Oxford University Hospitals NHS
NHS Trust

# Continuous Subcutaneous Administration of Medicines via the T34 Syringe Driver for Adult Palliative Care Patients: a clinical protocol

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| **Category:** | Protocol |
| **Summary:** | Clinical protocol written for the use of health care professionals in the Oxford University Hospitals NHS Trust for the continuous subcutaneous medicines via the T34 syringe driver in adult patients with palliative care needs. |
| **Equality Analysis undertaken:** | April 2014 |
| **Valid From:** | 2 June 2014 |
| **Date of Next Review:** | June 2017 |
| **Approval Date/ Via:** | 21 May 2014 via OUH Clinical Policy Group<br>April 2014: Sir Michael Sobell House and Katharine House Hospice Medicines Management group<br>May 2014: Chair approval from Medicines policy steering group |
| **Distribution:** | OUH Intranet<br>Target Audience: All clinical staff working in the OUH Trust |
| **Related Documents:** | OUH 4 hourly T34 syringe driver checklist<br>OUH T34 syringe driver tracking letter<br>OUH T34 competency checklist |
| **Author(s):** | OUH Palliative Care Advanced Nurse Practitioner |
| **Further Information:** | Sir Michael Sobell House Palliative Care Services |
| **This Document replaces:** | Clinical Protocol for the use of syringe drivers in palliative care patients (adults) v.1, v.2 and Clinical protocol for the subcutaneous administration of medicines via Graseby MS26 Syringe driver for adult patients v.3 |

**Lead Director:** Chief Nurse

**Issue Date:** 2 June 2014

## Contents

## Introduction

1. The syringe driver used in palliative care is typically a small, portable, battery powered infusion device that is suitable for patient use in the hospital and at home. The syringe driver is used to administer a continuous subcutaneous (s/c) infusion of drugs from a syringe e.g. analgesics, anti-emetics, sedatives or anti-cholinergics. The syringe is drawn up with a single drug or a combination of drugs and administered at a constant rate over a set period of time (usually 24 hours).
2. The development of this clinical protocol is in response to changes in practice. To meet with the Medicines and Healthcare Regulatory Agency (MHRA) requirements for infusion devices, the OUH Trust has changed from the Graseby MS26 to the CME medical T34 syringe driver pump as of June 2nd 2014.
3. From June 2nd 2014, all Graseby MS26 and MS16 syringe drivers will be obsolete in the OUH trust..

## Scope

4. This document applies to all service areas of the Trust related to care of adults. Applicability is to all clinical employees of the Trust, including individuals employed by a third party or by external contractors.
5. This protocol is written for practitioners working in the Oxford University Hospitals Trust and is intended to provide information on the treatment of adult patients who are requiring medicines infused subcutaneously using a T34 syringe driver for the palliation of symptoms in advanced disease.
6. This protocol does not cover patients admitted to the OUH trust who are on a T34 syringe driver for non-palliative indications. Advice should be sought from the equipment library in this circumstance.

## Aim

7. The main purpose of this document is to assist the team caring for the patient in deciding when a syringe driver is needed and to provide guidelines to be followed for setting it up and the ongoing management. Principles for deciding on appropriate drug doses will also be discussed.
8. Rationale for any decision to deviate from this clinical protocol should be documented in the patient's notes.

## Responsibilities

9. **The doctor or other non-medical prescriber**: is responsible for prescribing medication to be infused via the syringe driver and for on-going assessment of the effectiveness of the medication for the patient.
10. The NMC code (2008) states: As a professional, you are personally accountable for actions and omissions in your practice and must always be able to justify your decisions". **The registered nurse** is accountable for:

    10.1. Knowing whether the prescribed medication by the doctor or non-medical prescriber is a safe and appropriate dose for the patient.
    10.2. On-going assessment of the effectiveness of the medication for the patient.
    10.3. Setting up and reloading of the syringe and injection site every 24 hours or other appropriate interval.

10.4. Monitoring the continuous subcutaneous infusion via syringe driver every 4 hours as a minimum.
10.5. Ensuring their own training needs are met prior to using the device and that they are competent to use the T34 syringe driver.

11. **A clinical support worker** may care for a patient with a syringe driver in situ, with responsibility to report any concerns to the registered nurse. The clinical support worker has no responsibility for setting up or reloading of the syringe.
12. **All health care practitioners** should demonstrate that they have received appropriate training in the use of syringe drivers and medicines.
13. **Pharmacists** are responsible for checking the compatibility of medicines combined in the syringe driver.

## Principles of Informed Consent/Best Interest

14. It is imperative that verbal consent is sought from the patient before a syringe driver is commenced. Discuss with the patient the nature of the syringe driver and the medicines it contains, potential benefits and adverse effects and any alternative strategies. Explain how the syringe driver will be monitored and check that the patient/carer has understood and that the patient/carer agrees to the treatment. Consider all individual communication needs to promote understanding (e.g. use of interpreter, taking account of all disability or cognitive impairment needs) and check the patients understanding. Document this in the nursing or medical record.
15. In many cases, it may be that the patient's conscious level is too impaired to give consent. If the patient is unable to give verbal consent, explanation should be given to the relatives/carers and documented in the nursing or medical record. Although relatives may provide some insight into whether the patient would accept a syringe driver, they do not have the right to refuse treatment considered to be in the patient's best interests by the clinician in charge.

## Guidance Information

16. This section is sub-divided to cover essential clinical guidance related to the use of the T34 syringe driver for the continuous administration of subcutaneous medications.
17. Where appropriate, the guidance has also been summarised as an appendix to enable ease of use and access.
18. **Indications for use of a syringe driver**

- Persistent nausea and/or vomiting
- Intestinal obstruction
- Difficulty in swallowing due to profound weakness / low energy levels
- Low levels of consciousness/coma
- Poor alimentary absorption
- Dysphagia
- Obstructive oral/neck/oesophageal lesions
- Severe stomatitis
- When the medicine cannot be given by another route, e.g. drugs such as octreotide

## 19. Advantages of Using a syringe driver

- Provides an alternative route of administration when the oral route is unmanageable
- Permits good symptom control by providing steady plasma drug concentrations
- Control of multiple symptoms is often possible with a combination of medicines that can be mixed together
- Reduces necessity for repeated injections
- The subcutaneous route is more comfortable than the intramuscular route, especially for the cachectic patient
- Less invasive than the intravenous route and avoids the need for IV access
- Does not restrict mobility and independence
- Syringe only needs replacing once a day unless the prescription changes

## 20. Considerations when using a syringe driver

- The need to anticipate the patient's requirements over 24 hours
- An exacerbation of patient symptoms may necessitate additional (PRN) injections to supplement the infusion. These could be administered via a separate subcutaneous line.
- The syringe driver should not be seen as the solution to all problems – the patients symptoms still need to be assessed regularly and the medication and doses adjusted accordingly.
- There is a misunderstanding regarded by some that the syringe driver is a last resort, or a sign of impending death. In fact, some patients use a syringe driver for extended periods of time, and may return to oral medication once symptoms are controlled.
- Some ampoules with liquid drug contents may contain some "overage". When drawing up multiple ampoules, measure the exact dose required; this may not be the full contents of the ampoule.
- Not all medications will be compatible in a syringe driver.
- Training is essential for all practitioners to ensure competency in safe and effective use of medicines by subcutaneous infusion.

## 21. Setting up the T34 syringe driver

21.1. For ease of access and use, guidance on the initial setting up and reloading of the syringe is detailed in **Appendix 2**.

## 22. Site Selection

22.1. Discuss with the patient their preference for selection of site taking account of disabilities and physical needs: the disease process and common sense will influence the choice of site.

22.2. **Avoid** the upper arm in bedbound patients who require turning and sites over bony areas in cachectic patients

22.3. **Avoid** areas of broken skin, inflammation, skin folds, oedema, lymphoedema or previously irradiated areas

22.4. Suitable sites for placement of the subcutaneous cannula include: the upper chest; upper arm; anterior abdomen; anterior aspect of the thighs. (this is summarised in Fig 1 overleaf)

22.5. Use subcutaneous cannula/needle as recommended by local OUH policy.

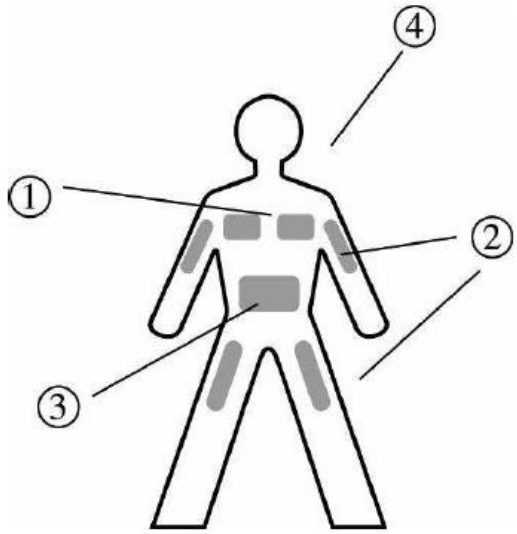
22.6. Decontaminate skin using Sani-Cloth CHG 2%/ alternative OUH recommended wipe prior to insertion, allow to dry for 30 seconds. Insert cannula/needle using an aseptic non-touch technique.

**Fig 1: Site Selection**

**Suitable Sites**

1. Anterior chest wall
2. Anterior aspect of upper arms & thighs
3. Anterior abdominal wall
4. Scapula region

***Take into account the mobility / immobility of the patient. In hairy areas, the hair should be clipped, not shaved***




## 23. Changing the infusion site

23.1. Monitor the insertion site every **4 hours as a minimum** and document findings on OUH T34 syringe driver checklist.

23.2. Label date of insertion on the clear dressing. Consider changing the insertion site every 72 hours.

23.3. **If subcutaneous access is limited, the device can remain in longer than 72 hours if the site is healthy**. However, if the site is red, leaking, bleeding, painful, appears to be inflamed, hard or swollen, the site should be changed beforehand.

23.4. Document rationale for non-removal on T34 checklist and in patients notes.

23.5. If the site is red, leaking, inflamed, painful, hard or swollen following removal of the subcutaneous device, continue to observe appearance of the subcutaneous site for infection for at least 24 hours and document in patient's notes.

23.6. Infusion lines in continuous use do not need to be replaced more frequently than 72 hours unless specific recommendations from manufacturer indicate otherwise or they become disconnected.

23.7. Some medicines e.g. Cyclizine can cause local irritation leading to increased frequency for changing the site. Should there be persistent problems with the site, consider:

- Seek specialist palliative care advice if problems persist
- Ensure 30ml luer lock syringe is made up to a total volume of 21mls to ensure adequate dilution
- Using a non-metallic cannula (e.g. Saf-T-Intima device)
- Using alternative skin cleanser or site dressing.
- Addition of dexamethasone 1mg to the 24 hour syringe can help reduce inflammation. (NB: Check dexamethasone is compatible with other medication in the syringe).
- Discuss with the specialist palliative care team if there is an alternative less irritant medication that can still give effective symptom relief.
- Change site prophylactically, e.g. daily.

## 24. Monitoring

24.1. The patient, infusion and infusion site must be checked as a minimum **every 4 hours** and findings documented clearly on the OUH T34 syringe driver checklist **(see Appendix 3;** checklist also available *on the OUH Palliative care Intranet site).*

24.2. The checks should include:

- Regular assessment of the patients symptoms: a PRN medication is required if the patient has breakthrough distress.
- Documentation of the syringe driver asset number being utilised.
- Site condition – is the insertion site red, sore, leaking, bleeding, or swollen? Has the needle displaced? If so, change the subcutaneous cannula.
- Inspect for leakage at the connections.
- Appearance of contents of the syringe and infusion line – is it clear or cloudy, or can crystals be seen? (precipitation/crystallisation).
- Check the display: check that the pump is delivering, that the infusion rate is as programmed and record rate setting.
- Press the **INFO** key to check and record:
    - Single press: **VTBI** (Volume to be infused) and **VI** (Volume infused)
    - Double press: **Battery life** remaining (record %). Battery life is typically 3-5 days
- Visually check volume remaining in millilitres (mls) – is it running too fast or too slow, or not at all? And compare with pump readings.
- Check the green light is intermittently flashing to indicate pump delivering.
- Check the keypad lock is on.

## 25. Prescription considerations in hospital

25.1. Prescribe medicines for continuous subcutaneous infusion via syringe driver on the appropriate section on the drug prescription chart. Ensure that appropriate doses are prescribed for 24 hour use and for breakthrough symptoms PRN.

25.2. Prescribe each component, specify the diluent and ensure compatibility following general guidelines for prescribing.

25.3. Request ward pharmacist to check combination of drugs prescribed within 4 hours of commencing the continuous subcutaneous infusion.

25.4. Record administration on the drug prescription chart and T34 syringe driver checklist.
25.5. Review the effectiveness of the drugs prescribed at least daily and consider whether any changes need to be prescribed. When the doses in the syringe driver are titrated or changed, the syringe driver should be re-prescribed.
25.6. Further information on drugs used in continuous subcutaneous infusion via syringe driver is included in **Appendix 6** and on the pharmacy injectables intranet page **-** Syringe Driver Combinations.

## 26. Alteration of dosage or addition of new medicines

26.1. If medicine doses need to be altered or additional medicines are required, discard the original syringe and prepare a new syringe with the new prescription. This ensures that the prescribed medicines are delivered over the prescribed time.
26.2. If the prescription is completely changed, you will need to completely restart the process using a new giving set and you will need to change the site.
26.3. Once the syringe driver is established, never assume that this will be the answer to all the patient's problems. Regular symptom assessment is essential.

## 27. Drug considerations and compatibilities

26.1 There are a variety of drugs that can be used in a continuous subcutaneous infusion via a syringe driver.
26.2 Many are compatible and can be mixed together, but others may precipitate when combined. Some drugs should not be administered via a syringe driver. If unsure seek specialist advice from the hospital palliative care or pharmacy teams.
26.3 **Water for injection** is recommended as the diluent unless otherwise stated. Information of the appropriate diluent can be found on the manufacturers product information sheet, BNF, pharmacist or seek palliative care team advice.
26.4 Further information on drugs used in continuous subcutaneous infusion via syringe driver is included in **Appendix 6** and on the pharmacy injectables intranet page **-** Syringe Driver Combinations.

## 28. Use of medicines beyond (Off-Label) and without market authorisation

28.1. The subcutaneous infusion of many drugs commonly used in palliative care is outside current UK product licenses. In palliative care, the use of other drugs by unlicensed routes and for unlicensed indications is common and can be supported by experience in clinical practice and accepted reference sources.

28.2. The Association for Palliative Medicine and the Pain Society (2012) suggest that the use of medicines beyond (off label) and without a market authorisation in palliative care and pain medicine practice is both necessary and common and should be seen as a legitimate aspect of clinical practice. See **OUH Procedure for the use of unlicensed and 'off-label' medicines** for further information *(in Policies on OUH intranet).*

## 29. Management of breakthrough symptoms

29.1. Prescribers should ensure that a suitable dose of an appropriate medicine to cover the need for breakthrough symptoms is available (e.g. PRN analgesia for pain,

PRN antiemetic for nausea and vomiting). All of these breakthrough symptoms need to be assessed and, if appropriate, a PRN dose of medication administered.

29.2. Any PRN medication needs to be given as a separate subcutaneous injection or via a subcutaneous cannula with needle-free bung (not via the syringe driver infusion line). Use an aseptic non-touch technique when giving medication.

29.3. When **Calculating a PRN Dose of Opioid** each PRN dose should be equivalent to a four hourly dose of the 24 hour total. To achieve this, divide the total 24 hour dose prescribed for the syringe driver by 6 (e.g. with a continuous subcutaneous infusion of 60mg morphine over 24 hours, PRN dose should be 10mg subcutaneous morphine for breakthrough pain).

29.4. Assess the effectiveness of any PRN's given. Has the PRN drug resolved the symptom partially or completely? Is the patient experiencing any side-effects? If unsure seek **specialist palliative care advice.**

29.5. **Any distressing or uncontrolled symptom at the time of setting up a syringe driver will require a PRN dose of the appropriate subcutaneous medication.**

29.6. Consider the need for a breakthrough medication dose to cover the 'lag time' between setting up of a new infusion and the delivery of a sufficient level of medication to the patient.

## 30. Admitting a patient from Home, Community Hospital or Nursing Home:

When admitting a patient from home with a syringe driver, there are a number of issues to be aware of:

30.1. Check the make of syringe driver and aim to transfer onto an OUH T34 syringe driver as soon as possible after admission.

30.2. Check that the core drug (s) and correct dosage(s) are correctly prescribed and make up a new syringe as soon as possible after admission. (It is useful to consider checking dosages with the District Nurse, GP practice, Community Hospital or Nursing Home).

30.3. Check the subcutaneous site and change site if required.

30.4. The community team may want to come in to collect the community owned pump or for you to send it back to the GP practice, Community Hospital or Nursing Home via the family or by post.

## 31. Discharging a patient from hospital who require a syringe driver

31.1. Patients can be cared for out of hospital with a syringe driver. As with any discharge, planning and communication are essential

31.2. Contact with the district nurse, Nursing Home or Community Hospital should be made as early as possible to check which syringe driver they use and if they use lockboxes (not all community trusts use the T34 syringe driver nor lockboxes).

31.3. In all discharges, make every effort for a community owned T34 syringe driver to be brought in so that you can swap over pre discharge.

31.4. Lock-box keys should not leave the hospital in any circumstance.

## 32. Aiming for discharge home:

32.1. The district nurse may be able to provide the patient with a community owned T34 syringe driver prior to discharge. Communication is the only way to establish this possibility and to ensure smooth transfer of care. The hospital owned syringe driver would then be swapped with the community syringe driver on the day of discharge.

32.2. **If a community owned T34 syringe driver is not available to be brought in** (e.g. limited numbers available or the specific community trust does not use the T34 syringe driver):

- Discuss with the district nurse re organising setting up the syringe driver as soon as the patient is home.
- In this situation, you would stop the pump and disconnect the syringe and syringe driver from the subcutaneous line at the time of discharge. The discharge will require coordination and communication between you, the DN and South Central Ambulance Service to ensure limited delay for the patient being off the syringe driver.
- The patient may require PRN's to cover their symptoms for their journey home and whilst waiting for re-setting up of a syringe driver at home.

32.3. **If the patient's symptoms are unstable or if you need to discharge the patient home rapidly due to their poor prognosis**, a loan of the hospital owned machine might be required.
32.4. The district nurse will want to know what time you will reload the syringe prior to discharge so they can plan the time of their visit.
32.5. If the patient leaves hospital with a syringe driver, make arrangements for the **tracking and return of the pump as soon as possible after discharge.**
32.6. **Use the tracking letter on the Palliative care Intranet site**: see Appendix 4
32.7. **Wards will be charged for syringe drivers that go missing, so the tracking of these pumps is imperative**.

### Discharging to a Community Hospital or Nursing Home:

32.8. The Community Hospital or Nursing Home may be able to provide a syringe driver pre transfer. Request if a pump can be brought in/collected and swap over on day of discharge. If unable, see point 31.6 as an option.
32.9. **If the patient's symptoms are unstable**, a loan of the hospital owned machine might be required. If the patient leaves hospital with an OUH syringe driver, make arrangements for the tracking and return of the pump as soon as possible after discharge using the tracking letter on the Palliative care Intranet site: **Appendix 4.**

## 33. What to do if the patient dies whilst the T34 syringe driver is running:

33.1. Stop the pump by pressing the NO/STOP key. Take the key pad lock off and press the ON/OFF key to power off the pump.
33.2. Visually check the syringe and record the date, time and amount of solution remaining on the syringe driver checklist. If there are no issues, when appropriate, discreetly disconnect the syringe, remove the syringe from the pump, destroy the contents and record the signatures of the health care professionals destroying the

remaining solution in accordance with local policy. Remove the battery, infusion device and set when possible

33.3. **If there are any doubts about the circumstances of the patient's death and the case is being referred to the coroner**: remove the cannula, disconnect the line form the cannula, quarantine the device including syringe, line set and documentation and contact equipment library services manager.

33.4. If there are controlled drugs in the quarantined syringe, these should be discarded as per local policy, document drug amounts discarded and quarantine the device.

## 34. Equipment maintenance

34.1. Initially, annual service will be recommended. A risk-based assessment will be carried out annually and maintenance periods adjusted accordingly, as per local policy.

34.2. If the pump is dropped, subjected to excessive moisture (do not immerse in water), humidity or high temperature, or otherwise suspected to have been damaged, remove it from service for inspection by the Clinical Engineering department.

34.3. Further information on requirements is available from the Clinical Engineering Department at the John Radcliffe Hospital (Ext 21548).

34.4. A register of all OUH owned T34 syringe devices is maintained by the Equipment Library.

34.5. The Equipment Library and Clinical Engineering Department must be notified if you are removing syringe driver pumps from service.

## 35. Cleansing and Decontamination

35.1. Turn off the pump and remove the battery.

35.2. Cleansing of the syringe driver and lock box may be carried out with a damp disposable cloth (e.g. Clinell wipes). Dry thoroughly.

35.3. Never use wipes impregnated with alcohol or chemicals such as solvents.

35.4. Do not submerge in water.

## 36. Incident Reporting

36.1. Systems are in place within Oxford University Hospitals NHS Trust to monitor and report incidents involving syringe drivers and staff should be familiar with the DATIX incident reporting system.

36.2. Reasons for incident reporting in relation to the T34 syringe driver include:

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| Administration of incorrect medication, dose and/or diluent selection |
| Incorrect rate setting on syringe drivers resulting in infusions completing ahead of intended time or carrying on beyond intended time of completion. |
| Device not alarming |
| Any other incident or near miss which may compromise patient safety or comfort. |

36.3. **Any device and consumable involved in an adverse incident should be removed from service and sent to the Clinical Engineering Department providing clear documentation on the specific issue.**
36.4. Clinical Engineering department can access the **Event Log** which shows a complete date and time stamped record of the last 512 pump events along with a record of the pump status at the time of an event.

## 37. Training

37.1. All staff using a T34 syringe driver must be personally competent and accountable in the use and operation of the pump and have undergone and have evidence of appropriate competency based training.

37.2. Staff should have an appropriate level of knowledge of the medicines prescribed for the syringe driver and for PRN usage.

37.3. Managers should ensure that relevant training takes place (e.g. at induction) and maintain a record of staff who are trained and competent to use the device.

37.4. The Equipment Library team will maintain a database of all OUH staff trained.

**Training resources include:**

37.5. Infusion Device Training organised by the manager of the OUH equipment library.
37.6. T34 Advanced User trainers in your ward area.

37.7. The OUH Palliative Care Intranet site has lots of resources available.

37.8. Hospital Palliative care team study days and ward based sessions.

37.9. Palliative care Link Nurses on your ward.

37.10. Infusion device ward assessors.

37.11. Interactive e-learning module **- 'Using Syringe-drivers' on e-elca website** www.e-lfh.org.uk/projects/end-of-life-care/

## 38. How to access specialist advice

38.1. The contact details for the OUH palliative care teams are summarised below:

| **Monday to Friday 9.00am – 5.00pm** | |
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| **Patients in the JR** | Hospital Palliative Care Team at the John Radcliffe Hospital: 01865 (2)21741 |
| **Patients in the Churchill/NOC** | Hospital Palliative Care Team at the Churchill Hospital: 01865 (2)23585 |
| **Patients in the Horton General Hospital** | Hospital Palliative Care Team at the Horton General Hospital : 01295 (2)24195 |
| **Overnight and at Weekends/Bank Holidays** | |
| **Sobell House** | 9.00am - 4.00pm: 01865 (8)57036<br>Outside of these hours: 01865 (2)25873 |
| **Katharine House Hospice** | 01295 811866 |

38.2. **Pharmacists** can additionally be used as a resource for advice and are available on each site. Pharmacists are also available for out of hours support and are contactable through switchboard.

38.3. **Medicines information** (Extension 21505) are available for advice 9-5 and are based at the John Radcliffe Hospital. Call the on-call pharmacist via switchboard for out of hours advice.

38.4. **Equipment Library** (Ext 20039) and **Clinical Engineering Department** (Ext 21548)

# Monitoring Compliance

39. Compliance with the document will be monitored in the following ways.

| Aspect of compliance or effectiveness being monitored | Monitoring method | Responsibility for monitoring (job title) | Frequency of monitoring | Group or Committee that will review the findings and monitor completion of any resulting action plan |
|---|---|---|---|---|
| DATIX incident reports | Monitoring of DATIX incident reports | Equipment Library services manager.<br>Deputy Matron for OUH Palliative care | Monthly<br>6 monthly review meeting between Equipment | OUH Clinical Governance Committee |

| Aspect of compliance or effectiveness being monitored | Monitoring method | Responsibility for monitoring (job title) | Frequency of monitoring | Group or Committee that will review the findings and monitor completion of any resulting action plan |
|---|---|---|---|---|
| | | services | Library team and Hospital Palliative care team | |
| Infusion device training and ward based training | Competence at training workshop and on ward<br>Record of staff trained kept on database | Equipment Library services manager | Annual | Equipment Library services manager and Hospital Palliative care team |
| Subcutaneous cannula, line sets, checklist use | Audit | Hospital Palliative care team | Annual | Hospital Palliative care team and Deputy matron for palliative care services |
| Individual competence | Self-assessment of own competence | Ward Manager | Annual | Ward manager |

## Reviewing arrangements

40. This policy will be reviewed in 3 years, as set out in the *Policy for the Development and Implementation of Procedural Documents.* The planned review date is therefore June 2017.

41. Guidance may need to be revised before this date, particularly if national guidance or local arrangements change.

## Document History

| Date of revision | Version number | Reason for review or update |
|---|---|---|
| June 2014 | 1.0 | New syringe driver device (CME T34) to meet MHRA guidance |

## Authors and Contributors

| Name | Title | Role |
|---|---|---|
| Amelia Sayce | OUH Hospital Palliative Care Advanced Nurse Practitioner | Lead Author |

## References

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Thames Valley Cancer Network guidelines on the Subcutaneous Administration of Medicines via Syringe Pumps for Adults in General Palliative Care Settings (ratified by the TVCN Supportive and Palliative Care Group PDG 2.12.2009)

Trissel L. (2011) Handbook of Injectable Drugs (16th Edition). American Society of Health-System Pharmacists. USA.

Twycross R. Wilcock A. (Editors-in-chief) (2011) Palliative Care Formulary 4 (4th Edition).

Twycross R. Wilcock A. (2001) Symptom management in advanced cancer (3rd edition) Radcliffe Publishing.

See also 'palliative care' section at the front of BNF

www.palliativedrugs.com

## Equality Analysis

42. As part of its development, this policy and its impact on equality, diversity and human rights has been reviewed, an equality analysis undertaken (see appendix attached) and in order to minimize the potential to discriminate, the following adjustments have been identified:

| How does this policy affect each characteristic?<br>Protected Characteristic: | Reasonable adjustments required |
|---|---|
| Disability (all disability including dementia and learning disability) | Request teams to assess all individual communication and physical disability needs to promote best understanding (e.g. use of interpreter, taking account of disability or cognitive impairment needs), to check their understanding and that this is documented in the nursing or medical record. |
| Sex | To be sensitive to the individuals perception re being touched and the issue of exposure for site selection and the monitoring of site, being aware of individuals cultural issues. |
| Age | Protocol for use in adult patients only. |
| Race | To be aware of Interpreter/communication requirements to ensure best understanding. |
| Sexual Orientation | Minimal potential for discrimination if all individuals are asked about their needs. |
| Pregnancy and maternity | Very rare. Each individual must be treated according to needs. |
| Religion or belief | Touch and exposure for site selection and monitoring of site selected, being aware of individuals cultural wishes. |
| Gender re-assignment | Minimal potential for discrimination if all individuals are asked about their needs. |
| Marriage or civil partnerships | Minimal potential for discrimination if all individuals are asked about their needs. |
| Carers | Keep carers fully informed and ensure signposted for carer support if required. |
| Safeguarding people who are vulnerable | Respond to individuals needs with attention to Mental Capacity Act requirements; refer to the OUH Trust Equality and Diversity policy. |

43. See **Appendix 1** for the completed Equality Analysis Assessment.

## Appendix 1: Equality Analysis Assessment

| **Equality Analysis** |
|---|
| Policy / Plan / proposal name:<br>Clinical Protocol for the Continuous Subcutaneous Administration of Medicines via the T34 Syringe Driver for Adult Palliative Care patients |
| Date of Policy: June 2014 |
| Date due for review: June 2017 |
| Lead person for policy and equality analysis: Amelia Sayce, OUH Palliative Care ANP |
| Does the policy /proposal relate to people? *YES* |
| The only policies and proposals not relevant to equality considerations are those not involving people at all. (E.g Equipment such as fridge temperature) |
| **1. Identify the main aim and objectives and intended outcomes of the policy.**<br>• This clinical protocol is written for practitioners working in the Oxford University Hospitals Trust and are intended to provide information on the treatment of all adult patients who are requiring medicines infused subcutaneously using a T34 syringe driver for the palliation of symptoms in advanced disease.<br>• The main purpose of this document is to assist the team caring for the patient in deciding when a syringe driver is needed and to provide guidelines to be followed for setting it up and the ongoing management. |
| |
| **2. Involvement of stakeholders.**<br>• OUH Hospital Palliative care team, Gwen Klepping (Specialist Palliative Care Pharmacist), Sharon Yates (Deputy Matron and Service manager for Palliative care services)<br>• Sobell House and Katharine House Hospice medicines management group<br>• OUH equipment library services team<br>• OUH clinical engineering department<br>• OUH Infection control team<br>• OUH stores and procurement<br>• OUH Medicines policy group<br>• OUH Clinical policy group |
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| **3. Evidence.**<br>Population information on www.healthprofiles.info search for Oxfordshire. |
| **Disability** |

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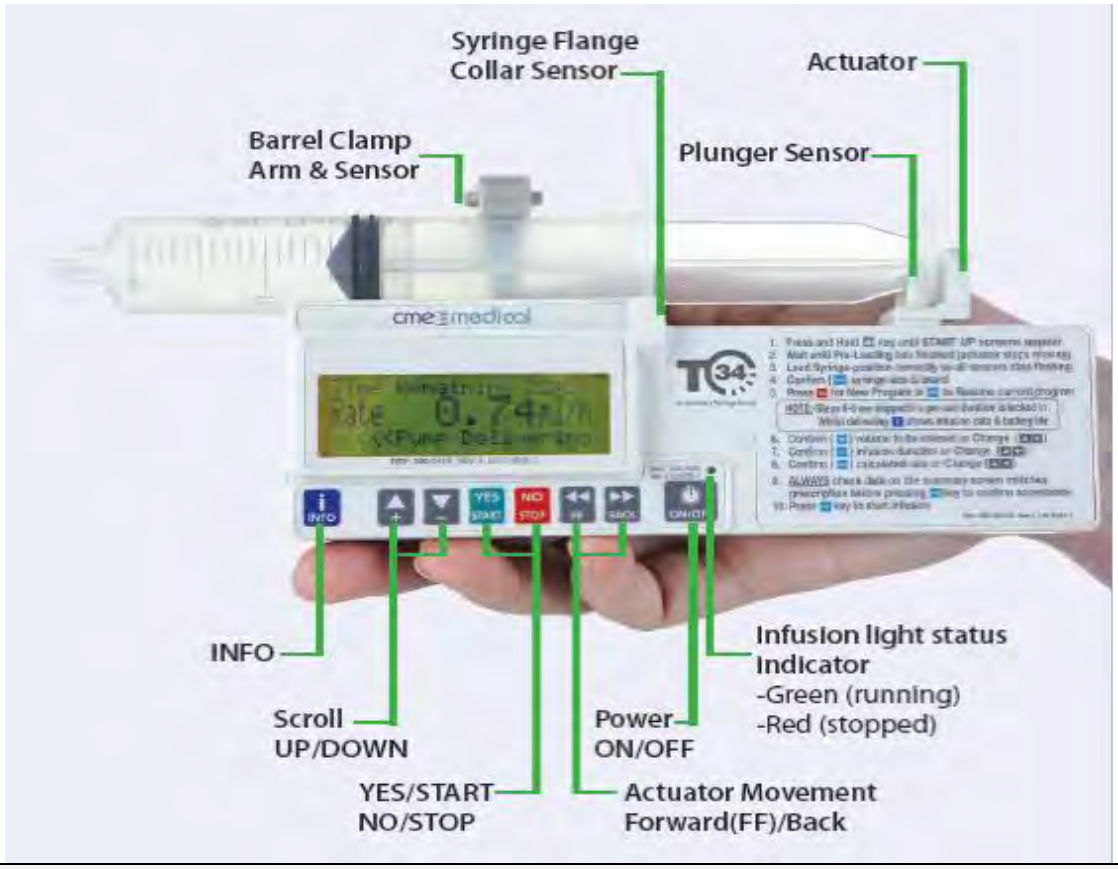
| Request teams to assess all individual communication and physical disability needs to promote best understanding (e.g. use of interpreter, taking account of disability or cognitive impairment needs), to check their understanding and that this is documented in the nursing or medical record. |
| **Disability: learning disability** |
| **Sex**<br>To be sensitive to the individuals perception re being touched and the issue of exposure for site selection and the monitoring of site, being aware of individuals cultural issues. |
| **Age:**<br>Protocol for use in adult patients only. |
| **Race:**<br>To be aware of Interpreter / communication requirements to ensure best understanding. |
| **Sexual orientation:**<br>Minimal potential for discrimination if all individuals are asked about their needs. |
| **Pregnancy and maternity:**<br>Very rare. Each individual must be treated according to needs. |
| **Religion or belief.**<br>To be sensitive and aware of the issues re. touch and exposure for site selection and for monitoring of site selected, being aware of individuals cultural wishes. |
| **Gender re-assignment.**<br>Minimal potential for discrimination if all individuals are asked about their needs. |
| **Marriage or civil partnerships**<br>Minimal potential for discrimination if all individuals are asked about their needs. |
| **Carers**<br>Keep carers fully informed and ensure signposted for carer support if required. |
| **Safeguarding people who are vulnerable**<br>Respond to individuals needs with attention to Mental Capacity Act requirements; refer to the OUH Trust Equality and Diversity policy. |
| **Other potential impacts e.g. culture, human rights, socio economic e.g. homeless people**<br>The policy prompts all staff to ask and take into account all patients individual needs. |
| |
| **Section 4 Summary of Analysis** |

| |
|---|
| Does the evidence show any potential to discriminate? If your answer is no – you need to give the evidence for this decision: ***NO*** |
| How does the policy **advance equality of opportunity?**<br>All steps have been taken within the policy to promote respect, dignity and understanding to ensure individuals needs are met |
| How does the policy **promote good relations between groups?** (Promoting understanding)<br>Less applicable to this policy. Refer to Equality and Diversity policy |

## Appendix 2: Setting up a CME medical T34 Syringe Driver

| Equipment Required |
| --- |
| • T34 syringe driver, lockbox and lockbox key<br>• 9 volt alkaline battery (procurement code WPA120)<br>• A variety of 1ml/2ml ordinary syringes to draw up drugs prescribed<br>• Subcutaneous cannula device as recommended by local policy<br>• Sani-cloth CHG 2%/ alternative OUH recommended wipe<br>• Infusion line set<br>• 30ml BD Plastipak luer lock syringe<br>• Sterile transparent film dressing (10cm x 12cm)<br>• Scissors, gauze swabs, tape<br>• Blank sticky label<br>• The prescribed drug(s) and drug prescription chart<br>• A suitable diluent. Water for injection is recommended as there is less chance of precipitation, unless otherwise indicated<br>• OUH T34 4 hourly syringe driver checklist |

**CME medical T34 Syringe driver**




## Setting up a T34 Syringe Driver (LOCK ON Prime and Load)

**When setting up a syringe driver or renewing the next 24 hour syringe, two qualified nurses should check the drugs, the rate and the identity of the patient**

**1) INITIAL SET UP: PREPARE THE SYRINGE AND INFUSION LINE**

a) Ensure you have all equipment required and that you have a suitable quiet environment to work in. As there are a number of beeps on initial set up, do so away from the patient's bedside.

b) Wash and dry hands.

c) Check and draw up the prescribed medication into a **30ml BD Plastipak luer lock syringe** making up to a total of **21ml** volume with water for injection using an aseptic non-touch technique.

***Seek specialist palliative care advice if the total amount of medication is too much for the syringe driver to hold.***

d) Complete the medicine additive label including details on date and time of preparation, name and dose of all drugs in syringe, diluent type and total volume and sign. Position the label on the syringe so that none of the syringe calibrations are obscured.

e) Attach the syringe to the infusion set using an aseptic non-touch technique and prime the tubing manually.

f) Where more than one infusion is prescribed, the lines should be clearly labelled with the number of the infusion as per the prescription chart.

g) Check the pump is clean and not damaged.

h) Insert the Duracell 9v battery into the battery compartment.

**2) POWER ON, PRE-LOADING and CHECKING THE BATTERY %**

a) Power on by pressing and holding down the ON/OFF button

b) Barrel clamp arm should be down. Observe and **allow pre-loading** sequence where the actuator will move automatically. **Ensure fingers are out of the way.**

c) When the actuator stops, the screen prompts you to load the syringe. **Don't load yet**.

d) Check the battery level 1st by pressing the INFO button once. Click YES/START key to see battery status. If the battery is 15% or less, change immediately**.**

**3) SYRINGE LOADING, DETECTION AND CONFIRMATION:**

a) Make sure the barrel clamp arm is down

b) Place the syringe above the pump and align syringe with the collar sensor

c) Align the syringe with the plunger sensor by moving the actuator with the FF/BACK buttons

d) Once aligned, lift the barrel clamp arm and turn 90˚. Place syringe collar and plunger into the sensor slots and click in place. Check syringe is aligned and central.

e) Return the barrel clamp arm to the down position to secure the syringe.

f) Once the syringe is correctly seated, the sensors will identify the make and size of syringe (should be 30 ml BD Plastipak) and ask you to confirm by pressing the YES button.

g) The syringe brand and size displayed must match the one being used; if an incorrect syringe is placed on the pump, the screen should read "Syringe Not Recognised". Action would be to fit correct syringe.

h) If no syringe brand and size displays, re-adjust the syringe in the sensors.

### 4) REVIEW AND CONFIRM INFUSION PROGRAMME:

a) The screen will display the VOLUME, DURATION and RATE as calculated by the pump. Visually check the volume in the syringe, check duration is over 24 hours and that the rate displayed is the syringe volume confirmed divided by the duration.

b) Press YES button to confirm.

c) The screen will now be displaying START INFUSION? **Do not confirm YES yet**: now go to the patient's bedside.

### 5) INSERTION OF THE SUBCUTANEOUS CANNULA:

a) Explain the procedure to the patient/family/carer: allowing them to ask any questions, express any anxieties, for you to reassure when appropriate and for the patient if able to give consent. Consider the individuals communication needs and any specific disability requirements (e.g. sensitivity to touch, impact of fear when patients may have cognitive impairment). It is important to recognise that having a syringe driver can be a frightening new experience for the patient and their family.

b) Wash and dry hands.

c) Choose an appropriate site for insertion: Patient preference, the disease process and common sense will influence the choice of site.

d) Subcutaneous metal butterfly devices will need priming. If using a needle-less device such as the Saf-T-Intima cannula you do not need to prime as there is only 0.2ml dead space.

e) Decontaminate skin using Sani-Cloth CHG 2%/alternative OUH recommended wipe prior to insertion. Allow skin to dry for 30 seconds.

f) Grasp the skin firmly. Using an aseptic non-touch technique, insert the device into the skin at a 35-45˚angle and release the grasped skin. Secure the device to the patient's skin by taping the wings and placing sterile transparent film on top. If using a needle-less device such as the Saf-T-Intima cannula, apply gentle pressure over the entry site and remove needle/guide wire by gentle, even pulling.

## 6) STARTING THE INFUSION:

a) Connect infusion line to the cannula using an aseptic non-touch technique, check that syringe/line contents are clear and not crystallised. Start infusion? is displayed on the pump: press YES to start.

b) Display will now show time remaining, infusion rate and pump delivering.

c) Check LED light is intermittently flashing green (will do so every 32 seconds). NB: there will be no 'whirring' noise.

d) Press and hold the INFO key to **put the Keypad lock on**: whilst pressing the INFO key, observe the bar on the screen moving left (OFF) to right (ON) and wait for the beep, which will indicate the lock is on. This will protect the settings.

e) Place in lockbox to protect the pump, lock with key. Provide carry bag for more mobile patients.

f) Place away from light e.g. under the bedclothes, in a pocket or in a material cover. Some drugs are light sensitive.

## 7) DOCUMENTATION and MONITORING

a) Complete the prescription record chart for syringe driver.

b) Complete the OUH T34 4 hourly checklist, including the patient's details, the pumps asset number, date and time infusion commenced, doses of drugs in syringe, site selected and site health, volume infused (VI), check syringe and line contents are clear and that the green LED light is flashing.

c) Dispose of waste in line with local policies.

d) Press arrow up **^** /down **v** key to put display backlight on.

e) Monitor every 4 hours as a minimum and record on OUH T34 syringe driver checklist:

- check VTBI (Volume to be infused) and VI by pressing INFO key x 1
- check battery level by pressing INFO key x 2

**8) INFUSION END**

a) At end of every infusion, turn the pump off by pressing NO/STOP key, disable the keypad lock by pressing and holding down the INFO key and observe the bar on screen moving right to left until you hear a beep.

b) Power OFF by pressing down on the ON/OFF button until you hear a beep.

**9) PROCEDURE FOR DAILY RENEWAL OF MEDICATION:**

a) Wash hands. Check and draw up the medication to the prescribed volume using an aseptic non-touch technique.

b) Complete the medicine additive label including details on date and time of preparation, name and dose of all drugs in syringe, diluent type and total volume and sign. Position the label on the syringe so that none of the syringe calibrations are obscured. Go to the patient.

c) **Unlock the keypad** by depressing and holding down the INFO button until the bar empties and the pump beeps.

d) **Stop the infusion** by pressing the NO/STOP button and switch the pump off by pressing and holding down the ON/OFF button until the bar empties and screen goes dark.

**e)** Remove the empty syringe from the syringe driver. Place barrel clamp arm down. **Do not connect the new syringe yet in order to avoid accidental bolusing of drugs.**

f) Switch the syringe pump on and **wait for the Pre-loading sequence to complete**. The actuator pad will return to the place where it started the previous infusion.

**g)** Check that the battery has over 15% of power by pressing the INFO button.

**h) Align the syringe above the collar and plunger sensors.**

**i) If the volume of fluid is smaller or greater than the previous day,** leave the barrel clamp arm in place across the body of the pump and align the syringe with the plunger sensor by moving the actuator with the FF/BACK buttons into the correct place to accommodate the volume of fluid in the new syringe.

**j) If your syringe holds the same volume of fluid as on the previous day, you will immediately be able to insert the syringe into the pump.**

k) Lift the barrel clamp arm up and turn 90° away from the body of the pump.

l) Place the new syringe onto the body of the pump and click the collar and plunger firmly into the appropriate gaps.

m) Place the barrel clamp onto the syringe. Once the syringe is correctly seated, the sensors will identify the make and size of syringe (BD Plastipak 30ml). Press the YES button to confirm if correct.

n) The screen will then display the VOLUME, DURATION and RATE as calculated by the pump and ask you to confirm by pressing the YES button

o) Disconnect the empty syringe and connect the new syringe to the patient's infusion line.

p) The screen will now be displaying Start infusion? Confirm by pressing the YES button. The screen will confirm that the pump is now infusing.

q) Lock the keypad by pressing and holding the INFO button until the display bar fills and pump beeps.

r) Insert the pump into the lockbox and lock with the key.

s) Place away from light e.g. under the bedclothes, in a pocket or in a material cover as some drugs are light sensitive

t) Complete the prescription record chart for syringe driver and document details as before on the OUH T34 syringe driver checklist.

u) Monitor 4 hourly as a minimum and record details on the checklist.

## 10) STOPPING THE SYRINGE DRIVER:

The pump can be stopped at any time (whether or not the keypad lock is on) by pressing the NO/STOP key. No other instruction can be carried out unless the keypad is unlocked.

## 11) WHEN THE SITE NEEDS CHANGING:

If the site is red or inflamed, leaking, bleeding, swollen, hard or painful the subcutaneous cannula/ needle should be removed and a new cannula inserted.

Check contents of infusion line and syringe: if clear and not crystallised:

- STOP the syringe driver, but do not power off
- Insert new subcutaneous cannula device using aseptic non-touch technique and secure
- Disconnect the line from the old cannula, connect to the new site
- Confirm YES to resume the infusion
- Gently remove the old cannula/needle from the patient and dispose of into sharps box.
- Document new cannula site on the OUH T34 syringe driver checklist.

**If the line or syringe appear cloudy, crystallised or contaminated, the cannula, infusion set and device should be discarded and a new infusion commenced from the start**

## 12) RESUMING THE INFUSION

a) Press and hold the "ON" button until a beep is heard. The screen will request confirmation of syringe size and syringe brand.
b) Press "YES" to confirm.
c) The screen will display "Press YES to Resume" or "NO for New Program".
d) Press "YES" to resume; the screen will display "Remaining volume, duration and rate of infusion".
e) Press "YES" to confirm. Screen will display "Start Infusion". Press "YES" to confirm.

**N.B. If you press "NO" the pump interprets this as a completely new 24hr period. In this case, you would be required to set up a completely new prescription from the start.**

## 13) CHANGING THE BATTERY

**You can change the battery without powering off**
To change:

1. Leave keypad lock on (as will protect settings)
2. Do not turn the pump off
3. Open the battery compartment, remove the old battery and replace with new one
4. Press ON/OFF button to power on the pump
5. Display will ask 'Resume syringe?': press YES button
6. Check RATE and DURATION on the display screen, ensuring correct.
7. Check battery level % by pressing INFO button x 1
8. Check keypad lock on

## 14) WHAT TO DO IF THE PATIENT DIES WHILST THE T34 SYRINGE DRIVER IS RUNNING

- Stop the pump by pressing the NO/STOP key. Take the key pad lock off and power off.
- Visually check the syringe and record the date, time and amount of solution remaining. If there are no issues, discreetly remove the syringe from the pump, destroy the contents and record the signatures of the health care professionals destroying the remaining solution. Remove the battery, infusion device and set when possible.

- If there are any doubts about the circumstances of the patient's death and the case is being referred to the coroner: remove the cannula, disconnect the line form the cannula, quarantine the device including syringe, line set and documentation and contact equipment library services manager.
- If there are controlled drugs in the quarantined syringe, these should be discarded as per local policy, document amount discarded. Quarantine the device.

## Appendix 3: T34 Syringe Driver Checklist

The table below aims to assist the practitioner with monitoring the continuous subcutaneous infusion via syringe driver. This checklist has been specifically designed for use with the T34 syringe driver. The full document is available on the palliative care intranet site.

Oxford University Hospitals NHS
NHS Trust

**Patient Sticker**

**T34 SYRINGE DRIVER FOUR-HOURLY CHECK LIST**

**Syringe Driver Asset No:**

| Prescription: include drug(s), dosage(s) and diluent used | Date | Time | Site | | Contents of the syringe + line clear | Rate mls/hr | VTBI *(record pump reading)* | Visual check (mls left) | Battery life % remaining | Keypad lock on | Checked by | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Where? | Healthy?* | | | | | | | | |
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| | | | | | | | | | | | | discarded |

**** if the site is red, leaking, bleeding, painful, appears to be inflamed, hard or swollen, the site should be changed and monitored closely for signs of infection. Document in comments column and in patient's medical notes.***

## Appendix 4: Troubleshooting and T34 Pump Alerts and Alarms

The T34 syringe driver has a fixed protected program that is configured for OUH use. It has a 3 point syringe detection feature, syringe recognition, automatic calculation of infusion rate, volume detected in ml/hr and enhanced safety features including alerts/alarms with descriptive display, lockable keypad and a pump event log.

When an **ALERT** is activated, it aims to draw your attention to the pump:

- The infusion continues
- 2-3 beeps are heard approximately every 3-4 minutes
- A screen message indicating the cause of the alert displays intermittently with the infusion running screen

When an **ALARM** is activated:

- The infusion stops
- A continuous audible alarm activates (this will continue until either the YES key is pressed to mute or the problem is rectified)
- A screen message displays to indicate the cause of the alarm
- The infusion status indicator (LED) turns red

Box 1 below lists possible causes of alarm/alerts and appropriate actions

**Box 1:**

| Screen | Possible Cause | Action |
|---|---|---|
| **Low Battery** | Alert: Battery is almost depleted (alerts at approximately 10%) | Prepare to change battery. |
| **Program Nearly Complete** | Alert: Infusion will end soon (activates approximately 15 mins before end of infusion) | Prepare to change syringe or turn pump off. |
| **End Battery** | Alarm: Battery will fail imminently | Change battery. Can do so without taking lockbox off. |
| **Pump Paused Too Long** | Alarm: Pump has been left in STOP mode (on hold) for 2 minutes | Either press YES to start the infusion, NO to continue pause or turn the power off. |
| **End Program** | Alarm: infusion is complete | Close down or start new infusion. |
| **Syringe Displaced, Check Syringe** | Alarm: one or more of the syringe detection sensors is not detecting | Check screen messages for assistance.<br><br>Check the syringe and re- |

| | | |
|---|---|---|
| | Syringe has been removed or displaced | seat as necessary. |
| **Occlusion Check Line & Syringe** | Alarm: patient access device is either blocked, occluded, clamped or kinked | Flush/replace access device, release clamp or un-kink tubing. |
| **System Error** | Alarm: if an internal system fault has been detected | Power pump off and then power on again.<br>If problem not rectified, power off pump and remove from patient use.<br>Contact Clinical Engineering department: if possible, record code no & summarise. |

**Trouble shooting:** Other possible problems and suggested actions are listed in Box 2:

**Box 2:**

| Problem | Possible Cause | Action |
|---|---|---|
| **Pump will not start** | No battery<br>Battery inserted the wrong way<br><br>Flat battery<br>Malfunction of motor | Insert battery<br>Insert correctly<br><br>Change battery<br>Send to clinical engineering |
| **Infusion stopped/alarm sounds** | Any of the problems in the previous section | Check on display screen any information and take appropriate action |
| **Infusion ended early/pump going too quickly** | Incorrect rate setting<br>Wrong syringe brand confirmed on set-up<br>Pump faulty<br>Leakage from luer lock connection | Stop infusion.<br>Take appropriate remedial action if an error has occurred<br>If appropriate set-up new infusion<br>Complete DATIX |

| | | |
|---|---|---|
| **Infusion taking longer than expected** | Pump stopped or has stopped and been re-started | As above |
| | Wrong rate | As above. Complete DATIX |
| | Battery low | Change battery |
| | Partial line occlusion | Change administration set |
| | Site inflammation | Change site |

## Appendix 5: Tracking Letter *(See palliative care OUH intranet site for print off copy)*

Dear colleague,

For best symptom management, this patient has needed to be discharged with an Oxford University Hospitals NHS Trust owned T34 syringe driver pump.

The syringe driver needs to be swapped to a community owned pump as soon as possible after discharge so that it can be returned to the hospital for ongoing use. This tracking document lists the syringe driver details and who is responsible for the pumps return to the hospital ward. Any delay or non-return of the device may incur a charge for the full value of the device to the ward.

**T34 syringe driver asset number**……

**Please return to**
**Ward**……**Hospital**……

**Ward Tel no**……..

| | **Name** | **Contact details: telephone no. (and fax where available)** |
|---|---|---|
| **Patients destination address if different to details above** | | |
| **GP practice** | | |
| **Name of District Nurse/Community Hospital/Nursing Home** | | |
| **Name of person responsible for returning the pump (this could be a family member or health care professional)** | | |

Yours sincerely,

Nurse signature Print name

**RETURNED: Date and signature:**

*A copy of this document should be faxed to the community team leading on the patients care on discharge, fax a copy to the Equipment Library team (fax:21561), send the original copy with the patient and keep a copy for reference on the ward.*

# Appendix 6: Medicines given by Continuous Subcutaneous Infusion

**Medicines included in this Clinical Protocol:**

| Medicine | Clinical Use |
|---|---|
| **Cyclizine** | Anti-emetic |
| **Diamorphine** | Analgesic (**Not** first line choice of strong opioid, but useful to consider if requiring higher dosage of opioids) |
| **Haloperidol** | Anti-emetic<br>Relatively non-sedating antipsychotic |
| **Hyoscine Butylbromide** | Abdominal colic<br>Death rattle |
| **Levomepromazine** | Sedating second-line anti-emetic<br>Sedating antipsychotic |
| **Metoclopramide** | Anti-emetic |
| **Midazolam** | Sedating anxiolytic<br>Anticonvulsant |
| **Morphine** | Opioid Analgesic (**First** line choice of strong opioid) |
| **Oxycodone** | Opioid Analgesic |

Specialists in palliative care may recommend and use other medicines for use in a syringe driver after discussion with the team leading on the patients care and the ward pharmacist. These drugs may include:

- Alfentanil
- Dexamethasone
- Fentanyl
- Ketamine
- Ketorolac
- Octreotide
- Phenobarbital

Others may be required at the discretion of the Specialist Palliative Care Team who will advise.

**Medicines that should not be used** because of skin reactions include:

- Phenothiazines, including chlorpromazine (Largactil ®) and prochlorperazine (Stemetil ®)
- Diazepam (Valium ®).

### Prescribing in Hospital

Prescribe medicines for continuous subcutaneous administration syringe driver administration on the prescription chart. Ensure that appropriate doses are prescribed for regular use and for breakthrough symptoms.

Prescribe each component and bracket together all those intended to be mixed in the same syringe; specify the diluent and ensure compatibility. *See OUH compatibility guideline on the pharmacy injectables intranet page.*

All combinations prescribed should be checked by a ward pharmacist within 4 hours from commencement of the syringe driver.

## Key Issues

**Compatibility and Stability of Drug Solutions :**

Pharmaceutical stability is important to ensure reliable pharmacological activity.

### Physical Compatibility

This is assumed if there is:

- No precipitation, crystallisation or cloudiness in the mixture.
- The expected therapeutic response to the prescribed mixture.

### Chemical Stability

There is no reliable data on the chemical stability of the various mixtures, as this requires their repeated chemical analysis over time.

### Microbiological stability

There is no reliable data on this, but it is normal practice to change the syringe every 24 hours.

### Guidance to Minimise Stability Problems

- Protect syringe contents from light, especially direct sunshine, whenever possible
- The preferred diluent is water for injection

- Ensure that all medicines mixed together in the same syringe are compatible with each other (see table on next page). Drug incompatibilities result in therapeutic failure and the return of symptoms. The greater the number of medicines mixed in a syringe, the greater the risk of incompatibility.

**See the Pharmacy intranet Injectables site –** Syringe Driver Combinations or **use the table below to determine whether particular 2 drug combinations of drugs are appropriate to combine or not:**

*(ref: Thames Valley Cancer Network guidelines on the Subcutaneous Administration of Medicines via Syringe Pumps for Adults in General Palliative Care Settings (2009)*

| | Diamorphine | Metoclopramide | Cyclizine[5] | Haloperidol | Levomepromazine | Hyoscine butylbromide | Midazolam |
|---|---|---|---|---|---|---|---|
| Diamorphine | | O.K. | O.K. | O.K. | O.K. | O.K. | O.K. |
| Morphine | | OK | OK | OK | OK | OK | OK |
| Oxycodone | | OK | OK | OK | OK | OK | OK |
| Metoclopramide | O.K. | | Not advised [1] | Apply caution[3] | Apply caution[3] | Not advised [1] | O.K. |
| Cyclizine[5] | O.K. | Not advised [1] | | O.K. | Not advised [4] | May precipitate | O.K. |
| Haloperidol | O.K. | Apply caution[3] | O.K. | | Not advised [2] | O.K. | O.K. |
| Levomepromazine | O.K. | Not advised [3, 4] | Not advised [4] | Not advised [2] | | O.K. | O.K. |
| Hyoscine butylbromide | O.K. | Not advised [1] | May precipitate | O.K. | O.K. | | O.K. |
| Midazolam | O.K. | O.K. | O.K. | O.K. | O.K. | O.K. | |

Water for injection is the recommended diluent

Key to the table:

1. One important mechanism of action for metoclopramide is the emptying of stomach contents into the upper gastrointestinal tract, whereas cyclizine and hyoscine butylbromide hinder stomach emptying.
2. Haloperidol and levomepromazine are pharmacologically quite similar and it does not make sense to combine them.

3. Each of these drugs can cause extrapyramidal side effects and prolongation of the QT interval - particular vigilance must be applied if they are used in combination.
4. Levomepromazine is a "broad spectrum" antiemetic and there may be little advantage in combining other anti-emetics with it.
5. Of all the drugs commonly used in syringe pumps, cyclizine has the greatest reputation for precipitation problems when mixed with other drugs.

# Cyclizine

| | |
|---|---|
| Dose over 24 hours | 100-150 mg |
| Diluent | Water for injection |

An antihistaminic antiemetic which acts centrally on the vestibular system and in the final nausea and vomiting pathway

Cyclizine is particularly useful where the cause of the nausea is central e.g. from brain metastases.
Dry mouth, drowsiness, restlessness and urinary retention are the main potential side effects.

It should not be combined with metoclopramide; cyclizine decreases gut motility negating the GI effects of metoclopramide.

In rare occurrences severe heart failure can be exacerbated and extrapyramidal reactions can occur. Cyclizine in a syringe-driver can also cause localised skin irritation if not diluted sufficiently.

**Syringe driver mixtures containing cyclizine may precipitate:**

- When the cyclizine concentration exceeds 20mg/ml
- When the syringe driver solution contains sodium chloride 0.9%, e.g. in hyoscine butylbromide injection.
- When the syringe driver solution is alkaline.
- When the relative concentration of other drugs in the mixture is high.

It is therefore important to monitor the syringe carefully for this potential problem.

In order to minimise the risks of precipitation or skin reactions, dilute mixtures containing cyclizine as much as possible.

# Metoclopramide

| | |
|---|---|
| Dosage over 24 hours | 30–120 mg |
| Diluent | Water for injection |

An antiemetic that promotes the emptying of stomach contents into the upper gastrointestinal tract. It also has some central properties.

It is used in the management of nausea and vomiting when delayed stomach emptying or impaired peristalsis is considered an important feature. However, its use should be avoided in patients with colic. It can also be helpful when the patient has chronic opioid-related nausea and vomiting.

It can produce **dystonic reactions/extrapyramidal side-effects**, particularly in young women or with prolonged use. The risk of such problems may also be greater if combined with haloperidol or levomepromazine. Higher doses of metoclopramide have been associated with prolongation of QT interval, the lowest dose necessary to control symptoms should be used and caution exercised if more than one drug with potential for this is prescribed.

Being a dilute preparation, it occupies a large volume in the syringe pump.

Mixtures containing metoclopramide should be discarded if they become discoloured.

# Haloperidol

| | |
|---|---|
| Dosage over 24 hours | Antiemetic: Start at 1-2.5mg/24hrs. This is subsequently titrated according to the response (Typical range: 1.5-5 mg/24hrs)<br><br>Antipsychotic: Typically 2.5-5mg/24hrs. |
| Diluent | Water for injection |

Haloperidol is considered the antiemetic of choice for nausea and vomiting due to biochemical disturbances, such as renal impairment or hepatic impairment.

Compared to other drugs in its class, it is not particularly sedating. However it is important to monitor for stiffness and extrapyramidal side effects. The risk of skin reactions also increases with the dose. Haloperidol is associated with prolongation of the QT interval and should be used with caution in patients with disorders of heart rate or in combination with other drugs which can also prolong QT (e.g. methadone, ondansetron)

When using haloperidol as in the management of a confused and agitated patient with terminal delirium, consider co-prescribing with midazolam.

Haloperidol has a sufficiently long therapeutic half-life for a once-daily nocte subcutaneous injection to be an alternative to its use in a syringe driver.

# Levomepromazine

| | |
|---|---|
| Dosage over 24 hours | Antiemetic: 5-25mg<br>Sedative antipsychotic: 12.5–75mg continuous subcutaneous infusion via syringe driver |
| Diluent | Water for injection |

A broad-spectrum antiemetic used as a 2nd or 3rd line treatment when more specific antiemetics have failed. It is generally not used in combination with other antiemetics.

Compared to other drugs in its class, it is highly sedating. As some patients are very sensitive to its therapeutic and adverse effects, it is best to start with a low dose and titrate upwards if necessary. It can cause postural hypotension, and skin reactions are quite common.

Levomepromazine has a sufficiently long therapeutic half-life for once-daily nocte subcutaneous injections to be an alternative to its use in a syringe driver. Used in this manner, localised skin reactions if a problem may not be so problematic.

Levomepromazine is light sensitive so ensure kept covered from light whilst infusing.

# Hyoscine Butylbromide (Buscopan®)

| | |
|---|---|
| Dosage over 24 hours | Noisy breathing/audible upper airway secretions: 20–60mg/day.<br>Colic: 60-120mg/day |
| Diluent | Water for injection |

Whilst there are other anticholinergic options for use in a syringe pump (e.g. glycopyrronium and hyoscine *hydro*bromide**), hyoscine butylbromide is the preferred choice** because:

- It does not have the same potential for central nervous system side effects (drowsiness, hallucinations, delirium, etc) as hyoscine hydrobromide.
- There is no convincing evidence that any anticholinergic option works better than the others.
- Hyoscine butylbromide is significantly cheaper than the other options.

When used in the management of upper airway secretions/noisy breathing, it is best to advise relatives that it will not dry up established secretions. Clear and timely explanation to relatives may avoid the need for pharmacological treatment of death rattle in patients who do not appear distressed by it. Good oral care is particularly important as treatment with hyoscine butylbromide will cause mouth dryness.

In addition to its anti-colic (i.e. anti-peristaltic) properties, it also has some anti-secretory effect in gastrointestinal tract.

Do not confuse hyoscine *butylbromide* with hyoscine *hydrobromide*: the two drugs have very different dosages

# Midazolam

| | |
|---|---|
| Dosage over 24 hours | Anxiolytic: 5-20mg<br>Sedation: 10-60mg<br>Anticonvulsant: 20-60mg<br><br>For all of above: you may need to use higher doses or the regime may need to be altered if symptoms not controlled: please seek specialist palliative care advice in these situations |
| Diluent | Water for injection |

Midazolam is an injectable benzodiazepine, which may be given by the subcutaneous route. The concentrated 10mg/2ml strength is preferred in palliative care.

When used for sedation in cases of terminal delirium, it does not actually treat the associated confusion or hallucinations. A combination of midazolam and antipsychotic eg haloperidol often works better in these situations. Alternatively if more sedation is required use levomepromazine. Seek specialist palliative care advice.

Midazolam is a schedule 3 controlled drug – outpatient and TTO prescriptions must state the quantity to be dispensed in both words and figures.

# Morphine Sulphate

| | |
|---|---|
| Dosage over 24 hours | Dose depends upon previous opioid requirements |
| Diluent | Water for injection |

## First Line choice of subcutaneous strong opioid

**Determining the starting dose of Morphine Sulphate for a syringe driver:**

- In **those with no previous exposure to opioids:** A suitable starting dose of 5 – 10mg morphine sulphate/24hrs by syringe driver is appropriate.
  Morphine 2.5mg-5mg subcutaneously up to every hour is a suitable PRN dose for breakthrough pain. Elderly patients or those with renal impairment should start at lower doses i.e. 1.25mg sc morphine: seek specialist palliative care advice if required.
- In **those on a regular weak opioid** (e.g. 8 tablets of co-codamol 30/500) a starting dose of 10 -15mg Morphine Sulphate/24hrs by syringe pump is appropriate. Morphine Sulphate 2.5-5mg subcutaneously up to every hour is a suitable **PRN** dose for breakthrough pain.
- In **those on regular oral morphine**: Establish the total 24hr intake of oral morphine, including PRN use in this amount. Divide this quantity by **two** to establish the daily dose of Morphine Sulphate to put in the syringe pump, rounding up when necessary to a more convenient dose:

**2MG ORAL MORPHINE = 1MG SUBCUTANEOUS MORPHINE SULPHATE**

The appropriate **PRN** dose of subcutaneous Morphine Sulphate is **one sixth** of the daily syringe pump dose. This may be given as often as needed until the pain is controlled, this may be more frequently than every four hours. If a patient is requiring very frequent PRN doses a full pain assessment and total review of analgesia should be undertaken

- ***If 'as required' doses are given to provide analgesia for painful procedures, these may <u>not</u> need to be added into the syringe pump total.***

If a patient is well established on Fentanyl patches, then continuation of this treatment is recommended. Morphine Sulphate given via a syringe pump can be run alongside Fentanyl skin patches if the opioid requirements subsequently go up

**Worked Example of Oral Morphine to subcutaneous Morphine Sulphate**

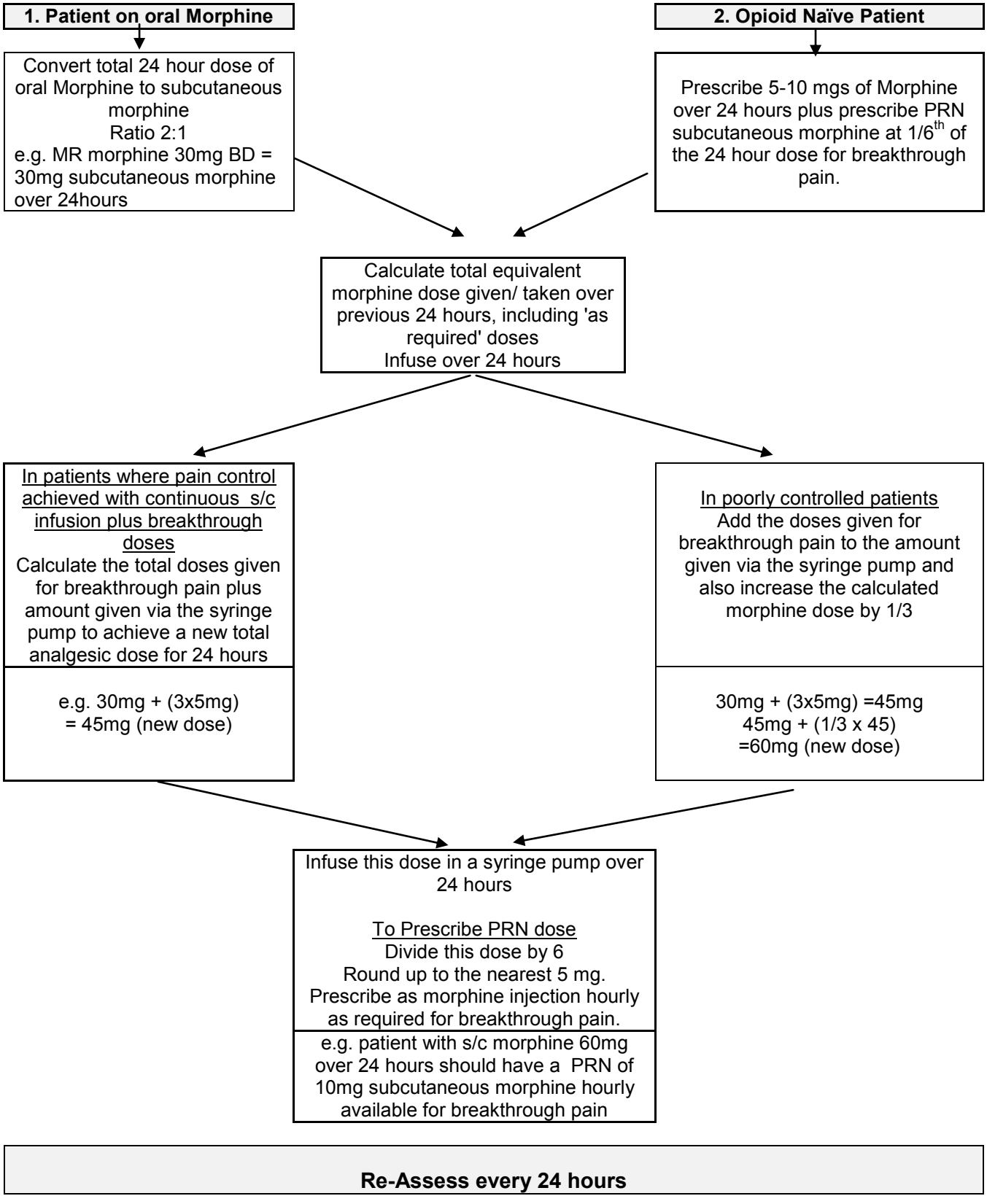
A patient on regular morphine sulphate M/R 100mg bd also required two PRN doses of oral morphine sulphate solution 30 mg in the last 24 hours to maintain good pain control. Conversion to a syringe pump is now required.

Calculate total daily intake of oral morphine: 2 x100mg= 200mg +
<u>2 x 30mg= 60mg</u>
TOTAL= 260mg

Equivalent daily subcut morphine sulphate = 260mg divided by 2 =130mg/24hours

Appropriate PRN subcut Morphine Sulphate= 130mg x 1/6= 21.66mg (round to 20mg)

## Flow Chart for the initiation and maintenance of Morphine Subcutaneous (S/C) Infusion



# Oxycodone

| | |
|---|---|
| Dosage over 24 hours | Dose depends upon previous opioid requirements |
| Diluent | Water for injection |

Oxycodone is a semi-synthetic opioid with similar properties to morphine. When used subcutaneously, it is only considered first line treatment for patients previously controlled with oral oxycodone, or where the patient has had unacceptable side effects from morphine. Specialist advice should be sought before commencing this preparation.

**Determining the starting dose of Oxycodone for a continuous s/c infusion via syringe driver:**

***There is ambiguity around Oxycodone equivalence to Morphine and Diamorphine therefore Specialist Palliative care advice is recommended for any patient starting on a continuous s/c Oxycodone infusion, or when converting from morphine to oxycodone or oxycodone to morphine.***

# Diamorphine

| | |
|---|---|
| Dosage over 24 hours | This depends upon previous opioid requirement (see below for worked examples). |

**Morphine is the 1st line opioid in OUH. Diamorphine is highly soluble; this allows large doses to be dissolved in small volumes of diluent.** Whilst morphine is the first line choice of opioid, diamorphine may be needed if the volume to be infused is too high to be infused in a 30ml syringe.

**General principles regarding the use of diamorphine in a syringe driver:**

1. The appropriate starting dose depends upon the level of opioid use by other means at the time of initiating syringe driver treatment.
2. The appropriate "rescue"/PRN dose for breakthrough pain or to cover procedures that will be painful is one sixth of the daily syringe driver dose.
3. When prescribing subcutaneous diamorphine for a syringe driver or for PRN use, it is generally helpful to round doses up to amounts that are easily drawn up from the available ampoule sizes.(Diamorphine ampoules come in 5mg, 10mg, 30mg, 100mg and 500mg sizes).
4. There is no maximum dose for diamorphine when it is used and titrated appropriately in the management of pain.

If a patient is well established on fentanyl patches, then continuation of this treatment is recommended. However, a diamorphine syringe driver can be run alongside fentanyl skin patches if the opioid requirements subsequently go up.

It is not necessary to wait for a particular amount of time to have elapsed from the last dose of oral morphine before setting up a diamorphine syringe driver. However, it is sometimes prudent to give a PRN dose of diamorphine at the time the syringe driver is put up if a particularly long time has elapsed since the last oral dose or if the patient is in pain as the syringe driver is put up.

**Worked Example**

A patient on regular morphine sulphate M/R 600mg bd also required two PRN doses of oral morphine sulphate solution 200 mg in the last 24 hours to maintain good pain control. Conversion to a syringe driver is now required.

Total daily intake of oral morphine:

| | |
|---|---|
| 2 x 600mg= | 1200mg |
| 2 x 200mg= | 400mg |
| TOTAL= | 1600mg |

Equivalent 24hr subcutaneous diamorphine dose = 1600mg ÷ 3 = 533.33mg (round to 530mg)

Appropriate PRN subcutaneous diamorphine dose = 530 ÷ 6 = 88.33 mg (round to 90mg)

## Monitoring diamorphine syringe drivers

Patients on diamorphine syringe drivers should have their level of pain relief assessed at least once a day.

1. If the patient is **pain-free without the need for any PRN doses** and there is no evidence of opioid toxicity, continue the established regimen.
2. If the patient is **generally well pain-controlled but requires an occasional PRN dose to maintain comfort**, calculate the total amount of PRN diamorphine administered over 24 hours (excluding doses given to cover painful procedures) and add this to the syringe driver. Recalculate the PRN diamorphine dose based upon the new syringe driver dose.
3. If the patient's **pain is poorly controlled despite the frequent use of PRN diamorphine** and appropriate attention to other pain-relieving measures, calculate the total amount of diamorphine administered to the patient by means of the syringe driver and all PRN doses over the previous 24 hours. Multiply this figure by 1.5 prescribe this as the new syringe driver dose. Recalculate the PRN diamorphine dose based upon the new syringe driver dose.

## *Seek specialist palliative care advice if you need to*

### Specialist Palliative care contact numbers:

| **Monday to Friday 9.00am – 5.00pm** | |
|---|---|
| **Patients in the JR** | Hospital Palliative Care Team at the John Radcliffe Hospital<br>01865 (2)21741 |
| **Patients in the Churchill/NOC** | Hospital Palliative Care Team at the Churchill Hospital<br>01865 (2)23585 |
| **Patients in the Horton General Hospital** | Hospital Palliative Care Team at the Horton General Hospital<br>01295 (2)24195 |
| **Overnight and at Weekends/Bank Holidays** | |
| **Sobell House** | 9.00am - 4.00pm 01865 (8)57036<br>Outside of these hours 01865 (2)25873 |
| **Katharine House Hospice** | 01295 811866 |

# Appendix 7: T34 Syringe Driver Competency-Based Assessment

*All staff have a responsibility to access appropriate training and before using a T34 syringe driver, must be personally competent and accountable in the use and operation of the pump. The competency-based assessment below provides evidence for this training.*

Access level: LOCK ON (Prime and load)

**SCENARIO:**

*You are required to administer a drug infusion using a T34 syringe pump.*

*For the purpose of training, the candidate used the following criteria:*

| | | |
|---|---|---|
| ***The drug is to be delivered over a period of:*** | 24 | *Hours - (pump default setting)* |
| ***Syringe size used:*** | 30 | *ml* |
| ***Syringe make used:*** | BD Plastipak luer lock syringe | |
| ***Total fluid volume in the syringe is:*** | 21 | *ml* |

| | **PERFORMANCE CRITERIA ACHIEVEMENT THROUGH CANDIDATE DEMONSTRATION, FACILITATOR OBSERVATION AND/OR QUESTIONING**<br>*The candidate achieved these outcomes because she/he has:* | ✓ achieved<br>X not achieved | Self-test<br>✓ or X |
|---|---|---|---|
| **1.0** | **START UP:**<br>**Ensured that all equipment is available and serviceable, checked that**: | | |
| 1.1 | Checked that the device is clean and visually intact | | |
| 1.2 | Checked that the device is appropriate for the intended use | | |
| 2.0 | **Correctly prime/prepare infusion equipment:** | | |
| 2.1 | Checked that the syringe and extension set are appropriate and compatible for the device and the drug delivery | | |
| 2.2 | Manually primed an infusion set | | |
| **3.0** | **Powered up the device and checked battery %:** | | |
| 3.1 | Checked that a syringe is **not** loaded and the barrel clamp arm is down on the device | | |
| 3.2 | Installed the appropriate battery | | |
| 3.3 | Turned the device on and observed the completion of the pre-programmed start-up sequence (actuator movement) | | |
| 3.4 | During pre-programming, checked the LCD display to confirm the default settings of the device | | |
| 3.5 | On completion of the pre-programme sequence, checked the battery power available is sufficient to run the device for the prescribed duration | | |
| **4.0** | **Ensured syringe placement and detection:** | | |
| 4.1 | Visually aligned the 3 syringe sensors to syringe and used the FF/back keys to adjust as necessary | | |
| 4.2 | Correctly loaded the syringe: ensured the syringe is placed in the 3 detection areas fully and observed LCD screen to confirm correct placement | | |
| 4.3 | Checked that the device had correctly identified the syringe brand and size and taken appropriate action if necessary if not identified correctly | | |
| **5.0** | **Subcutaneous cannula insertion**: | | |
| 5.1 | Describes appropriate sites for subcutaneous cannula insertion | | |
| 5.2 | Awareness of equality and diversity issues and importance of consent | | |
| 5.3 | Can demonstrate aseptic non-touch technique for cannula insertion | | |
| 5.4 | Describes how to secure the device | | |
| 5.5 | Describes ongoing care of the s/c cannula: monitoring, frequency of site change | | |

| | | | |
|---|---|---|---|
| **6.0** | **Review, confirm and start infusion programme:** | | |
| 6.1 | Reviewed the summary screen: Checked LCD screen for correct duration of infusion (volume, duration & rate) | | |
| 6.2 | *Observed "start infusion?"* screen: Checked that the administration set was connected to the patient access port and the clamp was released (if not already done so). | | |
| 6.3 | *Ensured infusion is running:* observed the "running screen" , checked green light flashing | | |
| 6.4 | Activated key pad lock on | | |

| | | | |
|---|---|---|---|
| **7.0** | **MONITORING:** Correctly accessed/explained the **INFO KEYS** in relation to the current infusion: | | |
| 7.1 | Single press to view: volume infused & volume to be infused | | |
| 7.2 | Double press to view: battery status | | |
| 7.3 | Observed the screens reverting to the default running screen | | |
| 7.4 | Activated/deactivated key pad lock | | |
| 7.5 | Demonstrates knowledge of what/how to monitor following set up | | |
| **8.0** | **TROUBLESHOOTING:** Able to **silence the alert/alarm noise** before effectively troubleshooting | | |
| 8.1 | Able to silence the alert/alarm noise appropriately | | |
| **9.0** | Demonstrated awareness of and able to perform checks/or action to be taken in relation to audible/visual **ALERTS**: | | |
| 9.1 | Near end of infusion | | |
| 9.2 | Low battery | | |
| **10.0** | Demonstrated awareness of and able to perform checks/or action to be taken in relation to audible/visual **ALARMS**: | | |
| 10.1 | Occlusion | | |
| 10.2 | End of infusion (end of programme/syringe) | | |
| 10.3 | Syringe displaced | | |
| 10.4 | Pump paused too long (activates after 2 minutes if device remains paused) | | |
| 10.5 | End battery | | |
| **11.0** | Demonstrates ability to **RESUME** or programme a new regime *(If the pump was stopped and turned off before the last program reached "End Program" the Resume prompt screen will appear)* | | |
| 11.1 | Resume the current programme | | |
| 11.2 | Programme a new regime | | |
| **12.0** | **CLOSE DOWN :** Correctly closed down and dismantled the device (assuming duration completed): | | |
| 12.1 | Checked device/tubing disconnected from access device | | |
| 12.2 | Removed syringe from device and returned barrel clamp to down position | | |
| 12.3 | Turned the device off | | |
| 12.4 | Demonstrated safe removal of disposables | | |
| 12.5 | Correctly removed the batteries ready for storage | | |
| 12.6 | Cleaned/decontaminated /stored the device as per local policy/manufacturer instructions | | |
| **13.0** | **DISCHARGE issues** | | |
| 13.1 | Demonstrates awareness of what to do when the patient is being discharged out of hospital with a T34 syringe driver | | |
| 13.2 | Can complete an OUH tracking document | | |
| **14.0** | **DRUG knowledge** | | |
| 14.1 | Able to list common drugs used in a continuous s/c infusion via syringe driver | | |
| 14.2 | Can describe where to find out more information on drug compatibilities | | |
| 14.3 | Can describe how to calculate a PRN dose for breakthrough symptoms | | |

| Use this space to add any additional comments on the assessment. Please ensure that each comment relates clearly to a numbered performance criterion. | |
|---|---|
| No | |

**Date completed: …… Candidate name**: ……

## Appendix 8: Document Development Checklist

This checklist is to accompany all newly written or reviewed clinical procedural documents. In order to enable approval, the following criterion is considered to ensure compliance with set standards for document development. Should some elements not be fulfilled, the document author may be asked to make necessary changes prior to resubmission for approval.

| **Title of Document Being Reviewed:**<br>**Clinical Protocol For The Subcutaneous Administration Of Medicines Via T34 Syringe Driver For Adult Palliative Care Patients** | | |
|---|---|---|
| **Policy reference Number:** | | **Yes/No/ or Not Applicable** |
| | Is the document title clear and unambiguous? | **Yes** |
| | Is the document correctly and consistently defined as a Policy, Procedure, Protocol, Guideline or Strategy? | **Yes** |
| **Rationale** | | |
| | Are the reasons for the development of the document stated? | **Yes** |
| **Document Development Process** | | |
| | Has the document been developed using the style and format of the approved template? | **Yes** |
| | Do all pages have appropriate branding and header and footer content? | **Yes** |
| | Have contributors to the development of the document been identified? | **Yes** |
| | Is there evidence that relevant expertise has been used in developing the document? | **Yes** |
| | Have links to national guidance and/or CQC Standards been identified? | **Yes** |
| | If the document relates to or has implications for medications, has advice and approval be sought from the relevant medicines committee? | **Yes** |
| **Evidence** | | |
| | Is there evidence to support the development of the document? | **Yes** |
| | Have all references been cited? | **Yes** |
| | Are links to other associated OUH procedural documents or information sources included? | **Yes** |
| **Content** | | |
| | Are definitions of terms used, including abbreviations and acronyms, provided? | **Yes** |
| | Is the document clearly and concisely written? | **Yes** |
| | Has the target audience been defined? | **Yes** |
| | Have the relevant responsibilities been described? | **Yes** |
| **Dissemination and Implementation** | | |
| | Does the document include an implementation plan? | **Yes** |
| | Are there processes detailed for monitoring the implementation and effectiveness? | **Yes** |

| | | |
|---|---|---|
| | Have any training needs been identified and planned for? | **Yes** |
| **Additional Information** | | |
| | Is the Equality Assessment completed and included in the appendices? | **Yes** |
| | Has the Version Control been completed? | **Yes** |
| | Does the document have a date of issue? | **Yes** |
| | Does the document have a review date? | **Yes** |
| | Is the review date considered appropriate? | **Yes** |
| **Approval & Responsibility** | | |
| | Does the document clearly state the author(s) by role/position and not name? | **Yes** |
| | Does the document identify the relevant committee or group who will approve it? | **Yes** |
| | Is the lead Director correctly identified? | **Yes** |
| **Comments** | | |
| | Cascade training programme in progress in the OUH, matrons and ward sisters aware of switchover plan. | **Yes** |
| **Clinical Policy Group or Delegated Group for Approval:** | | |
| | If the Clinical Policy Group (CPG) or delegated group for approval is happy to recommend this document for ratification, enter group details below. The Document will then be forwarded to the relevant committee for final ratification prior to publication. | |
| | **Name of Committee: Clinical Policy Group** | |
| | **Date of Meeting: 21 May 2014** | |
| **Final Committee Ratification** | | |
| | **Name of Committee: Clinical Policy Group** | |
| | **Date of Meeting: 21 May 2014** | |