Flow rate setting (N.B. do not alter)							
				Volume To be infused							
				Volume Infused (total)							
				Battery check (light flashing)							
	Site used and appearance:	Syringe appearance:		Running to time (Y/N) If NO see 'Troubleshooting'							
	Site changed: Yes ☐ No ☐	Line changed: Y ☐ N ☐		Site appearance e.g. 'OK'							
	Signature(s):			Initial							

Troubleshooting	If infusion is not completed, note volume remaining and sign below	
Alarm conditions – specify:	Volume disposed:	Date and time:
Time and actions taken:	Sign:	Witness (if applicable):
Action if not running to time:	Syringe pump discontinued: ☐ Sign:	

Monitoring

25. Inpatient pumps require a check every 4 hours. The first check should be completed within 1 hour of set-up therefore there are another 6 boxes for 4, 8, 12, 16, 20 and 24hrs. Enter the time of the check.

26. Patients in the community should have their infusion checked and documented on each visit. First check should be within 1 hour of set-up or before leaving the house.

At each check

27. Check the appearance of the syringe and document in appropriate box.

28. Confirm the flow rate setting: **N.B. This should not be altered – if patient needs breakthrough give bolus injection.**

29. Without removing the syringe, check and document the volume to be infused and the volume already infused.

This should also be confirmed by visual inspection of the syringe.

30. Tick the column if the battery light is flashing intermittently.

31. Document if the infusion is running to time, state Yes (Y) or No (N). If No – document actions in appropriate section of troubleshooting.

32. Check the site appearance If the infusion needs to be re-sited, mark "re-sited" and state new site in the troubleshooting 'Time and actions taken' section.

33. Initial the bottom of the column when all the checks are completed.

Troubleshooting

If you are unhappy with the functioning of the pump, it is important to monitor closely as per T34 McKinley guideline.

34. If the pump alarms specify time, problem encountered and any actions taken to resolve problem.

35. If infusion not running (or running slowly), identify reason and document action(s) in appropriate box.

36. If infusion runs too quickly check flow rate. Inform medical staff immediately if patient showing any indication of over-infusion. There is always the possibility of tampering – use of tamper-proof box may be helpful.Document action(s) in appropriate box.

37. If pump is temporarily discontinued, e.g. while in bath /shower, document in troubleshooting section.

Infusion discontinuation

38. If the infusion is discontinued before the syringe is empty for whatever reason document volume disposed of date / time and sign. A witness, if required according to local policy, should also sign.

39. Only if the syringe pump is no longer to be used e.g. switching back to oral therapy, death of patient then tick and sign at the syringe pump discontinued box.

Appendix 4 – Flow chart for Bodyguard T Syringe Pump Compatibilities

Flow chart for Bodyguard T Syringe Pump Compatibilities

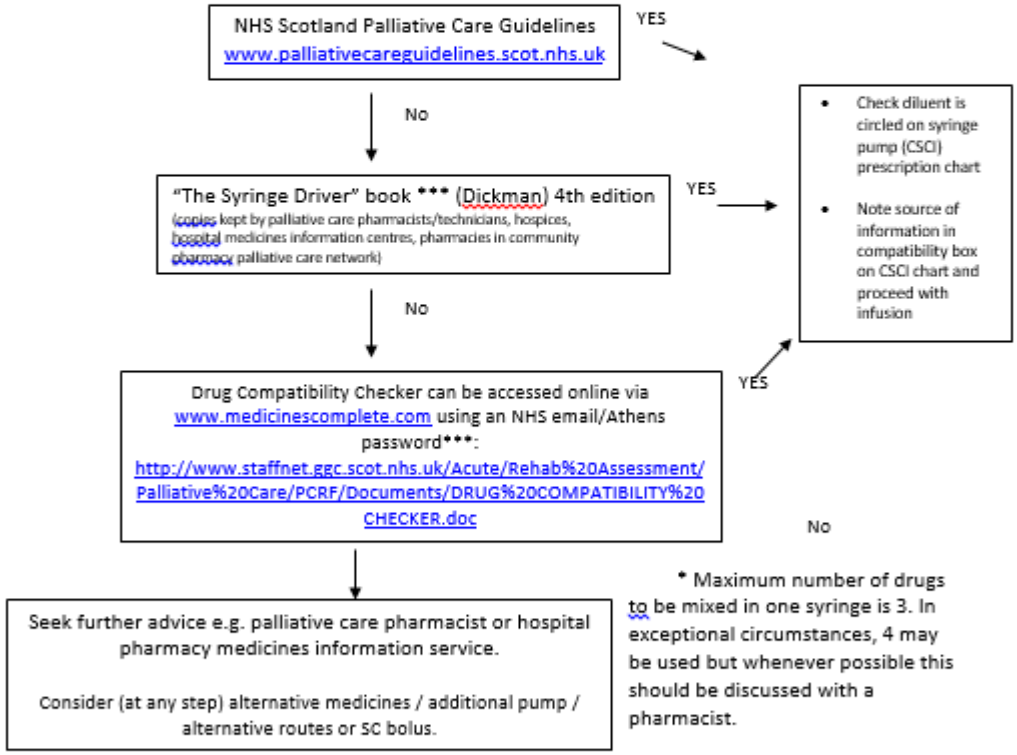
NHS Greater Glasgow and Clyde

Always SEEK ADVICE from a PHARMACIST IF YOU ARE UNSURE or NEED GUIDANCE

Is the combination* you require:

- In the **amount** you require (for EACH drug)
- In the **volume** you require (maximum of 22ml in 30ml syringe)
- In the **diluent****you require

Listed as compatible over 24 hours in:



* Maximum number of drugs to be mixed in one syringe is 3. In exceptional circumstances, 4 may be used but whenever possible this should be discussed with a pharmacist.

** If more than one diluent is listed, normally use water. Consider sodium chloride 0.9% [only if listed] if site irritation is a problem.

*** Many of the combinations listed in these sources come from use in clinical practice and may reflect use on a single occasion; close attention to monitoring for compatibility, site problems, occlusion and infusion timing is important.

Approved by GGC Palliative Care Pharmacists January 2011
Revised Mar 2023

NHS Greater Glasgow & Clyde: Guidance for the use of subcutaneous medications for specialist symptom management and end-of life care in the Royal Hospital for Children Glasgow. Author: Caroline Porter Diana Children's Nurse West of Scotland, Paediatric Supportive and Palliative Care Team.

NHS Greater Glasgow and Clyde

Appendix 5 - Information about your syringe pump

Information for patients about

Name: .....

GP Name: ..... Telephone: .....

District Nurse	Tel:
Out-Of-Hours District Nurse Service	Tel:
Hospice	Tel:
Community Clinical Nurse Specialist	Tel:
Hospital Ward	Tel:
Hospital Palliative Care Nurse Specialist	Tel:
Hospital Palliative Care Consultant	Tel:

This is a small, portable battery controlled pump. You can carry it about in a pouch attached to a belt or on your shoulder. The pump is fitted with a syringe, which gives your medicines through a needle just under the skin. The medicines are absorbed into your body. The pump runs 24 hours a day, avoiding the need for repeated injections.

Why do I need one?

Sometimes it is easier for you to have some of your medicines this way.

This may be because:

- You have been vomiting, and find it difficult to keep your medicines down. We can use the syringe pump to give you medicines to help stop you vomiting, as well as medicines to help other symptoms such as pain. Once the vomiting settles you may be able to go back to having your medicines by mouth.
- You have so many medicines to take that you are finding it difficult to swallow them all. Putting some of the medicines in the syringe pump can reduce the number of medicines you need to take by mouth.
- You are unable to swallow medicines. Medicines to help your symptoms can be put into the syringe pump.

Starting a syringe pump doesn't mean that your medicines have stopped working or aren't strong enough, only that this is another way of getting them into your body.

Living with your syringe pump

Your body will absorb the medicines from the syringe pump for a 24-hour period, helping to control your symptoms. You're GP, District Nurse, hospital or hospice staff will make any adjustments. **Do not interfere with the syringe or the pump.**

You must keep the syringe pump and the needle site dry especially when washing or bathing. If you drop the pump into water, contact your nurse, as you will need a new syringe pump to make sure that your medicines are being given correctly.

Do not expose the syringe in the pump to direct sunlight – you should keep it in the pouch to protect it.

Do not expose the syringe pump to extremes of heat. Avoid placing the syringe pump next to a heat pad, electric blanket or hot water bottle.

You can go out and about with the syringe pump as you can carry it in the pouch supplied. **Please note: you should ask your doctor if your medicine in the syringe pump means you cannot drive.**

You can eat and drink as normal. Always check with your doctor or pharmacist to see if your medication allows you to drink alcohol if you wish.

We advise you **not** to use a mobile phone near a syringe pump as it may affect the way the pump works. Try to keep mobile phones that are switched on about an arm's length away.

How do I know that my syringe pump is working?

The light above the '**on** or **off**' button will flash green about every 30 seconds. If it turns red, there is a problem with the pump – contact your nurse as soon as possible.

Sometimes it is necessary to take some additional medicines even though your syringe pump is in place. If you are at home and are still able to swallow medicines, make sure you have appropriate tablets, capsules or liquids to take should you experience any symptoms such as pain, sickness or anxiety. Let your district nurse or GP know if you have had to take any such medicines during the day.

Who will look after my syringe pump?

If you are at home, the District Nurse will come in each day to refill the syringe, check that the needle is comfortable and that there are no problems with the medicines.

If you are in hospital, a hospice or care home then staff will change the syringe each day and regularly check that the pump is working correctly. They will make sure that the needle is comfortable and that you are not having any problems with the medicines.

The medicines in your syringe pump have been prescribed by your doctor to help control your symptoms; you do not need to do anything to the syringe pump. Once refilled, the medicines should continue to control your symptoms over the next 24 hours.

If you have any other questions, please speak to your district nurse, or staff in the hospital, hospice or care home.

If you notice any of the following when you are being treated at home contact your District Nurse or GP. Let your staff nurse know if you are being treated in a hospital, hospice or care home:

- The colour of the medicines in the tubing or syringe changes.
- There is a cloudiness or sediment in the tubing or syringe.
- The skin around the needle is red, swollen or painful.
- The alarm on the pump sounds.
- Any leakage of liquid or fluid at site.
- Needle becomes displaced (i.e. comes out).

Acute Service: Order copies from Medical Illustration Services, telephone number **211 4692**, quoting reference 275481. Community copies: Print from website:
http://www.palliativecareggc.org.uk/?page_id=7 Palliative Care Team

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Review Date: November 2016
Designed and producedby Medical Illustration
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NHS Greater Glasgow & Clyde: Guidance for the use of subcutaneous medications for specialist symptom management and end-of life care in the Royal Hospital for Children Glasgow. Author: Caroline Porter Diana Children's Nurse West of Scotland, Paediatric Supportive and Palliative Care Team.

Appendix 6 - Self-assessment nursing competency checklist for monitoring a BodyGuard T or CME syringe pump in the ward environment

Nurses Name:	**Date:**
	Initial
I have received a verbal and visual handover of the functions and monitoring requirements of the CME BD BodyGuard T or CME syringe pump by _____	
I can demonstrate how to lock and unlock the CME BD BodyGuard syringe pump	
I can visually check and comment on the appearance of the syringe contents	
I am aware of how to identify whom to inform if the syringe appearance is altered	
I am aware of how to stop infusion if required whilst waiting on a new preparation being commenced	
I am aware that subcutaneous bolus medication may be required in the interim of stopping the infusion	
I am aware to press the blue information key to access the monitoring information required each 4 hours	
I can check the flow rate setting and confirm it is as would be anticipated	
I can check the volume to be infused and confirm it is as would be anticipated	
I can check the volume infused total and calculate this would be as anticipated	
I am aware of how to identify whom to inform if any of the above has a discrepancy	
I can check the battery by observing that the green LED light flashes every 32 seconds	
I am aware not to check the battery % level every 4 hours as this depletes the battery unnecessarily	
I can check the infusion is running to the expected time	
I can check and comment on the appearance of the skin around the neria guard device	
I am aware of how to identify whom to contact if the skin site appears unsatisfactory	
I can follow the instructions in section 1 of the RHCG Guidance Document, for re-siting a new neria guard device and continuing the infusion via a new site	
I am aware that the monitoring should be undertaken and documented appropriately at least four hourly	
I can hand over this monitoring information on accurately to the next nursing shift	

Appendix 7 – Assessment Criteria: Continuous Subcutaneous Infusion and Bodyguard/CME Syringe Pump

NHS Greater Glasgow and Clyde

Paediatric Supportive and Palliative Care Team
Royal Hospital for Children Glasgow

Name		Supervised practices			
	ASSESSMENT CRITERIA: **Continuous Subcutaneous Infusion and Bodyguard/CME Syringe Pump** **Please note the final sign off may not require completion of all 3 supervised practice sessions depending on assessor judgement and supervisee competence**	1 ✓	2 ✓	3 ✓	Sign off
1.	Explains the use of syringe pump, medications and all aspects of the procedure to the child, parent/carer, as appropriate and gains informed consent.				
2.	Verifies patient's details with the prescription and documentation.				
3.	Checks compatibility of prescribed medication(s) and diluent with current, clinically recognised resources.				
4.	Ensures drug doses are correct, using most up-to-date formularies.				
5.	Collects equipment necessary and visually checks the pump is clean, intact, with no parts damaged or missing and has been serviced within the last year.				
6.	Medication – collects medication necessary, signing out Controlled Drugs correctly.				
7.	Ensures any calculations required in the preparation of the solution are checked individually by practitioners and are cross-checked for accuracy.				
8.	Draws up prescribed medication(s) and diluent in appropriate syringes, using correct needles.				
9.	Adds medication to diluent. Rotates the syringe gently to mix the solution thoroughly, ensuring no loss of medication. Observes for cloudiness, discolouration and/or precipitation. Expels any air from the syringe.				
10.	Aseptically connects the administration line to the syringe and primes the line (only if a new administration line is being used). Attach a red/white sterile syringe cap to the syringe if a new administration line is not required.				

12.	Ensure the barrel clamp arm is down, then presses and holds the on/off key.				
13.	Notes the self-test screens have been displayed.				
14.	During pre-loading if necessary, uses the forward or back arrow keys to move the actuator to the required position to load the syringe.				
15.	Before loading the syringe, checks battery power. Renew if required.				
16.	Correctly places the syringe onto the pump, without losing medication, as this affects the dose delivered. Having a red/white sterile syringe cap in place will reduce the risk of syringe content loss during positioning the syringe into the pump.				
17.	Notes the brand and size of syringe recognised by the pump and confirms if correct.				
18.	Checks and documents on the pink chart that the deliverable volume, duration of infusion and rate of infusion are correct, before pressing the green triangle start button to confirm.				
19.	If a new infusion device is required: Selects an appropriate infusion site and sites the infusion device in the child. Connects the infusion line to the infusion device.				
20.	With screen prompt 'Start Infusion' – presses green triangle start button to start the infusion.				
21.	Locks the keypad (always) by pressing and holding down the blue i+ button.				
22.	Ensures the pump is infusing by observing for flashing of green light on pump. Ensure pump displays the correct time remaining, rate and syringe brand.				
23.	Secures the pump into the plastic syringe pump lock box and places in light protective carry bag, as necessary.				
24.	Completes all documentation.				
25.	Ensures the child is comfortable and addresses any child, parent/carer concerns or questions.				
26.	Monitors the infusion 4 hourly or more frequently if problems occur or are anticipated.				
27.	Explains the importance of the screen message: 'press green triangle button to resume/ red square button for new syringe'.				

28.	Indicates what action would be taken if infusion running more than 60 minutes ahead of or behind time.				
29.	Explains what action would be taken if the pump alarmed 'occlusion'.				
30.	Discusses what actions need taken when transferring a patient from one care setting to another.				
31.	What are the cleaning instructions for the pump?				
32.	What should you do if the pump is exposed to water ingress?				
33.	What should you do if the pump is dropped?				
34.	Awareness of precautions around exposure to sunlight and mobile phone use.				
35.	Explains how to report an adverse or near-miss incident.				
36.	Describes sources of help and advice regarding Continuous Sub-cutaneous infusions and the use of the Bodyguard/ CME T34 device, including out of hours support.				
	Assessors should date and initial these boxes for each supervised practice and final assessment.				

NHS Greater Glasgow & Clyde: Guidance for the use of subcutaneous medications for specialist symptom management and end-of life care in the Royal Hospital for Children Glasgow. Author: Caroline Porter Diana Children's Nurse West of Scotland, Paediatric Supportive and Palliative Care Team.