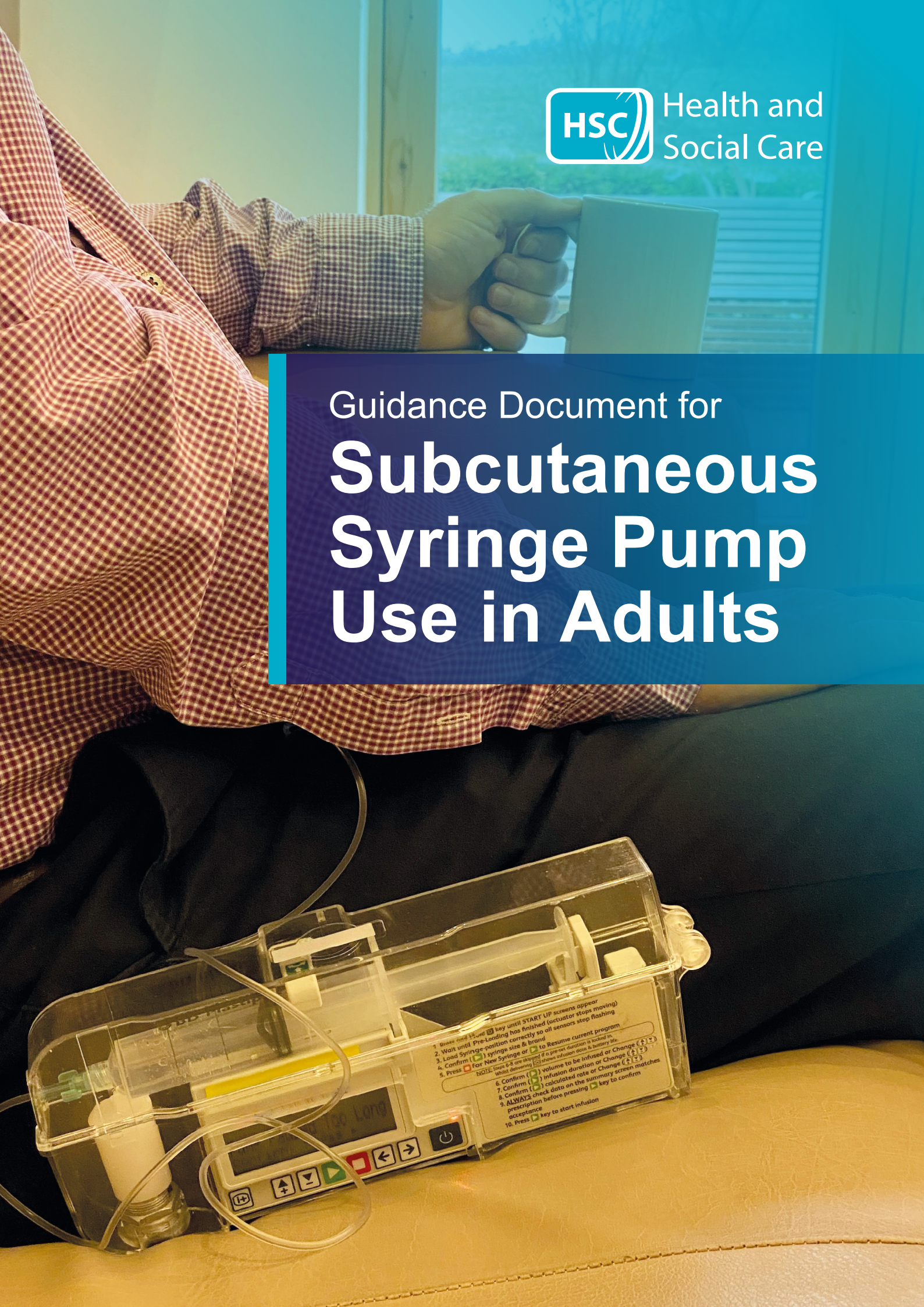

HSC Health and Social Care

Guidance Document for

Subcutaneous Syringe Pump Use in Adults

Foreword

As Co-chairs of the Palliative Care in Partnership (PCiP) Programme Board we are delighted to endorse this 'Guidance Document for Subcutaneous Syringe Pump Use in Adults in Northern Ireland'.

Over the years syringe pumps have changed in design and technology, but their ability to administer subcutaneous medications, particularly within the fields of oncology and palliative care, is of key significance. The syringe pump continues to assist in the management of symptoms and may support individuals to retain their independence and maintain their quality of life. The benefits of controlled delivery of medications subcutaneously, when they can no longer be tolerated or absorbed orally, has been particularly helpful for patients receiving oncology treatment and for those nearing the end of life.

This Guidance Document for Subcutaneous Syringe Pump Use in Adults in Northern Ireland, provides direction on the required knowledge and skills for the safe prescribing, administering, monitoring and discontinuing of medication delivered by a subcutaneous syringe pump.

It is hoped this regionally agreed guidance and educational recommendations will standardise the knowledge and skills required by staff caring for patients with oncology and palliative conditions across all care settings, reducing variation in practice and increasing consistency in processes throughout Northern Ireland to support safe and effective care to this patient group.

This document has been co-produced by a regional multi professional group from across all care settings. There has been extensive engagement including feedback from patients, relatives and staff. This collaborative approach has enabled regional agreement on many topics including the development of this robust guidance document for staff. In addition, a regional syringe pump information leaflet for patients and carers has been developed to complement this guidance. This means that each patient in Northern Ireland, regardless of where they live or access care, will receive the same information about their syringe pump.

We wish to acknowledge and thank all those who have led and enabled the development of this guidance document. It will be a valuable resource to all practitioners and will support governance processes and enable safe and effective care to all patients with oncology and palliative conditions requiring continuous subcutaneous medication across Northern Ireland.

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Section 1

Introduction

HSC Health and Social Care

Section 1

Introduction

This guidance will provide a regional approach to inform local organisational policies regarding the use of a subcutaneous syringe pump to deliver medications at a pre-determined rate in a continuous subcutaneous infusion (CSCI) to patients with oncology and palliative conditions. Patients will have been identified as needing a syringe pump to administer medications via the subcutaneous route, to help prevent or manage symptoms in a safe and effective way. The next 4 sections of this guidance relate to the use of a subcutaneous syringe pump for adult patients over the age of 18 years.

Please refer to the Guidance Document for Subcutaneous and Central Line Syringe Pump use in Paediatric Palliative Care for those under the age of 18 years.

In various Manufacturer Operational Manuals this piece of equipment is referred to as a syringe pump rather than a syringe driver. To maintain consistency the CSCI pump will be referred to as a syringe pump throughout this document. Syringe pumps are often used in other care settings such as Intensive Care Units to deliver medication through various routes. This adult document will guide the use of a 24hour subcutaneous syringe pump for patients with oncology and palliative conditions only.

The purpose of this guidance is to:

- Support and enhance patient safety during the delivery of continuous subcutaneous medications.
- Support staff when informing patients and those important to them of the reasons for using a continuous subcutaneous infusion as the chosen method for administration of medication.
- Enable standardisation when using a syringe pump and provide regionally agreed best practice guidance.

- Promote a consistent approach to delivering subcutaneous medications safely across all organisational boundaries.
- Support and guide staff who are involved in prescribing, erecting, replenishing and discontinuing medication via a continuous subcutaneous infusion, including signposting them to appropriate resources.
- Provide a component of a wider competency programme aimed at supporting registrants to enhance their knowledge and skills in the management of a syringe pump.

Responsibilities of organisations

It is the responsibility of each organisation to use this guidance to inform local policies to ensure procedures are in place to promote the safe use of syringe pumps across all care settings, including the provision of training. Organisations should consider adding details of the responsibilities of the prescriber and registered nurse erecting, monitoring and discontinuing the syringe pump within their local policies.

Any decision to deviate from this guidance should be documented in local policies.

What is a syringe pump?

A syringe pump is a small ambulatory, battery operated medical device, which administers medicine via a continuous subcutaneous infusion set over a defined period of time, for example 24 hours.

Indications for use in symptom management only (inclusive but not limited to):

- When a patient cannot tolerate oral medications due to reasons such as vomiting or dysphagia, uncontrolled nausea, or decreased level of consciousness and when other routes of administration are not suitable.
- To support safe titration of medication doses to manage symptoms.
- To support administration of medications not available by other routes.

Advantages of using a syringe pump (inclusive but not limited to)

- Safe and reliable.
- Avoids need for repeated injections.
- Ambulatory.

- Relatively easily managed in all care settings.
- A combination of medicines can be used in the syringe pump to manage more than one symptom.
- Maintains stable medicine levels.
- Improves symptom management when other routes of administration, such as oral, have been deemed inappropriate.

Risks of using a subcutaneous syringe pump (inclusive but not limited to)

- Potential risk of infection which can be severe and lead to the development of an abscess or cellulitis.
- Potential risk of inflammation at the site of the cannula insertion which can be severe leading to necrosis.
- Potential risk of dislodgement of cannula.
- Potential risk of needle stick injury.
- Potential of medicine incompatibility.
- Potential of pump failure.
- Potential for errors to occur when initiating and delivering medication.
- Potential for the patient or family to stop the pump inadvertently.
- Potential for human error due to lack of situational awareness.

Potential disadvantages

- Patients and those important to them may associate a syringe pump with dying.
- Patients may become psychologically dependant on the syringe pump.
- It may limit a patient's ability to travel away from home for long periods for example, more than 24hours however this can usually be facilitated in most situations.
- Syringe pump may be mislaid or lost between care settings.
- Mechanical failure.

Consent

The Department of Health (DoH), Reference guide to consent for examination, treatment or care (DHSSPS, 2009)[1] should always be observed when erecting a syringe pump.

Informed consent

Informed consent is essential when considering the use of a syringe pump to deliver medications. This must be obtained through discussion with the patient who has capacity before a syringe pump is erected. These discussions support shared decision making and enable patients and those important to them to feel involved in their care.

All organisations should have processes in place to ensure written information in the form of an information leaflet is given and explained to the patient and those important to them prior to a syringe pump being erected. In most cases informed consent can be either implied by the patient or verbally expressed[2]. Implied consent is consenting to something by observing their actions such as simple muscle movements, nodding of the head, blinking an eye or squeezing a hand, this must be recorded clearly as such in the patient's health care record.

The patient should be given all the relevant information and the opportunity to ask questions in order to make an informed decision. Informed consent can only be obtained when the patient has the capacity to:

- Understand the information given to them.
- Retain that information long enough to be able to make the decision.
- Weigh up the information available to make the decision.
- Communicate their decision – this could be by talking, using sign language or even simple muscle movements such as blinking an eye or squeezing a hand.

Some patients may not be able to give their consent. **It is important to note that currently, no one (not even spouses, partners or close relatives) can give consent to treatment or care on behalf of another adult under current law in Northern Ireland.**

1 Reference Guide to Consent for Examination, Treatment or Care (DHSSPS, 2009): https://www.gov.uk/government/publications/reference-guide-to-consent-for-examination-or-treatment-second-edition

2 See footnote 1

However, best interest decisions should be made with those people important to the patient such as relatives and friends who may have useful information to share about the patient. It is essential to consider this information to inform clinical decisions, for example, they may be able to tell health and social care professionals about the patient's beliefs and values about any previous Advance Care Planning conversations or the existence of an Advance Decisions to Refuse Treatment (ADRT). Also, they may know whether the patient has accepted or refused treatment in the past or has strong views on specific health questions.

If a patient is unable to give consent, professionals should follow the most up to date and relevant Department of Health Reference guide to Consent for Examination, Treatment or Care[3].

Informed consent - in respect of unlicensed use of medication via the syringe pump

"Medicines used in the palliative care setting are often unlicensed or used off-label (outside of the recommendations of their marketing authorisation, such as an unapproved route, indication, or dose).

It is common practice for two, three or four different medicines to be mixed in a CSCI (unlicensed product), although the greater the number of medicines mixed, the greater the potential for compatibility issues. Physical and/or chemical changes can occur when mixing medicines that may lead to reduced efficacy. It is therefore essential to consider medicine compatibility when mixing medicines in a CSCI"[4].

The British Pain Society (2012) in consultation with the Association for Palliative Medicine of Great Britain and Ireland suggest the use of medicines beyond licence in palliative care and pain management is both necessary and common, and should be seen as a legitimate aspect of clinical practice.[5] They recommend that choice of treatment requires partnership between patients and health care professionals, and informed consent should be

3 Reference Guide to Consent for Examination, Treatment or Care (DHSSPS, 2009): https://www.gov.uk/government/publications/reference-guide-to-consent-for-examination-or-treatment-second-edition.

4 Prescribing in palliative care | Medicines guidance | BNF | NICE: https://bnf.nice.org.uk/medicines-guidance/prescribing-in-palliative-care/

5 Use of medicines outside of their UK marketing authorisation in pain management and palliative medicine. The British Pain Society (2012) in consultation with the Association for Palliative Medicine of Great Britain and Ireland https://www.britishpainsociety.org/static/uploads/resources/files/useofmeds_professional_final.pdf

obtained, whenever possible, before prescribing any medicine.
Patients should be informed of identifiable risks and details of any information given should be clearly recorded within the patient's health care record.

Patient/carer education

It is important to prepare the patient and those important to them for use of a syringe pump. Many patients and those important to them may be apprehensive about a syringe pump being commenced. This may be due to past experiences or its association with dying. Professionals should acknowledge and seek to understand any anxieties and provide reassurance by allowing the patient and those important to them time to ask questions. Professionals should also provide verbal and if appropriate or necessary, written information to ensure patients and those important to them are informed of the indications for use of a syringe pump. Provisions should be made within organisations for alternative languages and accessible formats to be made available when necessary. Staff should also discuss the effects or potential side effects of medication in the pump, including who, when and how to contact a member of staff if an alarm sounds or the light stops flashing. In particular they should highlight the importance of patients and carers not pressing the buttons on the syringe pump to prevent complications such as the patient receiving the incorrect dose of medication, no medication or the pump being turned off accidentally. Also, the importance of recognising the appropriate action to take when the pump alarms as detailed in the patient information leaflet. All communication must be documented in the patient's health care record.

Information leaflet for patients and carers

The regionally agreed information leaflet titled 'A Syringe Pump Guide for Patients and Carers' can be found in Appendix 1. Professionals should discuss the information provided in the leaflet with the patient and those important to them and allow them time to ask questions. Professionals should discuss the medicines prescribed in the syringe pump and any potential side effects such as drowsiness, hallucinations etc. These conversations should be documented in the patients health care record.

Section 2 - A

Prescribing

HSC Health and Social Care

Section 2 - A

Prescribing

Prescribing medications for a syringe pump

The accurate prescribing of medications for administration via a syringe pump is essential to maintain patient safety. There is a risk of human error when prescribing and administering syringe pump medication. Reducing medication errors is a priority for everyone in particular healthcare professionals. The Department of Health medication safety campaign **Know, Check, Ask**[6] **(KCA)** encourages all healthcare professionals to use the same simple **KCA 3 step checking system** before you prescribe, supply or administer a medication:

KNOW the medications you are prescribing, supplying or administering, what do they do, what benefits do they have and what are the side effects.

CHECK they are right for each individual patient, based on their health conditions and any other medications they are taking.

ASK a colleague if you are unsure about, or don't understand anything, or think something is not quite right. Ask the patient if they understand and suggest that keeping a list of their medicines can help them.

These principles should be included in all local policies and all staff should be encouraged to use these when prescribing and administering medication.

6 Know Check Ask - DOH/HSCNI Strategic Planning and Performance Group (SPPG)

Staff must also adhere to any relevant policies and procedures in relation to the administration of medications in the organisation where they are providing care.

The regional "A Quick Reference Guide: Prescribing a subcutaneous syringe pump (and subcutaneous PRN chart)" has been created to help guide staff involved in prescribing subcutaneous medication for delivery in a syringe pump by consolidating helpful prescribing advice from throughout this guidance (see Appendix 2). It should be used to support medical and non-medical prescribers who are prescribing medication for syringe pumps used in oncology or palliative care settings and should be shared at education sessions and made easily available for staff to access.

Syringe pump prescriptions must be written on the 'HSC Regional Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' which is the approved syringe pump prescribing document for Northern Ireland or on encompass.

Staff must only prescribe medicines when they have the required level of knowledge and skills. The prescriber must consider if they have sufficient information to prescribe safely, including access to the patients health care record[7]. They must also have the appropriate level of understanding of the patient's symptoms, the medicines they are prescribing to treat these and medicine compatibilities[8].

A signed record must be maintained of all prescribed medication in all care settings. When initiating and reviewing medications in a syringe pump, the appropriately trained professional must undertake a holistic assessment of the patients physical, psychological, social and spiritual issues. The outcome of the assessment should be clearly recorded detailing the patient's symptoms, the need for particular changes in medication and details of any side effects or potential side effects, if appropriate.

Breakthrough Medication and Anticipatory Prescribing are terms regularly used when prescribing as required (PRN) medications to support the continuous subcutaneous infusion via syringe pump, in particular for end of life care. Many patients will need PRN breakthrough medication whilst on a syringe

7 Good Practice in Prescribing and Managing Medicines and Devices (GMC 2021): **https://www.gmc-uk.org/professional-standards/professional-standards-for-doctors/good-practice-in-prescribing-and-managing-medicines-and-devices**

8 Palliative Care Guidelines Plus: **https://book.pallcare.info/index.php?op=plugin&src=sdrivers**

pump. For further details regarding PRN breakthrough medication please see Appendix 3.

All medicines being administered via a continuous subcutaneous syringe pump must be prescribed on the appropriate documentation. This may include electronically for example via encompass depending on where the patient is being cared for. In the inpatient setting a continuous subcutaneous infusion must be prescribed in the relevant section of the patient's prescription chart. Organisations not using encompass should seek to use the regionally agreed 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' to prescribe CSCI medications. These charts must always be linked or referred to in the patient's main prescription chart. All organisations should refrain from using their own version of prescription charts.

Syringe pump prescription charts

There are **two** types of paper prescription charts used to prescribe CSCI medication in a syringe pump:

1. Prescription and Administration of Medicines via Subcutaneous Syringe Pump – **All care settings** (Appendix 4.1).
2. Continuation Record for Prescription and Administration of Medicines via Subcutaneous Syringe Pump – **Only available in primary care** (Appendix 4.2).

Important to note:
These charts should not be confused with the 'Prescription and Administration Record of Subcutaneous Medicines for Symptom Management in Primary Care Chart' which is used in primary care for breakthrough medication (Appendix 4.3).

Where encompass has not been introduced

Document clearly on the prescription and administration record that a syringe pump is in use.

Where encompass has been introduced

Medications should be prescribed electronically as a CSCI syringe pump on encompass.

Subcutaneous PRN medications should be prescribed electronically alongside regular medications.

Prescribing CSCI on encompass:

- Access the 'continuous subcutaneous infusion (via syringe pump)' prescribing order set by entering search terms in the Orders section of each patient such as 'csci', 'syringe driver', or 'syringe pump'.
- Click beside each medicine to be added to the syringe pump and add the prescribed dose.
- In the rare event a syringe pump medicine is not listed, it can be added using the 'specify medicine (free text)' function by selecting the button and entering the medicine name in the free text box.
- Select the diluent, either sodium chloride 0.9% or water for injections.
- Confirm the date and time to start the syringe pump and check all the details. This can be edited if required.
- Click 'Accept' and then 'Sign'.
- Click on the MAR (Medicines Administration Record) or MAR Summary to ensure the syringe pump has been prescribed as intended.

Details that must be included in a CSCI syringe pump prescription:

- Patient demographic details.
- Any known allergies.
- Duration of continuous subcutaneous infusion.
- Start date and start time.
- Diluent.
- Medicine and dose – it is best practice to print the medicine name in BLOCK capitals and write the dose for all medicines in words and figures.
- Prescriber's full name and signature.
- Completion of the discontinuation section by the prescriber when a new prescription is completed.
- If the patient has more than one CSCI via syringe pump in place, a separate prescription and monitoring chart must be used for each syringe pump infusion and these must be numbered accordingly.
- **Primary care continuation** record must replicate the prescription chart serial number appropriately (community only).

Important to note: To reduce the possibility of medication errors when writing a CSCI or SC PRN prescription and administration chart, all doses for all medicines should be written in words and figures. However, this is not a legal requirement and should not cause a delay in administering medication.

The prescriber should be aware that:

- Prescribing dose ranges **should not** be used for any CSCI via a syringe pump.
- Absorption via the subcutaneous route may be slower than the intramuscular (IM) route.
- Irritant medicines may cause a localised inflammatory reaction.
- A patient should have a proactive plan to manage the need for PRN breakthrough medication when a CSCI is initiated.
- When the maintenance 24-hour medication dose is changed in the CSCI, the PRN breakthrough medication dose should also be reviewed and adjusted accordingly.
- The Regional Syringe Pump Documentation Working Group has agreed that no more than four medications should be mixed in a CSCI.
- Not all medications will be compatible therefore all medication compatibilities must be checked before prescribing.[9]

Important to note: Where dexamethasone is included for site reactions, it must be counted in the number of medications in the CSCI

Prescribing a syringe pump on the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart'

Regardless of the care setting medicines should be prescribed on the regional 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart (unless using encompass).' Organisations should refrain from using their own version of this chart and should seek to use the regionally agreed chart to prescribe CSCI medications. Organisational policies should state clearly the regionally agreed chart (or encompass) to use and the process for completing the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' within each hospital, hospice and care home.

It is important to recognise that it is **not** unusual for patients to require two or more CSCI syringe pumps with different prescriptions and diluents. These should be managed as independent medication administration processes to reduce any risk of confusion. The infusion line should be labelled and the syringe pumps numbered.

A separate chart is required for each syringe pump.

9 Palliative Care Guidelines Plus: https://book.pallcare.info/index.php?op=plugin&src=sdrivers

Examples of 'Medicine Prescription and Administration Record Chart' also known as the medication Kardex, can be seen in Appendix 4.4.

In primary care setting – patients own home

Medicines should be prescribed on the regional 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' and the 'Continuation Record for Prescription and Administration of Medicines via Subcutaneous Syringe Pump' should be utilised.

Prescribing breakthrough medication in primary care

In primary care, breakthrough medications should be prescribed on the 'Prescription and Administration Record of Subcutaneous Medicines for Symptom Management Chart'. Please see Appendix 3 for more details.

Changing a 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart'

A change in dose or medication may be required for example if the patient's condition changes or their symptoms are not well controlled. To increase patient safety, staff should be encouraged to have a 'safety pause' and check the prescription to be administered and the expected effects and side-effects of the medication when new medicines and medicine combinations are required.

In any location where encompass has not been introduced.

In the event of a dose change in any setting, a new hand-written 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' is required before medications can be administered. A review of the prescribed breakthrough medication must also be completed if the dose of medication in the CSCI syringe pump is adjusted. Please see Appendix 3 for more details.

In any location where encompass has been introduced:

The CSCI syringe pump order must be amended in encompass before medications can be administered.

When a patient 'transfers' between care settings

When a patient moves between care settings the risk of miscommunication and unintended prescription changes to medications has the potential to cause a significant problem. Organisations should support the implementation of the core principles and responsibilities set out by the Royal Pharmaceutical Society:

- Health care professionals transferring a patient should ensure that all necessary information about the patient's medicines is accurately recorded and transferred with the patient, and the responsibility for ongoing prescribing is clear.
- When taking over the care of a patient, the healthcare professional responsible should check that information about the patient's medicines has been accurately received, recorded and acted upon.
- To improve patient safety and enhance any written communication the registered nurse from the transferring care setting should follow this up with a verbal conversation to the registered nurse in the receiving care setting.[10]

Discontinuing medication prescribed on the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart'

Any CSCI via a syringe pump prescribed on the 'Prescription and Administration of Medicines via Subcutaneous Syringe Sump Chart' must be discontinued in a timely manner. In the community setting it may be challenging to get a 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' discontinued in writing by the prescriber. A Standard Operating Procedure should be considered for use by the organisation to allow a registered nurse to discontinue the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' following verbal discussion with a prescriber.

Any Standard Operating Procedure should adhere to these key principles;

- Every effort must be made to ensure the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' is discontinued by an available professional who has a prescribing qualification at the time a new prescription is written

10 Keeping patients safe when they transfer between care providers - getting the medicines right. Final report June 2012 Royal Pharmaceutical Society. https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Publications/Keeping%20patients%20safe%20transfer%20of%20care%20report.pdf

- If authorisation to discontinue the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' is only available verbally, for example, via the phone, a written record must be made in the patient or residents notes of the conversation with the prescriber and must include:
  - The name and role of the person who authorised the medicine to be discontinued.
  - The name of the GP/ Non-Medical Prescriber.
  - The patient/residents name and Health and Care Number (HCN).
  - The name of the medication.
  - The date and time.

This should only be for a temporary period and should be countersigned by a suitably qualified prescriber. Each organisation should specify a suitable timeframe for the prescription to be countersigned e.g. within 5 days of the new prescription being written. Please see appendix 5 for an example Standard Operating Procedure which can be adapted for local use.

This Standard Operating Procedure should only be used when the new prescription is being written and it is not possible to remove the current prescription chart from the home or care home to get it discontinued by a prescriber at the time of the new prescription being written.

Section 2 - B

Administration

Health and Social Care

Section 2 - B

Administration

A syringe pump is a necessary mechanism used to deliver continuous subcutaneous medication. All care settings must recognise the importance of maintaining the trust and confidence of the patient and those important to them when using a syringe pump to manage their symptoms.

Holistic assessment and reassessment should continually underpin the planning and delivery of a CSCI. Organisations should add details to local policies to support the appropriately trained professional to regularly assess and review the patient. Patients and those important to them will often have concerns and fears. Professionals should take time to listen to and acknowledge these concerns and consider if additional information or care is needed to improve the overall management of the patient. Providing this reassurance will enhance patient confidence in the treatment plan and promote the safe and effective use of a CSCI via a syringe pump.

All organisations must have systems in place to agree the required number of syringe pumps for their organisation. They must also have a robust servicing process in place to ensure syringe pumps are fully operational and available to enable the delivery of subcutaneous medications when required. The model of syringe pump used in each organisation may vary. The use of numerous syringe pump models by different organisations reduces patient safety and increases the risk of human error as staff often work across organisational boundaries. To promote standardisation and reduce the opportunity for human error organisations should avoid purchasing a number of different models and aim to purchase a regionally agreed syringe pump. See further information in section 4 regarding purchasing new syringe pumps.

The responsibility of staff administrating medication is set out in the Professional Guidance on the Administration of Medicines in Healthcare settings (2019) Royal Pharmaceutical Society and Royal College of Nursing[11]. The registered nurse must ensure they have sufficient understanding regarding the CSCI medicines they are going to administer.

Period of preparation

The period of preparation should be viewed as an important part of erecting a CSCI syringe pump and every effort must be made by the suitably trained professional to be situationally aware to help reduce the risk of human error and maintain patient safety.

The setting up, initiating and monitoring of a syringe pump infusion must be carried out by an appropriately trained professional who has completed the appropriate CSCI syringe pump training and is competent in this skill. Further details are available in relation to the levels of staff training in Section 3 of this document.

Key Questions

Appropriately trained professionals should take time to consider key questions prior to setting up and initiating a syringe pump. All local policies and training should detail these key questions for the professional to improve patient safety:

- Have I had the appropriate training and is it in date?
- Do I have the knowledge, skill and competence required to erect the CSCI syringe pump?
- Are the medicines correctly prescribed and are all the medications compatible?
- Are these the right medications for the right patient at the right time?
- Have I gained consent and fully addressed the fears and concerns of the patient and those important to them?
- Have I given the patient time to discuss any concerns and provided reassurance?
- Are the medication conversions correct and appropriate?
- Have PRN medication(s) been prescribed to ensure symptoms are kept under control?

11 Professional Guidance on the Administration of Medicines in Healthcare settings (2019) Royal Pharmaceutical Society and Royal College of Nursing. **https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20standards/SSHM%20and%20Admin/Admin%20of%20Meds%20prof%20guidance.pdf**

- Do I have all the equipment I need to erect the CSCI via syringe pump?
- When replenishing the medicines in the syringe pump have I considered the patients' symptoms and are they being managed with the current prescribed medication?
- Have I listened, heard and acted on what the patient and carers have said?
- Do I need to liaise with the prescriber or specialist palliative care team for further discussion and advice?

Setting up the syringe pump

All organisations should include the manufacturers recommendations for setting up a syringe pump and use appropriate personal protective equipment (PPE) when setting up the pump. The details of which should be added in local policies as an appendix.

Steps to initiating an syringe pump

1. Prescription chart.
2. Syringe pump.
3. Medicines.
4. Diluent.
5. Syringe.
6. Labelling a syringe.
7. Infusion set and site selection.
8. Sharps box.
9. Batteries.
10. Lockbox and key.

1. Prescription chart

It is the responsibility of the appropriately trained healthcare professional administering the medication to check the medication compatibilities and that the prescription has been accurately prescribed for the correct patient. If they have any concerns they should discuss these with the prescriber and if required seek further advice from the pharmacist, doctor or specialist palliative care team. Example copies of prescription charts can be found in Appendix 4.

2. Syringe pump

The appropriately trained professional setting up and initiating the syringe pump must ensure the syringe pump and lockbox are clean, visually intact and operational. They must also ensure the syringe pump is within the correct configuration settings of the organisation and is within its service date. If they have any concerns about the syringe pump they should not use it and should seek to use another syringe pump instead. They should highlight their concern to their manager and medical or clinical engineer where appropriate.

3. Medicines

All healthcare professionals involved in the delivery of CSCI syringe pump medication, including the prescriber, have a responsibility to be knowledgeable about the compatibility of the medicines prescribed and the safe administer of these medications via a syringe pump.

They must check the following:

- Patient demographic details.
- Prescription is correctly written and signed.
- Compatibility of medicines and diluent prescribed.
- Medications have not expired.
- Any known allergies.
- Infusion volume required.
- Size and type of syringe required.
- Duration of infusion is clearly identified on the prescription.
- Review any oral medication such as regular opioids and ensure they have been discontinued or there is a plan for them to be discontinued.
- Any previous syringe pump prescriptions have been discontinued after the new 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' has been written and commenced (in settings where encompass is not in use only).

Checking the medication for use in the syringe pump

Inpatient setting – hospital/hospice/care home

In an inpatient setting it is strongly advised that a second nurse should be involved in the setting up and administration of medicines in the syringe pump up to the point of the CSCI syringe pump being commenced.

In some inpatient care settings such as hospice there may be a policy in place to deem one nurse sufficient for this procedure. To maintain patient safety this must be risk assessed, regularly reviewed and the governance process clearly detailed in their organisational policy.

This includes the preparation of the medication and checking the:

- Prescription for accuracy.
- Identity of the patient.
- Stock and expiry date of medication to be used including diluent.

- Patient's allergy status.
- Syringe pump required for administration.
- Dose of medication in the syringe prior to administration.

Both nurses will be required to sign the administration section of the prescription chart. In the case of controlled medicines, the check also involves ensuring the patient received the medication and that any surplus of controlled medication is destroyed in the appropriate pharmaceutical waste bin. When a second nurse is asked to check a calculation, they must undertake the full calculation independently. They must not be asked to confirm the first nurses answer until they have performed their own calculation. Carry pouches are available for patients who are mobile in the inpatient setting.

Community setting – patient's home

In the community setting one nurse can set up and administer medication via a CSCI syringe pump. This nurse will prepare and commence the syringe pump infusion without a second nurse.

If there is an incident or a safety concern in community it may be necessary to have a second nurse involved in setting up and administrating medication via syringe pump for a period of time. This two-nurse process should only be initiated to support the nurse involved in an incident to regain competency by refreshing their knowledge and skills. Organisations should have a process in place to manage this risk.

This nurse must prepare the medication and check the:

- Prescription for accuracy.
- Identity of the patient.
- Stock and expiry date of medication to be used including diluent.
- Patient's allergy status.
- Syringe pump required for administration.
- Dose of medication in the syringe prior to administration.

They must also sign the administration section of the prescription chart.
In the case of controlled medicines, the check also involves ensuring the patient received the medication and that any surplus controlled medication is destroyed in the appropriate pharmaceutical waste bin. Carry pouches are available for patients in community.

Delays in replenishing medication in a syringe pump

Delays in replenishing the medications in a syringe pump should be avoided as this will reduce the efficacy of the medicines and impact significantly on the symptom management and the overall patient experience. The Regulatory and Quality Improvement Authority (RQIA) suggest that an incident form needs to be completed if there is a delay of 4 hours in the administration of medication. However, the Regional Syringe Pump Guidance and Education Group and the Palliative Care in Partnership (PCiP) Clinical Engagement Group suggest in the interests of best practice organisations should have processes in place to monitor practice and report any delay of over 2 hours via a manual incident form or electronic reporting system. This will ensure good governance and support staff to identify the cause for the delay so that processes can be put in place to avoid a recurrence where possible and improve the patient experience.

Checking breakthrough medication – all care settings

When a syringe pump is being initiated for the first time or if there has been a delay in replenishing the syringe pump the nurse must consider the need for as required (PRN) breakthrough medication in particular if symptoms are not well controlled. Please see Appendix 3 for further details on prescribing and administering PRN breakthrough medication.

When a syringe pump is already in progress:

- **DO NOT** add additional medicines to the syringe pump infusion.
- **DO** prepare a new syringe and use a new infusion line when the **combination** of medication prescribed in the syringe pump has changed from the previous infusion. A new infusion line is **not** required if the combination of medication in the syringe has not changed. Infusion sets should continue to be changed as per manufactures guidance.

Staff should seek advice from a colleague, line manager, a specialist palliative care pharmacist/nurse/doctor if they are not familiar with any part of the process including the rationale for use, the medication, prescribing procedure, dosage, reconstitution, administration, side effects and illegibility of documentation. Please see useful links listed in Appendix 6.

Medicine compatibilities

All organisations should have processes in place to ensure staff have access to systems that will allow them to check medication compatibilities.

Prescribers and the registered nurse involved in administering medication must ensure they are knowledgeable about medication compatibilities to ensure safe prescribing and administration of medications (see Appendix 6).

Unlicensed medicines

Medications have been combined in a syringe for use in a syringe pump successfully for many years. It is common practice to mix up to a maximum of four medicines in a syringe for subcutaneous use in a syringe pump to control patient symptoms. When two or more licensed medicines are combined in a syringe for subcutaneous use in a syringe pump this results in a new unlicensed product being formed. Doctors and other independent prescribers (nurses, pharmacists) can mix, and direct others to mix, medicines (including controlled medicines) for administration to manage symptoms for a particular patient[12]

Converting modified release twice daily (BD) oral opioid preparation to CSCI

Opioids are often one of the medicines administered subcutaneously via a syringe pump. If a patient is on a BD oral modified-release medication it is best practice to:

- Start the syringe pump approximately 4 hours before the next dose of oral opioid medication is due (for example for a patient on MST tablets and the next dose is due at 22:00 then start the continuous subcutaneous syringe pump at 18:00).
- Ensure the modified release oral opioid medication is discontinued when the subcutaneous medication via the syringe pump is prescribed and commenced.
- Consider the need to administer an as required (PRN) breakthrough dose of medication if the patient is symptomatic at the time the syringe pump is commenced.
- Ensure an appropriate dose of PRN breakthrough analgesia is prescribed[13].
- Continue to assess the patient to ensure symptoms are controlled and they are not experiencing side effects when the route of administration is changed.

Converting continuous subcutaneous opioids to BD modified release oral opioid preparation:

The CSCI via a syringe pump should be stopped when the first dose of modified release oral opioid is administered. It is important to note the patient may require PRN breakthrough medication until therapeutic levels are reached with the regular oral opioid medication.

12 Palliative Care Formulary | Pharmaceutical Press
13 Northern Ireland Guidance for the Management of Symptoms in Adults in the Last Days of Life (2023)

Converting transdermal fentanyl/buprenorphine patches to subcutaneous or oral medication:

Please consult with a specialist palliative care pharmacist/nurse/doctor.

Medication supply

All local syringe pump policies should highlight the responsibility of the professional to support and signpost families and carers to where they can access a supply of the prescribed medications in and out of hours.

Professionals must make every effort to ensure an adequate supply of medicines are available in all care settings especially in the out of hours period to facilitate the timely replenishment of subcutaneous medicines in a syringe pump. Any delays in medicine availability should be avoided as this will result in poor symptom management which will be distressing for the patient and those important to them.

The supply of medicines can be particularly challenging in the community setting especially outside normal working hours as the prescriber, the medications and the patient will be in different locations. This means it may take a longer period of time to get the prescribed medications into the patient's home or care home to facilitate replenishment of subcutaneous medications in the syringe pump.

Proactive management of prescriptions and the supply of medications is essential in all care settings. All professionals should:

- Plan ahead.
- Know the process out of hours for getting a prescription from the GP.
- Have easy access to the details of all community pharmacies that stock and dispense palliative medicines.[14]
- Ensure there is an adequate stock of medicines available - particularly in the patient's own home or care home.
- Consider anticipatory prescribing of medication. If available in the patient's Trust area this could include having a 'Just in Case' box with anticipatory medication in place in the patient's home.

14 Palliative Care - Business Services Organisation (BSO) Website (hscni.net): https://bso.hscni.net/directorates/operations/family-practitioner-services/pharmacy/contractor-information/contractor-communications/hscb-services-and-guidance/palliative-care/

In **hospital or hospice settings**, additional medication may be obtained via the pharmacy department or local pharmacy supplier. Every effort must be made to proactively manage the supply of required medications to ensure there is an adequate stock of medications available both in and out of hours. If there are insufficient medications available in these settings during the out of hours period then staff must follow local organisational policy arrangements to get a supply of medications. This process must be included in organisational policies.

4. Diluent

Diluents help to reduce site irritation and enable medications to be delivered over a prescribed time. The diluent must be compatible with the medicine(s) in the syringe. Water for injection or Sodium Chloride 0.9% can be used. They both have advantages and disadvantages.

Comparison of diluents. The table below is available in the Palliative Care Formulary[15]

Water for Injection	Sodium chloride 0.9% [10]
Advantages	**Advantages**
Less chance of incompatibility	Isotonic. Preferable for diluting irritant medicines (potentially less infusion site reaction)
Generally, more compatibility data available for commonly used medicines	
Disadvantages	**Disadvantages**
Large volumes are hypotonic, which may cause infusion site pain or skin reaction (generally not a problem in practice, because infusion rates are so slow)	Incompatible with some medicines, for example cyclizine;
	Generally, less compatibility data available for commonly used medicines

Sodium Chloride 0.9% is the diluent most commonly used in Specialist Palliative Care practice to prevent inflammatory reactions at the skin infusion site.

15 Palliative Care Formulary | Pharmaceutical Press

Please use an electronic compatibility data base (see appendix 6) if further support is required.

5. Syringe size and type

All organisations must detail in their local syringe pump policy the information required to select the appropriate syringe size and type for use with the syringe pump. It is essential that organisations adhere to the guidelines provided by the manufacturer, particularly in relation to maximum fill levels.

A 20ml or 30ml Luer-lokTM syringe is the most common syringe used with a syringe pump. The size selected is decided by the volume to be infused.

Some organisations may decide to use a 50ml syringe to reduce the need for an additional syringe pump. It can be difficult to get a lockbox for a 50ml syringe. If a 50ml syringe is in use and the patient is transferring to a different ward or care setting, it is essential that staff in the discharging unit communicate with the appropriately trained registered professional in the receiving care setting to ensure they have the equipment and training necessary to support the continued use of a 50ml syringe size. If staff do not have the knowledge, skills and equipment, then it may be necessary to consider an alternative way of delivering the medication, prior to transferring the patient, such as using a smaller syringe size in two syringe pumps. A risk assessment must be completed for all patients using a 50ml syringe with no lockbox. A sample risk assessment template is included in appendix 7.

Important to note: Using a syringe size that is not approved by the pump manufacturer or a syringe type that is not compatible with the syringe pump could affect performance resulting in over delivery or under delivery of medication to the patient. Organisations must have processes in place to make sure staff have easy access to the appropriate syringe size and type for the model of syringe pump in use.

6. Labelling a syringe pump

All organisations must ensure a supply of labels that can be attached to the syringe is available for staff when erecting a syringe pump. Each organisation should detail the ordering process within their local policy.

The following details are required on the label:

- Patient name.
- Health and Care Number (HCN).
- Medicine Name(s).
- Dose (amount) of each medicine.
- Route of administration.
- Diluent name.
- Total (final) volume in mls.
- Date and time prepared.
- Infusion expiry date/time.
- Initials of the individual(s) preparing the syringe.
- Initials of individual(s) checking the syringe.

Attaching the label to the syringe:

When all the medicines have been drawn up into the syringe, the correct adhesive additive label must be completed either manually or electronically and attached to the syringe. This label is white and is entitled '**Medicines in syringe for injection / infusion'**. All information required on the label must be checked by one or two registered nurses depending on the care setting to ensure the details are entered correctly. This must be secured to the barrel of the syringe prior to attaching the syringe to the infusion set. This label must not obscure the visual scale on the syringe.

For all settings:

Ensure the label on the syringe:

- **DOES NOT** interfere with the mechanism of the syringe pump, for example where there is contact with the barrel clamp arm.
- **DOES NOT** obscure the visual scales on the syringe which need to be viewed during the infusion.

7. Infusion set and site selection

Various infusion sets are available for use with a Syringe Pump and these can change following procurement processes. All organisations must detail the infusion sets of choice in their local policies**.**

Needle free set

At present in Northern Ireland there is two infusion sets that are most commonly used;

- Neria Guard – administers the soft cannula via safer sharps device at a 90° degree angle and can be disconnected for increased flexibility.
- Saf-T-Intima -30-45° degree insertion.

A subcutaneous identification label must also be attached to the subcutaneous infusion line (MHRA July 2023)[16]. These should be easily available for staff and all organisations should detail the ordering process in their local policy.

Insertion of a subcutaneous infusion canula

All organisations should include information regarding site selection in local policies. Where possible, the patient should be involved in the choice of a suitable site. Patient preference and wishes must always form part of the overall assessment prior to site selection.

A risk assessment should be completed to assist professional decisions. The outer arm and upper thigh are common sites, the abdomen may be suitable as an alternative to these for patients who are bedbound. If the patient has abdominal ascites or fluid overload this may affect the absorption of medication. Professionals should consider the scapular area for patients with confusion or delirium who may pull on the line. It may be difficult to find appropriate sites on a patient who is experiencing cachexia, this should be highlighted to all professionals involved in the patients care, especially if the patient is moving from one care setting to another. It may be necessary to extend the time of rotating the cannula beyond 72hr in this instance.

16 MHRA Guidance on the regulation of In Vitro Diagnostic medical devices July 2023. https://assets.publishing.service.gov.uk/media/64bfd78a1e10bf000d17ce1e/Guidance_on_the_regulation_of_IVD_medical_devices_in_GB.pdf

Appropriate sites	Sites to avoid
Anterior abdominal wall	Sites over a bony prominence
Scapular area	Areas of scar tissue
Anterior aspects of both legs	Areas of inflamed / infected /irradiated skin
Anterior/Lateral aspects of upper arms.	Broken skin
	Oedematous limbs/abdominal ascites/ lymphoedema limbs
	Breast
	Never place in chest wall due to risk of pneumothorax.

Observation and irritation at the insertion site

All syringe pump infusion sites must be observed for erythema, pain, swelling, bruising or burning sensation every 4 hours for inpatients or at each visit by the community nurse. Organisations should encourage staff to use a Visual Infusion Phlebitis (VIP) score to assess the infusion site (see appendix 8). If there is irritation at the cannula site all potential causes for the irritation such as medication interactions or infection must be considered and reviewed. When the combination of medicines prescribed has changed from the previous infusion the infusion site must be changed using a new cannula and subcutaneous infusion line. A new infusion line is **not** required if the combination of medicines in the syringe has not changed. A robust review of all the medicines in the syringe pump must be completed. The prescription may need adjusted if any of the medications, including the diluent, are thought to be causing the irritation. The rationale for these changes must be documented in the patient's health care record. If irritation at the insertion site is recurring, then consider reducing the concentration of medicines by using larger volumes of diluent and/or using a larger syringe. Low dose dexamethasone (500micrograms-1mg) may be used for site irritation. Consideration should be given to use sodium chloride 0.9% as the diluent (if compatible). Local guidelines should be available for professionals and they should seek further advice regarding site selection from the specialist palliative care team if required.

When to change the infusion site (manufacturer's instructions should be detailed in local policies).

- Rotate the site every 72 hours depending on the type of cannula used.
- Rotate the site if there is erythema, pain, swelling, bruising, or burning sensation noted. There may be exceptional circumstances where a cannula can remain insitu for an extended period of time if there is difficulty with identifying an appropriate site. Justification for this should be clearly recorded within the patients care plan and communicated within the nursing team.
- Prepare a new syringe and use a new infusion line when the combination of medicines prescribed has changed from the previous infusion. A new infusion line is **not** required if the combination of medicines in the syringe has not changed.
- Record information specific to the site on the 'Prescription and Administration of Medication for Subcutaneous Syringe Pump Chart' in the section for monitoring and checking site section.

8. Sharps box

A sharps box must be used for the safe disposal of any needles. Staff must adhere to local organisational infection and control policies regarding the safe disposal of sharps.

9. Batteries

All organisations must adhere to the guidance available from the syringe pump manufacturer regarding the appropriate battery to use with a syringe pump. Battery types and duration may change depending on the model of syringe pump being used. Some manufacturers will list the type of batteries to use in the quick reference guide in the syringe pump manual. This information should be included in the appendix of local policies. Advice should be sought from medical/clinical engineers within each organisation and the preferred battery type to be used for the syringe pump should be detailed in their local policy.

If notification is received from any manufacturer in relation to battery faults or battery changes then good governance processes must be in place. Organisations must ensure all appropriate staff across all care settings are informed and the local syringe pump policy is updated promptly.

Battery life

Factors that affect battery life include:

- Pump settings.
- Infusion rate.
- The number of interventions that occur (for example stopping/starting infusions, manual movement of actuator and backlight activation).
- The number of key presses that occur.
- Frequency of LED green light flashing.
- Battery chemical and constructive compositions.
- Syringe size and viscosity of medicines.

All syringe pumps should have a battery meter which:

- Displays battery life remaining as a percentage (%).
- Has an alarm to alert users (professionals, patients, carers) when the battery power is low.
- Has an end of battery alarm to inform users when the battery power is almost depleted.
- Continues to alarm until a professional presses YES to confirm or the battery power is fully depleted.

A battery check should be included as part of the regular checks to ensure there is adequate battery life to deliver medication for the required length of time. Extra batteries must be available for staff to use. The process for accessing these should be detailed in local policies.

Indications to change a battery

Average battery life is approximate and varies for different models of syringe pumps.

Guidance on when to change the battery will vary in different clinical settings. In discussion with the medical/clinical engineer all organisations must consider the manufacturers advice in relation to changing batteries. In organisations where more than one syringe pump is in use it is best practice to maintain consistency regarding battery changes across devices as this will reduce confusion and support training. Battery change guidance information must be clearly detailed in local policies.

The following rules regarding battery changes apply to all care settings. The registered nurse must ensure there is an adequate percentage of battery life available at the start of the infusion to deliver medication for 24hours, some organisations may opt to change the battery when medication in the syringe is being replenished.

It is advised the battery must be changed if there is less than 50% charge remaining.

The low battery alert should not be used as an indication to change a battery. This is to reduce the risk of human error and avoid the message coming on screen 'resume or new Programme' if the battery is changed mid infusion.

Storage of the pump after use:

More than one brand of a syringe pump may be in use in some organisations. In more recent versions of syringe pumps the battery must be kept in the pump to maintain the event log and to ensure the internal battery does not get depleted. If more than one model of syringe pump is in use in an organisation then they must seek to maintain consistency across all devices to avoid confusion.

All organisations must have a process in place to review the battery life and check for any signs of corrosion when the pump is switched off to ensure the event log and syringe pump function is maintained. Advice should be sought from the manufacturer and medical/clinical engineers in each organisation and this should be detailed in their local policy. When not in use all pumps must be turned off and decontaminated as per manufacturer's syringe pump instructions.

10. Lockbox and key

A lockbox is used with a syringe pump to protect it from displacement and optimise patient safety. National Patient Safety Agency (NPSA) Rapid Response Report (2010) advises that all organisations should use lockbox covers with all ambulatory syringe pumps. There is risks associated with using a syringe pump without a lockbox. If it is not possible to use a lockbox a risk assessment must be completed. The risk assessment will help the professional identify any risks or potential risks of using the syringe pump without a lockbox. The outcome of this assessment should be discussed and agreed with the nurse in charge (band 6 or above) before proceeding to erect the syringe pump without the lockbox.

If a decision is made to use a syringe pump without a lockbox then this period of time should be kept to a minimum where possible. A risk assessment template is available in Appendix 7. This should be adapted for local use.

A lockbox is available for 20ml and 30ml syringes. It may be more difficult to obtain a lockbox for a 50ml syringe. The lockbox for the 20ml and 30ml will not fit a 50ml syringe as the syringe barrel clamp is extended too far. A risk assessment will need to be completed if a 50ml syringe is used and a lockbox is not available.

A universal key is used to open and close a lockbox. The discharging care setting must ensure the syringe can be accessed by the registered nurse in the receiving care setting if a patient is transferred to another ward or care setting. All care settings should have processes in place to ensure the syringe pump and lockbox is returned to the discharging setting as soon as possible following patient transfer.

Maintenance of lockboxes should be detailed in local policies as per manufacturer's instructions.

Monitoring the patient with a syringe pump infusion

11. Monitoring the infusion.
12. Transfer of a patient with a syringe pump between care settings.
13. Discontinuing or removal of the syringe pump infusion.

11. Monitoring the infusion

Following the initiation of CSCI via a syringe pump it is important to monitor the infusion to ensure it is functioning and the patient is receiving the prescribed medication. Observation of the patient and response to their unique comfort needs are the fundamental principles which keep the patient at the centre of their care.

In all care settings a first monitoring check should be carried out by the registered nurse 30 minutes after starting the syringe pump. In all inpatient settings such as Care Homes, Hospitals, Hospices these monitoring checks must be continued 4 hourly and recorded on the syringe pump chart. In the community, monitoring checks will be carried out by a registered nurse when medication in the syringe pump is being replenished and each time the nurse visits the patient. For patients who are nearing the end of their life a second daily visit may be carried out in community.

A second daily visit is dependent on the individual patient assessment carried out by the district nurse and may be negotiable following discussion with the medical and nursing team. It is important to document the details and outcome of these discussions in the patient's health care record.

All patients/carers should be:

- Provided with the appropriate contact numbers in case any problems or concerns arise. There is space to do this in the Regional Syringe Pump Guide for Patients and Carers information leaflet.
- Advised to contact the appropriate professional if symptoms are not well controlled after taking PRN medication or the alarm mechanism is sounding.
- Advised to contact the appropriate professional if the pump is dropped or gets wet.

The syringe pump infusion line and site of insertion to the patient should be monitored for:

- Pain, swelling, redness, infection, bruising or oedema at the infusion site.
- Blood in the infusion line.
- Crystallisation.
- Leaking or disconnection of the infusion set.
- Infusion not progressing, most pumps will have a monitoring screen and flashing light to indicate the pump is functioning. The syringe must also be checked to ensure it has remained in the correct position.
- Infusion running to time measured by rate per hour.
- Infusion progressing too quickly.

The professional should also review the patients overall symptom management. including the benefits or side effects of the medication such as opioid toxicity, hallucinations etc.

The summary screen on the syringe pump, will usually provide information on:

- The infusion time remaining.
- The rate in millilitres (ml) per hour.
- The volume to be infused.
- The volume infused.
- Display information about the percentage of battery life remaining.

Important to note: The key pad lock function is not constant across all pumps. When the keypad is locked on some of the pumps the 'stop' (red) and 'go' (green) function keys are still accessible to use and caution must be highlighted when communicating with patients and families not to press these when the pump is operational as it may result in the patient not receiving the correct dose of medication or no medication at all.

These monitoring checks must be recorded in the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart'.

Any decision to deviate from routine monitoring must be justified and documented in the patient's health care record.

To avoid the potential of fluid back flow:

Place the syringe pump at the same level or lower than the infusion site.
If an infusion is stopped before the syringe is empty, always disconnect the syringe from the patient and apply a sterile universal Luer-LokTM cap before removing the syringe pump.

Audit of practice

Regular audits should be performed by all organisations to monitor rates of infusion site infection/inflammation. A regional audit template is available in Appendix 9 and can be adapted for local use. Please see Section 4 for more details on Audit and Monitoring Processes for a syringe pump.

12. Transfer of a patient with a syringe pump between care settings

Organisations must have processes in place to ensure there is robust communication between nursing, medical and pharmacy staff when a patient with a syringe pump is transferring between care settings. This will ensure the receiving care setting is fully informed and has all the required equipment and medication necessary for the syringe pump infusion to continue to deliver medication safely to the patient.

When a patient is transferred between care settings, a monitoring check should be recorded before and after patient transfer in the designated section of the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' or in encompass.

Transfer of syringe pump

Each organisation must have processes in place to ensure syringe pumps are tracked and returned to the organisation to which they belong as soon as possible. The receiving care setting should contact the discharging care setting promptly to agree a plan which facilitates the quick return of the syringe pump.

A local register should be maintained to record information on transfer of any syringe pump between in-house wards and care settings. There should also be a register in each organisation detailing the location, asset numbers and records of any syringe pump with a fault or requiring repairs.

13. Discontinuing or removal of the syringe pump infusion

There are many reasons for discontinuing a syringe pump. It is important to follow the correct processes when discontinuing the pump to ensure patient safety. To avoid the risk of inadvertent bolus administration the infusion must be disconnected from the patient prior to removal from the syringe pump. Once it is removed a sterile universal Luer-LokTM cap should be applied to the connection port.

- **For shower/ bath**

A shower or bath should be scheduled for when the medications in the syringe are due to be replenished. Manufacturers advise the syringe pump must be stopped and removed for a bath or shower to prevent moisture damage to the syringe pump. The syringe pump should be kept below the level of the infusion site to prevent fluid ingress back into the pump as this will damage its components and may prevent the syringe pump from working correctly. Following the shower/bath the syringe pump medication should be replenished and the syringe pump restarted.

- **For a procedure**

Please adhere to local guidelines/policies for patients attending procedures. A syringe pump **MUST** be disconnected if a patient is having an MRI scan. If staff are unsure about whether it is necessary to stop the CSCI they should seek advice from the department carrying out the procedure.

- **When the subcutaneous administration route is no longer required**

Some patients may only require a CSCI via syringe pump to control their symptoms for a limited period of time as their medication may be discontinued or changed to an alternative route such as oral.

- **When a patient has died**

Local policies should detail the process to be followed by the professional following the death of a patient.

- **For patients whose death was expected**; the registered nurse should stop the CSCI and complete a monitoring check detailing the syringe pump being stopped. The syringe pump must be left in situ with the patient until the verification of death has been completed. The professional completing the certification of death must confirm whether a referral to the coroner is required or not. If the coroner is involved they will direct if the pump needs to be left in situ. This verification is often carried out by medical staff, in some settings a registered nurse who has completed the appropriate training will be the professional verifying death.
- **For patients whose death is thought to be unnatural;** these deaths will be reported to the doctor who will discuss the death with the coroner. The registered nurse can stop the infusion and complete a monitoring check detailing the pump being stopped. The syringe pump must be left in situ with the patient and only when instructed by the doctor who has had the discussion with the coroner can the syringe pump be removed and medication discarded.

Monitoring of the syringe pump
14. Identifying and monitoring of potential risks with a syringe pump.
15. Equipment malfunction.
16. Decontamination of the syringe pump.

14. Identifying and monitoring potential risks with a syringe pump

Syringe pumps are at risk of developing a fault. All staff involved in the use of syringe pumps must have completed appropriate training as per section 3 of this regional syringe pump guidance.

Local policies must have processes in place to identify, monitor and ensure any syringe pump that is thought to be faulty is immediately removed from the clinical area and returned to medical/clinical engineering for maintenance.

All trained staff must:

- Ensure the syringe pump is fully functional prior to use.
- Check the configuration settings including date and time.
- Ensure the syringe pump is asset tagged, has a service history recorded, and is within service period prior to use.
- Conduct a physical examination of the syringe pump to check for any signs of damage or if the syringe pump has been dropped.
- Conduct a physical examination to check for signs of fluid ingress.
- Stop using the syringe pump if it appears faulty in any way.

15. Equipment malfunction

If trained staff suspect a malfunction in the syringe pump they must stop the syringe pump **IMMEDIATELY** to ensure patient safety.

Across all care settings, all trained staff should have completed introductory training which will include how to recognise when the syringe pump is not working and what actions to take.

When malfunction of a syringe pump is suspected, trained staff must:

- Undertake an holistic patient assessment, the infusion site and infusion line should be checked to ensure it is intact and functioning as expected.
- Know how to recognise when the syringe pump is not working and what actions to take.
- Try to establish the cause and try to problem solve, as per trouble shooting protocol/ manufacturer instructions if possible.
- Replace the syringe pump if there is no obvious reason for the malfunction, or they are unable to resolve the problem as per local guidance/process.
- Send the syringe pump for repair/service to medical/clinical engineering with a decontamination certificate.
- Maintain a record of this event, with the syringe pump asset number, service record and history of the fault recorded and the action taken to resolve it.

- Log an incident on a manual or electronic incident recording system such as datix detailing the time of the incident. They must also be aware the fault may be reportable to the Northern Ireland Adverse Incident Centre (NIAC) – medical/clinical engineering will advise if this is required.
- Record a copy of the service record certificate regarding this fault and actions taken to resolve it. This must be recorded using the agreed incident recording process for the organisation in which the trained professional works such as in the datix electronic recording system. This will form part of the post incident investigation.
- Update the details on the syringe pump register – this is usually held by medical/clinical engineering.
- Liaise with the GP/Consultant if there is any concern regarding the malfunction of the syringe pump affecting the patient's condition/ symptoms.
- Liaise with the prescriber as there is a risk the pump may have over/under infused the prescribed medication.
- Take the syringe pump out of general use and condemn it if the fault cannot be resolved. The line manager should be informed and a new syringe pump obtained.

Manufacturers will often include troubleshooting information within their guidance. This should be included as an appendix of the organisational policy.

Out of hours arrangements:

All organisations must have 'out of hours' arrangements in place for staff to access a replacement pump, for example, if the syringe pump malfunctions during the out of hours period. This is particularly relevant to staff in care homes or patients and relatives in their own home. All policies must detail the process to follow including the details of who to contact for support. Contact details of the trained professional for the out of hour's period must be shared with patients and carers.

All policies should detail maintenance and servicing arrangements for syringe pumps, ensuring processes are in place to complete regular audits to monitor compliance as per manufacturers' recommendations. Further information and guidance on this can be found in section 4 of this guidance document.

Syringe pumps must not be modified, adapted or used in any other way than those recommended by the manufacturer.

16. Decontamination of the syringe pump

Infection control guidance for syringe pumps must be included in all organisation policies. This must form part of training and be followed by all staff to ensure all syringe pumps are decontaminated after use in accordance with the manufacturer's guidance.

Processes must be in place to keep a record of the decontamination status, signed and dated by the individual who carried out the decontamination process. The steps below should be followed:

- Clean the syringe pumps between patients or once a month using a disinfection wipe.
- **DO NOT** decontaminate the syringe pump with surgical spirit or abrasive cleaners such as Xylene, Acetone or similar solvents.
- **DO NOT** immerse the syringe pump in water.
- Store the syringe pump in a dry place when not in use.
- Store all pumps with a new battery in situ and adhere to locally agreed battery replacement processes.
- Replace the battery to maintain the event log.
- Dispose of the old battery appropriately as it is a fire risk.

Each organisation must have processes detailed in local policies to provide guidance to staff regarding the safe disposal of batteries for example, cover caps, transport in lipo bags or battery disposal boxes.

Storage across care settings may be different and should be detailed within local policies.

Lockbox cleaning

Manufacturers recommend the use of alcohol sprays and wipes to decontaminate the lockbox. Other products may be used but users should be aware that extended usage could result in the lockbox becoming brittle and susceptible to damage.

Maintenance

Monitoring arrangements must be in place to ensure annual maintenance and servicing arrangements for syringe pumps are in place as per manufacturers' recommendations. Organisation operational policies must be observed.

Section 3

Education and training

Health and Social Care

Section 3

Education and training

Education and training underpins the safe and effective delivery of patient care. This section will inform syringe pump education and training processes within each organisation. It will outline the level of education and training required for professionals involved in prescribing, initiating, monitoring and discontinuing syringe pumps. All local policies should detail the required education and training for safe syringe pump use. A rationale for any decision to deviate from the suggested education and training requirements detailed in this section should be documented in local policies.

All professionals providing levels 1-3 training must ensure it includes the core components detailed within this section. Levels 1-3 training can be delivered locally or accessed through an education provider. Level 4 can only be provided by the manufacturer. Additional information may be necessary to include in local training depending on local arrangements within care settings. In order to support a standardised approach to syringe pump education and training, any variances in local training should be minimised.

All clinical staff caring for adult patients in all care settings where a syringe pump is being used to deliver subcutaneous medication should read this document. All staff must receive the appropriate level of training before using a syringe pump, and adhere to local policies and procedures. These guidelines should not be used as a stand-alone syringe pump training document.

Key messages

A. There are 4 levels of training for staff involved in syringe pump use:

Level 1 - Syringe pump prescriber awareness training- for the prescriber.

Level 2 - Syringe pump introductory training - for a registered nurse who is newly qualified or has not been involved in syringe pump use for more than a year.

Level 3 - Syringe pump refresher training (1-3 yearly) - for the registered nurse who works in a care setting where syringe pumps are used on a weekly basis, this training may be completed 3 yearly. In care settings where syringe pumps are infrequently used then annual refresher training is advised.

Level 4 - **Advanced trainer training (2 yearly)** – provided by the manufacturer to support organisations to have advanced trainers who can cascade training to other staff within their organisations.

B. A CSCI should only be prescribed by a medical or non-medical prescriber (NMP) competent to do so. All medical, nursing and pharmacy staff who prescribe syringe pump medication should complete syringe pump prescriber awareness training relevant to their professional role to give them an understanding of subcutaneous syringe pump use.

C. All registered adult nurses involved in initiating, replenishing, monitoring and discontinuing a syringe pump must undertake introductory and refresher training and have achieved personal competency. The registered nurse is accountable for the use and operation of the syringe pump.

D. Each organisation has a responsibility to ensure staff are provided with the opportunity to attend training and education to ensure they are competent in the management of the syringe pump.

E. All managers should support staff to attend training. They must also maintain an accurate record of staff who are trained and competent in the use of syringe pumps.

F. Registered nurses are accountable for ensuring their practice is evidence based and must take appropriate action to ensure they are competent when using the syringe pump. In accordance with 'The Nursing and Midwifery Code (NMC 2018): Professional standards of practice and behaviour for nurses, midwives and nursing associates[17]' this includes seeking support from their line managers and completing appropriate training.

G. Bank/agency staff – must receive appropriate syringe pump training. Processes must be in place to ensure bank/agency staff providing care in a setting where syringe pumps are regularly used to deliver subcutaneous medication are competent in syringe pump use. It is the responsibility of the nurse in charge to inform the bank/agency if they require a nurse who is competent in syringe pump management.

Prescribing medication for a continuous subcutaneous infusion:

A continuous subcutaneous infusion should only be prescribed by a medical or non-medical prescriber competent to do so such as those listed below:

Registered medical professional – currently registered with the General Medical Council (GMC).

Registered pharmacist – currently registered with the Pharmaceutical Society of Northern Ireland and has successfully completed a Non-Medical Prescriber qualification.

Registered nurse – currently registered with the Nursing and Midwifery Council (NMC) and has successfully completed a Non-Medical Prescriber qualification and who is competent within set medicine parameters.

Level 1 - Syringe pump prescriber training

All prescribers should attend syringe pump prescriber awareness training to give them an understanding of syringe pump use prior to writing a subcutaneous syringe pump prescription for the first time. Awareness training can be provided locally within organisations.

17 The Nursing and Midwifery Code (NMC 2018): Professional standards of practice and behaviour for nurses, midwives and nursing associates: https://www.nmc.org.uk/standards/code/

All prescriber awareness training must include:

- What are syringe pumps and how are they used.
- How to complete the documentation/prescribe the medications – both in hard copy and on the encompass system.
- How to set up and monitor the syringe pump.
- Medication compatibility – in particular medicine combinations and possible issues, how to identify these and how to prevent them.
- Troubleshooting.

When prescribing subcutaneous medication for delivery via a syringe pump in a care setting the prescriber must check that staff have the appropriate knowledge and skills to initiate, replenish, monitor and discontinue the pump. Every effort must be made to support staff who do not have the appropriate skills and knowledge by seeking support from skilled staff in other care settings and from education providers. The prescriber may need to consider an alternative route of administration for medication if staff do not have the appropriate skills and knowledge within a particular care setting.

Syringe pump prescription

Prescribers must complete the training for the HSC regional documentation for subcutaneous syringe pumps and have an awareness of symptom management in palliative care, the medications commonly used in syringe pumps, such as that in the Northern Ireland Guidance for the Management of Symptoms in Adults in the Last Days of Life (2023)[18] and compatibilities.

Awareness training for pharmacists

All pharmacists should have an awareness of symptom management in palliative care and the medicines commonly used in syringe pumps, such as that in the Northern Ireland Guidance for the Management of Symptoms in Adults in the Last Days of Life (2023)[19] and compatibilities.

Level 2 - Syringe pump introductory training

Setting up, initiating, replenishing, monitoring and discontinuing a syringe pump must be carried out by a registered nurse – on the live register of the Nursing and Midwifery Council (NMC).

18 Northern Ireland Guidance for the Management of Symptoms in Adults in the Last Days of Life (2023) available at: https://pcip.hscni.net/what-is-palliative-care/information-and-guidance-for-healthcare-professionals/palliative-care-symptom-management-medication/

19 See footnote 18

All organisations must have processes in place to ensure registered nurses who work in a care setting where syringe pumps are used are facilitated to attend introductory training. This must be detailed in all organisational policies. Introductory training must be delivered face to face. Accurate records must be maintained of all staff who have completed introductory training. The trainer should also maintain a record of attendees. It is the responsibility of the individual nurse to inform their line manager of attendance for training records. This will promote safe and effective management of patients requiring a syringe pump to deliver a CSCI of medication.

The registered nurse must deem themselves competent and be accountable for the use and operation of the pump. They must be able to evidence completion of appropriate competency-based training and provide evidence of competence to their line manager. These arrangements should be detailed in organisational policies. Please see the regional competency document in Appendix 10.

Training for the registered nurse joining a new organisation

The registered nurse must attend syringe pump introductory training prior to using a syringe pump for the first time, this must be repeated when joining a new organisation. However, this training may be waivered if local organisational policy permits the registered nurse to provide evidence of attendance at introductory training and completion of competence document to their new manager. The registered nurse must continue to attend 1-3 yearly refresher training as an ongoing update. Introductory training is advised for any staff member who has not been involved in the use of a syringe pump for more than one year.

The registered nurse should not operate a syringe pump unless they are fully trained and personally competent in its use. In the circumstance that a patient requires a syringe pump and no staff within the care setting are trained and competent, support should be sought by the nurse in charge from skilled staff and/or education providers to ensure staff receive adequate training as soon as possible.

Each organisation should have a process for the provision of training and supervision to support care settings in these circumstances. These arrangements must be detailed in organisational policies.

Additional knowledge and skills required by the registered nurse

The registered nurse must:

- Have the knowledge and skills to explain the rationale for subcutaneous syringe pump use to the patient and those important to them.
- Have adequate knowledge to recognise if a patient's symptoms are not controlled and escalate this to a prescriber, seeking a review of the patient and current syringe pump prescription as soon as possible.
- Be knowledgeable regarding the need to consider administering breakthrough medication to control symptoms whilst waiting on the patient to be reviewed, the prescription being updated and the syringe pump replenished.

All professionals providing introductory training must ensure it includes:

- Legal and professional guidelines and accountability.
- Patient anxieties and information tailored to their needs to reduce stress.
- Rationale for use of a syringe pump as per organisational policy.
- Advantages and disadvantages of using a syringe pump to deliver subcutaneous medication.
- Medicine management considerations including risk awareness.
- How to recognise syringe pump malfunction and what actions to take.
- How to set the pump up correctly and how to respond to alarms/alerts or malfunctions.
- Regional syringe pump prescription requirements.
- Medication conversions from oral to subcutaneous (generalist level)
- Medicine compatibilities awareness.
- Use of case study examples to illustrate complexities.
- Suitable infusion sites and sites to be avoided.
- Device insertion and management.
- Syringe pump models and functionality variance.
- Guidance on syringe size, type and volume capacity – This should include raising awareness of the need to complete a risk assessment template if a lockbox is not able to be used.
- Undertake practical set up of a syringe pump and discontinuation processes.
- Consider troubleshooting guidance and recommended actions.
- How to monitor the syringe pump and advise staff to adhere to local organisational policy.
- Human factors should be discussed and considered.

A period of supervised practice **must be undertaken by the registered nurse** using the syringe pump until the nurse declares themselves competent using the regionally agreed workbook (see Appendix 10). The nurse should inform their line manager when competent and completion of the competency-based workbook has been achieved.

If competency is failed then a new episode of training and supervised practice must take place.

Level 3 - Syringe pump refresher training 1-3 yearly

All staff involved in initiating, replenishing, monitoring and discontinuing a syringe pump must attend a minimum of 3 yearly refresher training either face to face or via a digital platform. Some care settings may have gaps in the use of syringe pumps, it is advised that staff in these settings attend annual refresher training to maintain competency. Organisations must ensure the registered nurse is supported to attend mandatory refresher training to update their syringe pump knowledge and skills. Training can be delivered locally or accessed through an education provider however the core components outlined below for refresher training must be adhered to by the professional providing the training. Additional information may be necessary to include in training depending on the care setting. In order to support a standardised approach to syringe pump education and training, any variances in training provided should be minimised where possible.

All professionals providing 1-3 yearly refresher training must ensure it includes;

- Legal and professional guidelines and accountability.
- Patient/carer information tailored to address their needs.
- Rationale for use of a syringe pump as per organisational policy.
- Advantages and disadvantages of using a syringe pump to deliver subcutaneous medication.
- Medicine management considerations, risk awareness.
- Regional syringe pump prescription requirements.
- Medication conversions oral to subcutaneous (generalist level).
- Medicine compatibilities awareness.
- Use of case study examples to illustrate complexities.
- Suitable infusion sites and sites to be avoided.
- Device insertion and management.

- Syringe pump models and functionality variance.
- Guidance on syringes and volume capacity - this should include raising awareness of need to complete a risk assessment template if a lockbox is not able to be used.
- Observe the practical use of the Syringe Pump including the discontinuation processes.
- Consider troubleshooting guidance and recommended actions.
- How to monitor syringe pump and advise staff to adhere to local organisational policy.
- Human factors should be discussed and considered.
- Refresher training should focus on case studies and opportunities to explore any challenges or concerns the registered nurse may have in clinical practice.

Each individual registered nurse is accountable and responsible to ensure they keep up to date with this aspect of training. Where competence or confidence has lapsed refresher training should be undertaken. They should also complete medicines management training 3 yearly.

Training updates must be accessible and a record must be kept of all staff attendance at training.

Level 4 - Syringe pump advanced trainer training 2 yearly

Advanced trainer training is provided by the syringe pump manufacturers trainer. There may be a charge for this but it is often available when a new syringe pump is being introduced. It will ensure organisations have advanced trainers who can cascade training to other staff within their organisations. This is a necessary and efficient way of training staff across care settings within organisations.

Syringe pump advanced user sessions (“train the trainer”) authorises the manufacturer specialist trainers to deliver education, to those staff members who have been identified as advanced trainers by their organisation. Those who complete the ‘advanced user’ session can facilitate training throughout their organisation, which includes theory and practical training on the syringe pump. The ‘advanced user’ session does **not** enable attendees to train other advanced trainers in their organisation.

- An advanced trainer must attend 2 yearly training with the syringe pump manufacturer to maintain competency, these sessions are approximately 120 minutes long. Following this training attendees will be in a position to cascade training to their colleagues.
- The session covers the pump geography and description of hands-on practice and the completion of a self-assessment of theory knowledge and practical skill. The manufacturer trainer will usually observe the attendees throughout the session and provide access to eLearning to complete advanced training.
- A certificate of attendance is provided by the manufacturer.
- The attendees must complete a self-assessment booklet usually provided by the manufacturer.
- Access to syringe pump 'advanced user' training will require the organisation to liaise with the manufacturer to request this training from the manufacturer depending on the syringe pump in use.

Section 4

Audit and governance

Health and Social Care

Section 4

Audit and governance

Regular audit, of patient care, training courses, records and maintenance processes will support good governance of subcutaneous syringe pump use in organisations. This will ensure syringe pumps function safely and staff have the required level of knowledge and skills to prescribe, initiate, replenish, monitor and discontinue syringe pumps. All organisations must have governance processes in place to ensure all safety warning notices and medical device alerts are shared with relevant staff when they are received. It is important that relevant notices are acted and reported upon.

Audit of syringe pump use in patient care

Organisations should audit clinical practice to improve patient safety and ensure the required standard of care is being delivered to each patient with a syringe pump.

Replenishing medicines

Medicines in a syringe pump must be replenished when the prescribed infusion is complete or if there is a change to the combination of medicines in the syringe to improve symptom control during the 24hr period. Any delays in replenishing the medicines should be avoided. If there is a delay of 2 hours then an incident form must be completed. Please see information regarding 'Delays in Replenishing Medication in a Syringe Pump' (page 29).

Audit of infusion site

An audit of the infusion site should be performed by all organisations at least twice per annum to monitor rates of syringe pump infusion site infection and inflammation. Please see the regional audit tool in Appendix 9.

Audit of training programmes

All organisations who provide syringe pump prescriber awareness training, introductory training and refresher training locally must have processes in place to audit the training content at least annually to ensure the necessary details as listed in section 3 of this document are included. They should consider using the seven criteria set out in the Northern Ireland Practice Education Centre (NIPEC) Quality Assurance Framework[20] to support this audit. This will support a regional standardised approach to syringe pump training.

Audit of HSC Clinical Education Centre training programmes

The Department of Health commission and approve education programmes for nurses and midwives. NIPEC audit HSC **Clinical Education Centre** (CEC) annually. One or two programmes offered by CEC are identified for review yearly. The programme is reviewed using the seven criteria set out in the NIPEC Quality Assurance (QA) Framework (2023).

HSC CEC also have internal processes which contribute to the overall quality assurance of programmes. These include:

1. Individual programme evaluation by each participant post attendance at a programme. These evaluations are reviewed by the Nurse Education Consultant and Senior Education Manager.
2. Special Interest Groups (SIG) meet quarterly to discuss and share learning relevant to clinical specialism.
3. Yearly programme review to update content.
4. Meetings with senior education manager with education leads from each organisation to discuss programme provision and specific learning needs.

Staff training records

All staff must have the opportunity to attend the required level of training depending on the action they are involved in with a subcutaneous syringe pump infusion. Processes must be in place in all organisations to ensure all staff attend the required level of training and accurate records are maintained. Audits should be carried out to ensure awareness training is completed by the prescriber. Audits should be carried out to ensure staff have attended introductory training followed by a minimum of 3 yearly refresher training. This interval should be reduced to annually in areas where syringe pumps

20 The NIPEC Quality Assurance (QA) Framework (2023) is available from: https://nipec.hscni.net/service/qa-doh-com-dev-and-ed-activity/

are not regularly used. Staff have a responsibility to ensure they access and maintain the required level of training to ensure they have the appropriate knowledge and skills to support safe management of a subcutaneous syringe pump.

Process for incident reporting and lessons learnt.

Regulated establishments should report any incidents adversely affecting the wellbeing of a patient to the Regulation and Quality Improvement Authority (RQIA) as per the legislation and guidance.

All organisations must have governance processes in place for reporting syringe pump incidents, the details of which should be included in all policies. Organisations will record this either manually or on an electronic incident recording system such as datix. All organisations must ensure staff follow the incident recording and reporting process for their care setting if an incident occurs. Staff should also contact local medical/clinical engineering departments for advice on how to investigate the incident correctly and send the syringe pump for repair/service.

Processes must be in place to ensure timely action is taken following an incident to maintain patient safety and any lessons learnt are shared with all relevant staff inside their organisation as soon as possible. They should also ensure any lessons learnt are shared at a regional level if appropriate.

Maintenance and servicing of the syringe pump

All policies should detail maintenance and servicing arrangements for syringe pumps, ensuring processes are in place to complete annual audits to monitor compliance as per manufacturers' recommendations.

Syringe pump maintenance:

Organisations must have systems in place to have all syringe pumps serviced regularly, at least annually whether they are used or not. Any service arrangements will be carried out and guided by medical/clinical engineers.

If there is any doubt as to the functional operation of the syringe pump whilst in use it must be sent for maintenance checks immediately with a decontamination certificate. For example, if it has been dropped, suffered fluid ingress or if fluid has accidently been spilt on it such as it being dropped in a bath.

Maintenance and servicing for syringe pumps is often supported by medical/clinical engineers. Processes must be in place to ensure guidance provided by the medical/clinical engineer is detailed within local policies. It is important that manufacturers' recommendations are observed and the rational for any deviation from these are included in local policies.

Purchasing new syringe pumps

The 'Northern Ireland regional syringe pumps, guidance and education group' recognise the use of numerous syringe pump models by different organisations reduces patient safety and increases the risk of human error as staff often work across organisational boundaries. All organisations should be aware of the role of the Medicines and Healthcare products Regulatory Agency[21] (MHRA) and the National Patient Safety Agency[22] (NPSA). In particular they should be mindful of the Rapid Response Report that was issued on 16th December 2010 (see Appendix 11) and the Review of the action set out in 'Safer Ambulatory Syringe Drivers (2018).[23]

Before purchasing new syringe pumps organisations should consider what model of syringe pump is used by other organisations regionally and seek advice from organisational medical/clinical engineers. All organisations should consider a regional approach to purchasing any new syringe pump and should seek to raise any issues through organisational governance structures and any relevant regional clinical forums such as the Palliative Care in Partnership Clinical Engagement Group. Independent providers should also seek advice from contract arrangements.

All organisations have a responsibility to ensure all CSCI syringe pumps meet the required Medicines and Healthcare products Regulatory Agency standards.

21 Medicines and Healthcare products Regulatory Agency - GOV.UK
22 About the NPSA - NPSA
23 Review of the action set out in 'Safer Ambulatory Syringe Drivers' (2018) available at: https://assets.publishing.service.gov.uk/media/5bf5518f40f0b60766b0feb5/dhsc-review-of-syringe-driver-safety-actions.pdf

Adverse incidents and hazard warning notifications

Role of the Medicines and Healthcare products Regulatory Agency (MHRA) and Northern Ireland Adverse Incident Centre (NIAIC).

MHRA and NIAIC have responsibility for ensuring that medicines and medical devices are effective and acceptably safe. MHRA asks healthcare workers, carers, patients, and members of the public to report adverse incidents involving medical devices in Northern Ireland to NIAIC. When a medical device is suspected or known to be faulty, NIAIC will work with manufacturers and distributors to consider the most appropriate and timely action to take.

Organisations must be aware of how to report adverse events or incidents to NIAIC[24] if there is an incident involving a syringe pump.

24 Guidance on reporting adverse incidents to NIAIC: https://www.health-ni.gov.uk/articles/reporting-adverse-incident

Appendices

HSC Health and Social Care

Appendix 1

Information leaflet for patients and carers

✔ DO

DO contact your nurse if the syringe pump is dropped or the alarm sounds, they will give further advice. This is important as it may mean the pump is not working properly. Any adjustments to the syringe pump will be made by your community nurse, hospital, hospice, or care home staff nurse.

DO keep the syringe pump and the infusion site (area where the plastic tube goes into the skin) dry. If the infusion site does get wet, gently pat the skin dry and inform your nurse.

DO inform your nurse if the site becomes red and irritated or if the syringe pump is dropped.

DO inform your nurse if you have any hospital appointments, procedures or scans.

✖ DO NOT

DO NOT tamper with the syringe or the syringe pump when it is running.

DO NOT touch any of the buttons on the screen as this might result in you receiving too much or too little medication or none at all.

DO NOT expose the syringe pump to direct sunlight or heat as this can damage the screen on the syringe pump or cause some medications to be less effective.

DO NOT put the syringe pump next to your mobile phone or store together in the carry case/ bag/ or near any gadgets that you know are magnetic.

DO NOT take your syringe pump into the bath or shower as it will not work if it gets wet. Your nurse will discuss this with you.

Who should I contact if I have any worries or questions?

District Nurse

Time Available .....
Name .....
Phone Number .....

Out of Hours Contact

Time Available .....
Name .....
Phone Number .....

GP

Time Available .....
Name .....
Phone Number .....

Hospice/Palliative Care Nurse

Time Available .....
Name .....
Phone Number .....

Hospital/Ward Nurse

Time Available .....
Name .....
Phone Number .....

If you no longer need your syringe pump it is important to return it to:

Nurse .....

Location .....

Printed May 2024. To be reviewed 2029.

HSC Health and Social Care

A Syringe Pump Guide for Patients and Carers

This leaflet answers some common questions about a syringe pump.

It provides general guidance. However, for any concerns or queries you should talk to a health care professional e.g. your District Nurse, Ward Nurse, GP or Pharmacist.

What is a syringe pump?

The syringe pump is a small, portable battery-controlled device that can be carried in a pouch, in your pocket or placed near you if you are in bed. The syringe pump is fitted with a syringe that gives you medication through a plastic tube just under the skin. This allows the medication to be absorbed and delivered slowly into the bloodstream.

The syringe pump delivers medication over 24 hours. The medication in your syringe pump will be replaced by a nurse each day.

Why do I need to have my medication given through a syringe pump?

Your Doctor, Nurse or Pharmacist will discuss with you the reason(s) for having some of your medication through a syringe pump. They will provide advice on the medication required and how long you may need the pump. The pump:

- ensures you receive a regular and even amount of your medications.
- helps to reduce the need for repeated injections into your skin. You may still need additional injections if your symptoms are not well controlled.
- helps with symptoms such as pain, shortness of breath, sickness and anxiety.
- helps if you have difficulty swallowing oral medication.

Which professional will look after my syringe pump?

The medication in the syringe will be changed each day by a registered nurse who will check that:

- the syringe pump is working properly.
- the area where the plastic tube goes into the skin is comfortable.
- the medication is helping and not causing any problems.
- the green light is flashing on the syringe pump.

If you are staying in a hospital, hospice or nursing care home:

- the nursing staff will check your syringe pump regularly.

If you are at home or in a residential care home:

- your community nurse will check your syringe pump at each visit.

How long will I need a syringe pump?

Some patients may only require medications via a syringe pump to control their symptoms for a limited period of time, others may need it for longer. Your syringe pump may be discontinued and your medication changed to an alternative route such as oral when your symptoms are controlled.

Can I go on holiday with my syringe pump?

If you are aiming to go on holiday, please speak to your nurse or doctor as some planning for your syringe pump will be required. This may take a few weeks to organise.

Appendix 2

A Quick Reference Guide: Prescribing a subcutaneous syringe pump (and subcutaneous PRN chart)

HSC Health and Social Care

How to check syringe pump medicine compatibilities

Combining injectable medications in a syringe for delivery via a syringe pump creates a new unlicensed product. **Not all medications will be compatible with each other**. Prescribers must ensure that medications prescribed for delivery via a syringe pump are compatible.

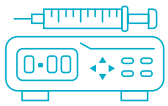
Free access medicines compatibility checker:
www.pallcare.info

If the required combination is not listed, please seek specialist advice. Options include splitting the medication between two syringe pumps or using alternative medications.

REMEMBER

- Maximum of 4 medications per syringe pump prescription.
- Prescribing typically compatible medications does not guarantee compatibility in every situation. All professionals should be able to undertake a simple syringe pump assessment.
- Seek specialist advice when needed (pharmacist or local Specialist Palliative Care Team).

How to choose a syringe pump diluent



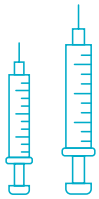
Sodium Chloride 0.9%

- Sodium chloride 0.9% is the diluent used routinely in Specialist Palliative Care practice in Northern Ireland. It is the preferred diluent to prevent inflammatory reactions at the skin infusion site.

REMEMBER

- Cyclizine is incompatible with sodium chloride 0.9%. If using cyclizine you must prescribe water for injection as the diluent or consider an alternative antiemetic.

Be aware of diluent volume

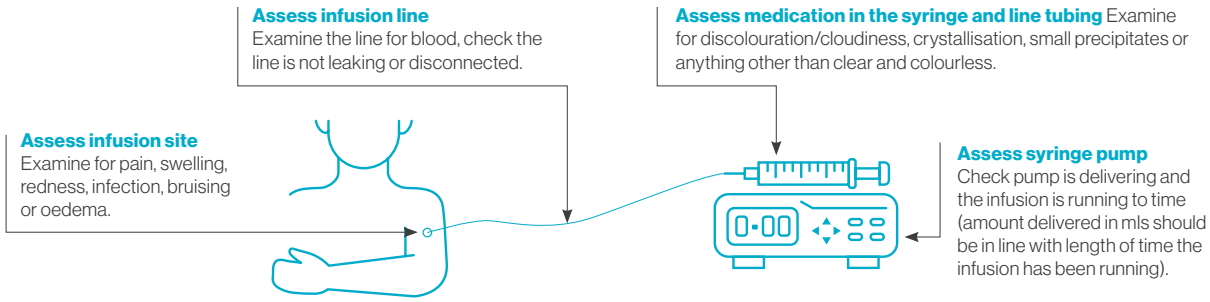


Prescribers **must not prescribe the size of the syringe used or the volume the medicines should be made up to**. For your information:

- If a 20ml syringe is being used, the maximum volume in the syringe is 18ml.
- If a 30ml syringe is being used, the maximum volume in the syringe is 23ml.
- If the medications prescribed do not fit a 30ml syringe, seek specialist advice (pharmacist or local Specialist Palliative Care Team). Options include splitting the medications between two syringe pumps or using alternative medications.

How to assess a syringe pump is functioning correctly

- All prescribers should be able to monitor the patient for syringe pump delivery, site absorption and medication compatibility issues.
- Prescribing typically compatible medications does not guarantee medication compatibility in every situation.

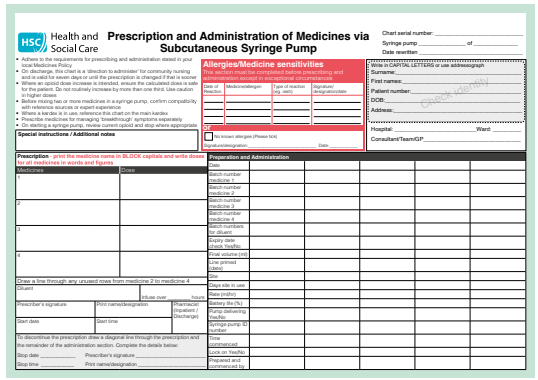


- If you find any problems, speak to the nursing team managing the syringe pump to try to resolve the issue and decide if you need further specialist advice.
- Please report incidents through local reporting systems.

How to prescribe syringe pumps at home or when a patient is being discharged home

WHEN A PATIENT IS AT HOME OR IS BEING DISCHARGED TO HOME FROM AN INPATIENT SETTING, YOU MUST PRESCRIBE ON PAPER CHARTS.

- Use the paper chart **'HSC Prescription and Administration of Medicine via Subcutaneous Syringe Pump'**.
- Print the medicine name in BLOCK capitals and write doses for all medicines in words and figures to ensure the intended dose is clear and unambiguous.
- When prescribing the supply of syringe pump medications **remember to order diluent** e.g. sodium chloride 0.9% in 10 ampoules.


Health and Social Care

Prescription and Administration of Medicines via Subcutaneous Syringe Pump

Chart serial number: _____
Syringe pump _____ of _____
Date rewritten: _____

Allergies/Medicine sensitivities
This section must be completed before prescribing and administration except in exceptional circumstances

Date of Reaction | Medicine/allergen | Type of reaction (eg. rash) | Signature/ designation/date

OR
☐ No known allergies (Please tick)
Signature/designation: _____ Date: _____

Write in CAPITAL LETTERS or use addressograph
Surname: _____
First names: _____
Patient number: _____
DOB: _____
Address: _____
Hospital: _____ Ward: _____
Consultant/Team/GP: _____

Special instructions / Additional notes

Prescription - print the medicine name in BLOCK capitals and write doses for all medicines in words and figures

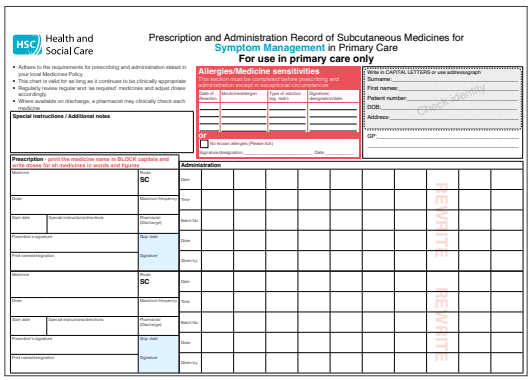
Medicines | Doses
1
2
3
4
Draw a line through any unused rows from medicine 2 to medicine 4
Diluent _____ Infuse over _____ hours
Prescriber's signature | Print name/designation | Pharmacist (Inpatient / Discharge)
Start date | Start time
To discontinue the prescription draw a diagonal line through the prescription and the remainder of the administration section. Complete the details below:
Stop date _____ Prescriber's signature _____
Stop time _____ Print name/designation _____

Preparation and Administration

Date
Batch number medicine 1
Batch number medicine 2
Batch number medicine 3
Batch number medicine 4
Batch numbers for diluent
Expiry date (Check Yes/No)
Dose volume (ml)
Line primed (date)
Site
Days site in use
Rate (ml/hr)
Battery life (%)
Pump delivering Yes/No
Syringe pump ID number
Flow commenced
Lock on Yes/No
Prepared and commenced by

Check identity

- Use the paper chart **'HSC Prescription and Administration Record of Subcutaneous Medicine for Symptom Management in Primary Care'**.
- Print the medicine name in BLOCK capitals and write doses for all medicines in words and figures to ensure the intended dose is clear and unambiguous.


Health and Social Care

Prescription and Administration Record of Subcutaneous Medicines for **Symptom Management** in Primary Care
For use in primary care only

Allergies/Medicine sensitivities
If the section must be completed before prescribing and administration except in exceptional circumstances

Date of Reaction | Medicine/allergen | Type of reaction (eg. rash) | Signature/ designation/date

OR
☐ No known allergies (Please tick)
Signature/designation: _____ Date: _____

Write in CAPITAL LETTERS or use addressograph
Surname: _____
First names: _____
Patient number: _____
DOB: _____
Address: _____
GP: _____

Special instructions / Additional notes

Prescription - print the medicine name in BLOCK capitals and write doses for all medicines in words and figures

Medicine | Route SC
Dose | Maximum frequency
Start date | Special instructions/directions | Pharmacist (Discharge)
Prescriber's signature | Stop date
Print name/designation | Signature

Medicine | Route SC
Dose | Maximum frequency
Start date | Special instructions/directions | Pharmacist (Discharge)
Prescriber's signature | Stop date
Print name/designation | Signature

Administration

Date
Time
Batch No.
Dose
Given by

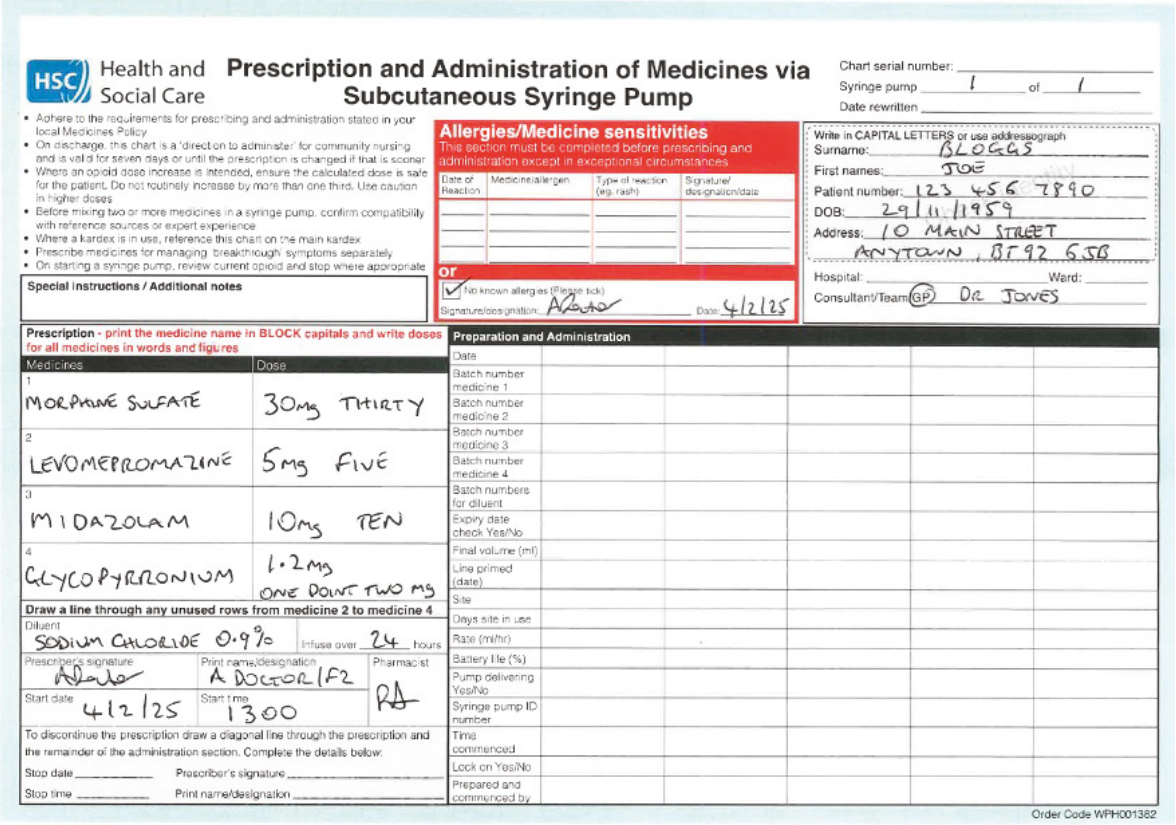
REMOVE

Check identity

How to prescribe syringe pumps at home or when a patient is being discharged home

EXAMPLES

Completed Syringe Pump Chart



Health and Social Care

Prescription and Administration of Medicines via Subcutaneous Syringe Pump

Chart serial number:
Syringe pump 1 of 1
Date rewritten

- Adhere to the requirements for prescribing and administration stated in your local Medicines Policy
- On discharge, this chart is a 'direction to administer' for community nursing and is valid for seven days or until the prescription is changed if that is sooner
- Where an opioid dose increase is intended, ensure the calculated dose is safe for the patient. Do not routinely increase by more than one third. Use caution in higher doses
- Before mixing two or more medicines in a syringe pump, confirm compatibility with reference sources or expert experience
- Where a kardex is in use, reference this chart on the main kardex
- Prescribe medicines for managing 'breakthrough' symptoms separately
- On starting a syringe pump, review current opioid and stop where appropriate

Special instructions / Additional notes

Allergies/Medicine sensitivities
This section must be completed before prescribing and administration except in exceptional circumstances

Date of Reaction	Medicine/allergen	Type of reaction (eg. rash)	Signature/ designation/date

or
☑ No known allergies (Please tick)
Signature/designation: A Doctor Date: 4/2/25

Write in CAPITAL LETTERS or use addressograph
Surname: BLOGGS
First names: JOE
Patient number: 123 456 7890
DOB: 29/11/1959
Address: 10 MAIN STREET ANYTOWN, BT92 6SB
Hospital: Ward:
Consultant/Team (GP): DR JONES

Prescription - print the medicine name in BLOCK capitals and write doses for all medicines in words and figures

	Medicines	Dose
1	MORPHINE SULFATE	30mg THIRTY
2	LEVOMEPROMAZINE	5mg FIVE
3	MIDAZOLAM	10mg TEN
4	GLYCOPYRRONIUM	1.2mg ONE POINT TWO MG

Draw a line through any unused rows from medicine 2 to medicine 4

Diluent: SODIUM CHLORIDE 0.9% Infuse over 24 hours
Prescriber's signature: A Doctor Print name/designation: A DOCTOR/F2 Pharmacist: RA
Start date: 4/2/25 Start time: 1300

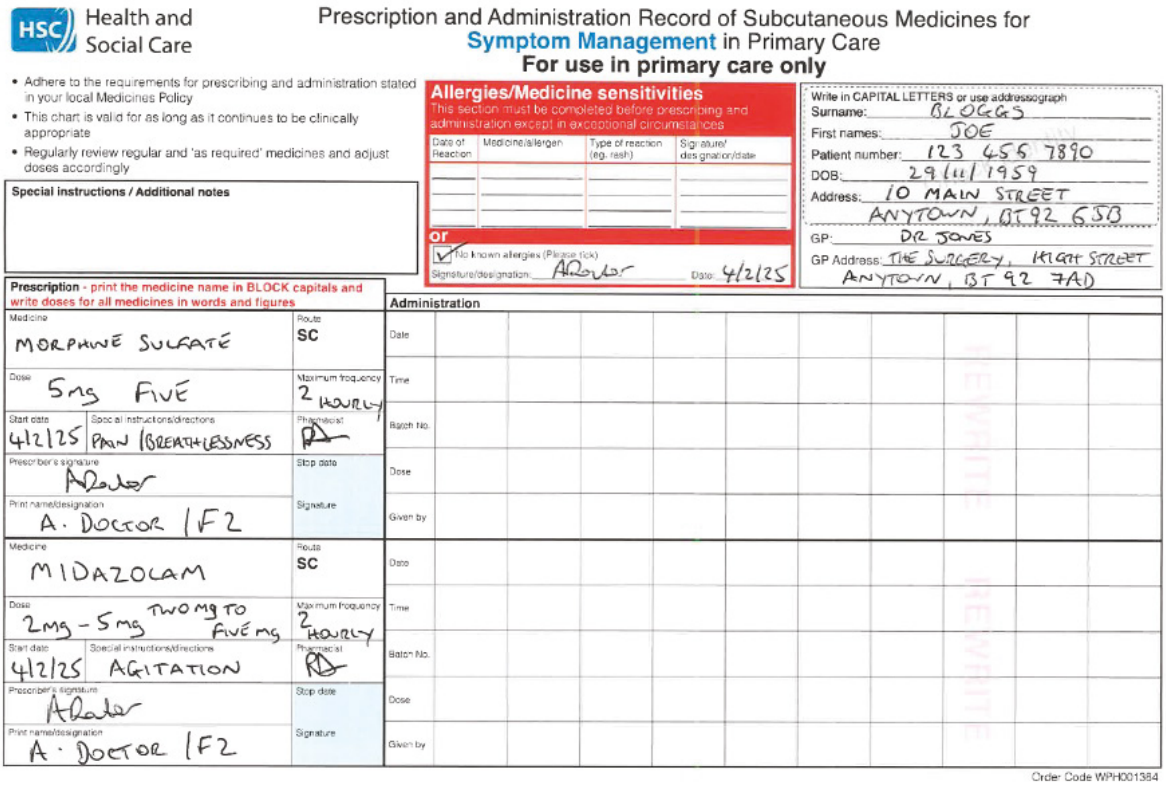
To discontinue the prescription draw a diagonal line through the prescription and the remainder of the administration section. Complete the details below:
Stop date Prescriber's signature
Stop time Print name/designation

Preparation and Administration

Date						
Batch number medicine 1						
Batch number medicine 2						
Batch number medicine 3						
Batch number medicine 4						
Batch numbers for diluent						
Expiry date check Yes/No						
Final volume (ml)						
Line primed (date)						
Site						
Days site in use						
Rate (ml/hr)						
Battery life (%)						
Pump delivering Yes/No						
Syringe pump ID number						
Time commenced						
Lock on Yes/No						
Prepared and commenced by						

Order Code WPH001382

Completed SC PRN Chart



Health and Social Care

Prescription and Administration Record of Subcutaneous Medicines for Symptom Management in Primary Care
For use in primary care only

- Adhere to the requirements for prescribing and administration stated in your local Medicines Policy
- This chart is valid for as long as it continues to be clinically appropriate
- Regularly review regular and 'as required' medicines and adjust doses accordingly

Special instructions / Additional notes

Allergies/Medicine sensitivities
This section must be completed before prescribing and administration except in exceptional circumstances

Date of Reaction	Medicine/allergen	Type of reaction (eg. rash)	Signature/ designation/date

or
☑ No known allergies (Please tick)
Signature/designation: A Doctor Date: 4/2/25

Write in CAPITAL LETTERS or use addressograph
Surname: BLOGGS
First names: JOE
Patient number: 123 456 7890
DOB: 29/11/1959
Address: 10 MAIN STREET ANYTOWN, BT92 6SB
GP: DR JONES
GP Address: THE SURGERY, HIGH STREET ANYTOWN, BT92 7AD

Prescription - print the medicine name in BLOCK capitals and write doses for all medicines in words and figures

	Medicine	Dose	Route	Maximum frequency	Start date	Special instructions/directions	Pharmacist	Prescriber's signature	Print name/designation	Stop date	Signature
1	MORPHINE SULFATE	5mg FIVE	SC	2 HOURLY	4/2/25	PAIN / BREATHLESSNESS	RA	A Doctor	A. DOCTOR / F2		
2	MIDAZOLAM	2mg – 5mg TWO MG TO FIVE MG	SC	2 HOURLY	4/2/25	AGITATION	RA	A Doctor	A. DOCTOR / F2		

Administration

Date											
Time											
Batch No.											
Dose											
Given by											
Date											
Time											
Batch No.											
Dose											
Given by											

Order Code WPH001384

Appendix 3

Supporting the use of medication via continuous subcutaneous infusion- use of PRN medications.

Anticipatory prescribing, breakthrough medication, as required (PRN) medication breakthrough pain, incident pain, and uncontrolled background pain are terms regularly used when prescribing for patients with a palliative condition.

Patients may still need additional short acting immediate release medication to treat intermittent symptoms even when they have a continuous subcutaneous infusion of medications in place.

Prescribing anticipatory and breakthrough medication will support the overall symptom management of the patient who requires medication via a continuous subcutaneous infusion to manage their symptoms.

Anticipatory prescribing

This is defined as prescribing 'as required' medicines as required (PRN) medicines for symptom control at the end of life, in advance of their need. It ensures medications that are most likely to be required by the patient to relieve symptoms, are available when the symptom occurs. This can reduce prescribing delays or difficulties accessing medication, especially during the out of hours period (Overview | Care of dying adults in the last days of life | Guidance | NICE).

Important to note:
A continuous subcutaneous infusion of medication should **NOT** be prescribed in an anticipatory method. Organisations should have a separate policy or provide information in an appendix of their syringe pump policy to guide appropriately trained professionals in relation to prescribing anticipatory PRN medications.

Just in case box

Some organisations may have processes in place for a 'Just in Case' box to be placed in a patient's home. This box contains anticipatory medicines that are given by injection to manage symptoms that a patient might develop towards the end of life. These medications support proactive management of medication availability as they will be kept in the patient's home in case they

are required.

Uncontrolled background pain

Background pain refers to a persistent level of pain which is experienced by the patient, it is usually managed with regular analgesia, often in a slow release format. Despite regular slow release analgesia the background pain may be uncontrolled and the patient may experience an intermittent exacerbation of pain. This may occur spontaneously or be triggered by a specific activity carried out by the patient, this is referred to as breakthrough pain **(Palliative Care Guidelines Plus pallcare.info)**.

While symptoms are not adequately controlled, patients will require doses of PRN medication to treat their symptoms. These should be accurately recorded and discussed with the prescriber as the number of PRNs required will help guide the titration of regularly prescribed medication.

Breakthrough pain

This is defined as “a transient exacerbation of pain that occurs either spontaneously, or in relation to a specific predictable or unpredictable trigger, despite relatively stable and adequately controlled background pain” **(Palliative Care Guidelines Plus pallcare.info)**.

PRN breakthrough medication

Breakthrough medication refers to the medication that is required to treat a patients symptoms when they experience an exacerbation of these. Breakthrough medication can be given alongside their long acting regular oral or CSCI medication. **(Palliative Care Guidelines Plus pallcare.info)**.

Appropriate records must be maintained of any authorisations, actions taken and by whom for example nurses should document the rationale for administering a PRN medication and review and document its benefits or side effects in the patients record.

A patient should have a proactive plan to manage the need for breakthrough pain and medication when a syringe pump is initiated. If the patient is symptomatic at the time of commencing the CSCI of medication, administration of a breakthrough dose of medication should be considered to ensure patient comfort.

Important to note:
PRN breakthrough medication will need to be adjusted if changes are made

to the 24hr prescribed medication dose in the CSCI.

Prescribing PRN breakthrough medication in hospital/hospice/care home

In hospital/hospice inpatient settings, PRN breakthrough medication must be prescribed in the 'As required medication' section of the Medicine Prescription and Administration Record, also referred to as the 'kardex'. In care homes there are variations in the prescription and administration record chart. To support standardisation and reduce the possibility of human error it is best practice that all organisations in the community seek to prescribe subcutaneous PRN breakthrough medications on the 'HSC Prescription and Administration Record of Subcutaneous Medicines for Symptom Management in Primary Care' chart.

Inpatient settings (where encompass has been introduced):

PRN breakthrough medications should be prescribed electronically alongside regular medications.

Prescribing breakthrough medication in primary care

In primary care breakthrough medications should be prescribed on the 'Prescription and Administration Record of Subcutaneous Medicines for Symptom Management in Primary Care' Chart.

Prescribing breakthrough opioid medications

If opioids are prescribed via a CSCI an appropriate PRN breakthrough dose of analgesia should also be prescribed. PRN Breakthrough analgesia is usually worked out as 1/6th of the total 24 hour opioid dose, but can also be given up to 1/10th of the total 24 hour opioid dose. A lower PRN breakthrough dose can be considered if the professional prescribing the medication is concerned about the risk of opioid toxicity, in particular if the patient is frail or elderly, has renal or liver impairment.

Checking PRN breakthrough medication in primary care/care homes

The nurse must consider the need for breakthrough medication when reviewing the patient, in particular when a CSCI syringe pump is being initiated for the first time or if there has been any delay in replenishing the syringe pump. In community/care home **only one nurse** is required to check PRN breakthrough medication.

If there is an incident or a safety concern in community it may be necessary to have a second nurse involved in drawing up and administrating PRN

breakthrough medication.This two-nurse process should only be initiated to support any nurse involved in an incident to regain competency by refreshing their knowledge and skills. Organisations should have a process in place to manage this risk.

This includes the preparation of the medication and checking:

- the prescription for accuracy.
- identity of the patient.
- the stock and expiry date of medication to be used including the diluent.
- the patients allergy status
- the dose and volume of medication in the syringe prior to administration.

The nurse must sign the administration record following administration of the medication.

Checking PRN breakthrough medication in hospital/ hospice

When reviewing the patient the nurse must consider the need for PRN breakthrough medication to maintain patient comfort. In particular when a syringe pump is being initiated for the first time or if there has been any delay in replenishing the medication in the syringe pump. In hospital/ hospice **two nurses** are required to check PRN breakthrough medication.

In some inpatient settings such as hospice there may be a policy in place to deem one nurse sufficient for this procedure. To maintain patient safety this must be risk assessed, regularly reviewed and the governance process clearly detailed in their organisational policy.

This includes the preparation of the medication and checking:

- the prescription for accuracy.
- identity of the patient.
- the stock and expiry date of medication to be used including the diluent.
- the patients allergy status
- the dose and volume of medication in the syringe prior to administration.

The two nurses must sign the administration record following administration of the medication.

Appendix 4.1 – Prescription and Administration of Medicine via Subcutaneous Syringe Pump Chart

HSC Health and Social Care

Prescription and Administration of Medicines via Subcutaneous Syringe Pump

Chart serial number: _____

Syringe pump _____ of _____

Date rewritten _____

- Adhere to the requirements for prescribing and administration stated in your local Medicines Policy
- On discharge, this chart is a 'direction to administer' for community nursing and is valid for seven days or until the prescription is changed if that is sooner
- Where an opioid dose increase is intended, ensure the calculated dose is safe for the patient. Do not routinely increase by more than one third. Use caution in higher doses
- Before mixing two or more medicines in a syringe pump, confirm compatibility with reference sources or expert experience
- Where a kardex is in use, reference this chart on the main kardex
- Prescribe medicines for managing 'breakthrough' symptoms separately
- On starting a syringe pump, review current opioid and stop where appropriate

Special instructions / Additional notes

Allergies/Medicine sensitivities

This section must be completed before prescribing and administration except in exceptional circumstances

Date of Reaction	Medicine/allergen	Type of reaction (eg. rash)	Signature/ designation/date

or

☐ No known allergies (Please tick)

Signature/designation:_____ Date:_____

Write in CAPITAL LETTERS or use addressograph

Surname:_____

First names:_____

Patient number:_____

DOB:_____

Address:_____

Check identity

Hospital: _____ Ward: _____

Consultant/Team/GP_____

Prescription - print the medicine name in BLOCK capitals and write doses for all medicines in words and figures

Medicines	Dose
1	
2	
3	
4	

Draw a line through any unused rows from medicine 2 to medicine 4

Diluent | Infuse over _____ hours

Prescriber's signature | Print name/designation | Pharmacist

Start date | Start time

To discontinue the prescription draw a diagonal line through the prescription and the remainder of the administration section. Complete the details below:

Stop date _____ Prescriber's signature _____

Stop time _____ Print name/designation _____

Preparation and Administration

Date					
Batch number medicine 1					
Batch number medicine 2					
Batch number medicine 3					
Batch number medicine 4					
Batch numbers for diluent					
Expiry date check Yes/No					
Final volume (ml)					
Line primed (date)					
Site					
Days site in use					
Rate (ml/hr)					
Battery life (%)					
Pump delivering Yes/No					
Syringe pump ID number					
Time commenced					
Lock on Yes/No					
Prepared and commenced by					

Order Code WPH001382

Codes for specific problems:

BL = bleeding
CC = colour change
P = pain
BR = bruising
L = leakage
R = redness
C = crystallisation
SW = swelling
OC = occlusion
O = other and specify

Where contents are discarded complete the following section according to organisational policy

Amount discarded (ml)	Date	Time	Signature 1	Signature 2

For patient transfer complete the section below. Record a monitoring check before and after transfer

Date	Time	Transferring from	Transferring to

Use addressograph-otherwise write in capitals

Surname:_____

First names:_____

Patient number:_____ DOB:_____

Address:_____

Hospital: _____ Ward: _____

Consultant/Team/GP_____

Monitoring checks (Checks to be completed according to organisational policy)

Date Year	Time	Rate (ml/hr)	Pump deliv-ering Yes/No	Volume (ml) to be infused (VTBI)	Volume (ml) infused (VI)	Battery life (%)	Solution checked Yes/No	Line checked Yes/No	Lock on Yes/No	Site checked Yes/No	Specific problems see codes or enter None	Signature

Monitoring checks (Checks to be completed according to organisational policy)

Date Year	Time	Rate (ml/hr)	Pump deliv-ering Yes/No	Volume (ml) to be infused (VTBI)	Volume (ml) infused (VI)	Battery life (%)	Solution checked Yes/No	Line checked Yes/No	Lock on Yes/No	Site checked Yes/No	Specific problems see codes or enter None	Signature

Appendix 4.2 – Continuation Record for Medicines via Subcutaneous Syringe Pump Chart (For Use in Primary Care Only)

HSC Health and Social Care

Continuation Record for Medicines via Subcutaneous Syringe Pump
For use in primary care only

- Adhere to the requirements for prescribing and administration stated in your local Medicines Policy
- Where an opioid dose increase is intended, ensure the calculated dose is safe for the patient. Do not routinely increase by more than one third. Use caution in higher doses
- Before mixing two or more medicines in a syringe pump, confirm compatibility with reference sources or expert experience
- Prescribe medicines for managing 'breakthrough' symptoms separately.

Prescription Chart Serial Number:

Continuation Record Number:

Use addressograph-otherwise write in capitals
Surname:
First names:
Patient number:
DOB:
Address:
GP:

Check prescription and administration chart for allergies/medicine sensitivities

Preparation and Administration							
Date							
Batch number medicine 1							
Batch number medicine 2							
Batch number medicine 3							
Batch number medicine 4							
Batch numbers for diluent							
Expiry date check Yes/No							
Final volume (ml)							
Line primed (date)							
Site							
Days site in use							
Rate (ml/hr)							
Battery life (%)							
Pump delivering Yes/No							
Syringe pump ID number							
Time commenced							
Lock on Yes/No							
Prepared and commenced by							

Order Code WPH001383

Codes for specific problems:

BL = bleeding
CC = colour change
P = pain
BR = bruising
L = leakage
R = redness
C = crystallisation
SW = swelling
OC = occlusion
O = other and specify

Where contents are discarded complete the following section according to organisational policy

Amount discarded (ml)	Date	Time	Signature 1	Signature 2

For patient transfer complete the section below. Record a monitoring check before and after transfer

Date	Time	Transferring from	Transferring to

Use addressograph-otherwise write in capitals
Surname:
First names:
Patient number:
DOB:
Address:
GP:

Monitoring checks (Checks to be completed according to organisational policy)

Date Year	Time	Rate (ml/hr)	Pump delivering Yes/No	Volume (ml) to be infused (VTBI)	Volume (ml) infused (VI)	Battery life (%)	Solution checked Yes/No	Line checked Yes/No	Lock on Yes/No	Site checked Yes/No	Specific problems see codes or enter None	Signature

Monitoring checks (Checks to be completed according to organisational policy)

Date Year	Time	Rate (ml/hr)	Pump delivering Yes/No	Volume (ml) to be infused (VTBI)	Volume (ml) infused (VI)	Battery life (%)	Solution checked Yes/No	Line checked Yes/No	Lock on Yes/No	Site checked Yes/No	Specific problems see codes or enter None	Signature

Appendix 4.3 – Prescription and Administration Record of Subcutaneous Medicines for Symptom Management in Primary Care Chart

Health and Social Care

Prescription and Administration Record of Subcutaneous Medicines for
Symptom Management in Primary Care
For use in primary care only

- Adhere to the requirements for prescribing and administration stated in your local Medicines Policy
- This chart is valid for as long as it continues to be clinically appropriate
- Regularly review regular and 'as required' medicines and adjust doses accordingly

Special instructions / Additional notes

Allergies/Medicine sensitivities
This section must be completed before prescribing and administration except in exceptional circumstances

Date of Reaction	Medicine/allergen	Type of reaction (eg. rash)	Signature/ designation/date

or

☐ No known allergies (Please tick)

Signature/designation:_____ Date:_____

Write in CAPITAL LETTERS or use addressograph

Surname:_____

First names:_____

Patient number:_____

DOB:_____

Address:_____

Check identity

GP:_____

GP Address:_____

Prescription - print the medicine name in BLOCK capitals and write doses for all medicines in words and figures

Administration

Date								REWRITE		
Time								REWRITE		
Batch No.								REWRITE		
Dose								REWRITE		
Given by								REWRITE		

Medicine — Route: **SC**

Dose — Maximum frequency

Start date — Special instructions/directions — Pharmacist

Prescriber's signature — Stop date

Print name/designation — Signature

Order Code WPH001384

Prescription - print the medicine name in BLOCK capitals and write doses for all medicines in words and figures

Administration

Date								REWRITE		
Time								REWRITE		
Batch No.								REWRITE		
Dose								REWRITE		
Given by								REWRITE		

Medicine — Route: **SC**

Dose — Maximum frequency

Start date — Special instructions/directions — Pharmacist

Prescriber's signature — Stop date

Print name/designation — Signature

Appendix 4.4 – Medicines Prescription and Administration Record

Adult Acute

Medicine Prescription and Administration Record

Record number of Kardexes in use: ___ of ___
Rewritten on (date): _____
Rewrite checked by: _____

Allergies / Medicine sensitivities

This section must be completed before prescribing and administration except in exceptional circumstances

Date of Reaction	Medicine/allergen	Type of reaction (eg. rash)	Signature/ designation/date

or

☐ No known allergies (Please tick)

Signature / Designation: Date:

Write in CAPITAL LETTERS or use addressograph

Surname: _____
First names: _____
Health and Care no: _____
DOB: _____

Hospital: _____ Ward: _____
Consultant: _____ Date of admission: _____

Date	Weight	Height	BSA

Risk factors that may require consideration for dose adjustment and medicine choice	☐ Renal impairment	☐ Hepatic impairment	☐ Pregnancy	☐ Breast feeding	☐ Other (please specify)
Signature:					
Date:					

Additional charts in use (tick each chart)

Other prescription charts in use must be referenced on the main prescription record. Attach all additional A4 charts to the Medicines Prescription and Administration Record. If a chart is no longer in use, put a line through the selected box below and date and sign it.

☐ SC Insulin ☐ IV Insulin ☐ Anticoagulant
☐ TDM (Therapeutic Drug Monitoring) eg. gentamicin, vancomycin ☐ SC syringe pump
☐ Fluid balance ☐ Chemotherapy ☐ Anaesthetic record
☐ PCA (Patient Controlled Analgesia) ☐ Epidural
☐ TPN ☐ Dietetic ☐ Other (please specify) _____

Medicines management section

☐ Medication history Source: _____ Signature: _____ Date: _____
☐ Patient's own drugs brought in ☐ Medication card required on discharge
☐ Monitored dosage system filled by: _____ Day of week: _____ Phone no: _____
☐ Medicines reconciled by pharmacist Signature: _____ Date: _____

Common abbreviations for routes of administration

Buccal	=	BUCC
Inhalations	=	INH
Intramuscular	=	IM
Intravenous	=	IV
Nasogastric	=	NG
Nebulised	=	NEB
Oral	=	PO
Per gastrostomy	=	PEG
Per rectum	=	PR
Subcutaneous	=	SC
Sublingual	=	SL
Topical	=	TOP
Transdermal	=	TD
Vaginal	=	PV

Abbreviations for frequency

Once daily	=	od
Twice daily	=	bd
Three times daily	=	tds or tid
Four times daily	=	qds or qid
Every morning	=	mane
Every night	=	nocte

Codes for recording omitted doses Review delayed or omitted doses at each medicine round

① = Nil by mouth
② = Patient refused
③ = Patient not available
④ = Route not available
⑤ = Vomiting
⑥ = Drug not available
⑦ = Other (Record on pg.13)
⑧ = Prescriber enters for each dose to be withheld

For guidelines on prescribing and administration refer to Trust Medicines Code

Additional notes on medicines

(For example, any medicines withheld on or during admission or discontinued must be specified here with medicine, dose, reason withheld and signature)

Oct 2019 Version 1.0

Appendix 5

Example Standard Operating Procedure for discontinuing a 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' in Care Home/ Patients Own Home (to be adapted for local used).

In the community setting it may be challenging to get a 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' discontinued in writing by the prescriber. A Standard Operating Procedure should be considered for use by all organisations to allow a registered nurse to discontinue the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' following verbal discussion with a prescriber.

Any standard operating procedure should adhere to these key principles;

- Every effort must be made to ensure the Prescription and Administration of Medicines via Subcutaneous Syringe Pump chart is discontinued by an available professional who has a prescribing qualification at the time a new prescription is written.
- If authorisation to discontinue the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' is only available verbally, for example, via the phone, a written record must be made in the patient/ residents health care record of the conversation with the prescriber and must include:
  - The name and role of the prescriber who authorised the medication to be discontinued including the rationale.
  - The patient/residents name and HCN.
  - The name of the medication.
  - The date and time.

- This should only be for a temporary period and should be countersigned by a suitably qualified prescriber as soon as possible. Each organisation should specify a suitable timeframe for the prescription to be countersigned by a prescriber for example, within 5 days of the new prescription being written.

Actions to take when discontinuing a 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' with verbal consent from a prescriber:

Patient has a syringe pump in place and requires the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' to be rewritten.

- The registered nurse will contact the prescriber to get the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' rewritten.
- The prescriber is unable to come to the patient's own home/care home to discontinue the current 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' in writing and rewrite the new prescription chart.
- The new 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' will be collected by the family, carer or a registered nurse from the G.P. surgery or out of hours centre and brought to the patient's own home/care home.
- The registered nurse will seek verbal permission from the prescriber to discontinue the current 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' when the new prescription chart is to be commenced.
- The registered nurse who has received verbal permission from the prescriber to discontinue the 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' via a phone call, will make a written record of their conversation with the prescriber in the patient/resident's notes including:

    - The name and role of the prescriber who authorised the medication to be discontinued.
    - The patient/residents name and HCN.
    - The name of the medication.
    - The date and time.

- The registered nurse will discontinue the old 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' by signing and dating the discontinue section on the prescription chart.
- The old 'Prescription and Administration of Medicines via Subcutaneous Syringe Pump Chart' must be filed in the patient's health care record following completion of the medical or non medical prescriber counter signature.

Appendix 6

Useful links

- Northern Ireland 2023 Guidance for management of symptoms in Adults in the last days of life (NB additional guidance for COVID-19 pls refer to COVID-19 section)
- NI Guidelines on converting doses of opioid analgesics for adult use. (2023).
- Community Pharmacy Network – Information for Health and Social Care Professionals.
- Community Pharmacy Palliative Care Network Information Leaflet.
- Palliative Care Matters Palliative Care Matters (pallcare.info)*
- Palliativedrugs.com – My account | Pharmaceutical Press* Requires a login to access
- Red Whale – Red Whale | Home | Medical Education for Primary Care* Requires a login to access
- Chester South Primary Care Network (CSPCN)- CSPCN – Chester South Primary Care Network
- Know, Check Ask (KCA)- Know Check Ask - DOH/HSCNI Strategic Planning and Performance Group (SPPG)
- Learning From Palliative Care: Prioritising patient safety when using syringe pumps- Learning from Palliative Care

Appendix 7

Risk assessment

Example

Risk assessment for use of a syringe pump without a lockbox

Delivery of subcutaneous medication (which may include controlled medicines) via a syringe pump without a lockbox.

Patient has a syringe pump insitu and it is not possible to use a lockbox due to:

- Size of syringe – Lockbox is not suitable for use with a 50ml syringe (where possible the syringe should be changed to a smaller syringe at the earliest opportunity).
- No lockbox available.
- Lockbox is too heavy for frail patient.
- The patient requiring multiple CSCI's
- The lockbox being too bulky for the patient.
- Patient declines lockbox.

Instructions

This document is intended to be used for assessing suitability of subcutaneous syringe pump usage with no lockbox.

The risk assessment process:

1. Identify reason why a lockbox is not to be used with a syringe pump.
2. Ensure the nurse in charge is informed and completes the risk assessment.
3. Ensure all staff are informed and the risk assessment is kept in the patients health care record.
4. Ensure regular review of risk assessment.

Completed risk assessments must be held within the ward or care setting to which it relates and must be brought to the attention of all relevant staff.

Department:		**Completed by:**
Date:	**Signature:**	**Review date:**

Hazard	Who might be harmed and how	Control measures in place	Current level of risk	Additional control measures required	Level of risk on completion	Action to be taken by	Date by which to be completed	Date completed and signature
Medication in syringe pump being consumed/ injected incorrectly or stopped accidentally	Patient or other persons because: **Patient** may interfere with syringe and pump **Family/ Carers** may interfere with syringe and pump and patient may receive incorrect dose of medication **Family/ Carers** may remove syringe with medication and consume contents **Staff** may inadvertently remove syringe and deliver incorrect dose of medication **Environment** – if the patient is a resident in a care home/ residential home – other patients may interfere with the syringe in the pump or consume contents of the syringe	Syringe pump should only be used without a lockbox when all options to use a lockbox have been exhausted Syringe pump should only be used without a lockbox when a full risk assessment has been completed by a registered nurse. Risk Assessment must be discussed with a line manager Band 6 (or similar) or above. The risk must be low and the line manger must agree it is safe to use the syringe pump without a lockbox Prescriber must be made aware (for information only) that the syringe pump is going to be used without a lockbox and the outcome of risk assessment discussed Risk of medication in syringe pump being consumed/ injected incorrectly or stopped accidentally must be considered and reviewed at each replenishment of medications in syringe.						

	Impact (Consequence) Levels				
Likelihood Scoring Descriptors	**Insignificant (1)**	**Minor (2)**	**Moderate (3)**	**Major (4)**	**Catastrophic (5)**
Almost Certain (5)	**Medium**	**Medium**	**High**	**Extreme**	**Extreme**
Likely (4)	**Low**	**Medium**	**Medium**	**High**	**Extreme**
Possible (3)	**Low**	**Low**	**Medium**	**High**	**Extreme**
Unlikely (2)	**Low**	**Low**	**Medium**	**High**	**High**
Rare (1)	**Low**	**Low**	**Medium**	**High**	**High**

Delivery of continuous subcutaneous infusion (CSCI) medication (which may include controlled medicines) via a syringe pump without a lockbox

Individual patient risk assessment

This assessment must be completed by a registered nurse and approved by a Band 6 (or similar) manager or above.

Patient name:	
Patient address:	
HCN:	
DOB:	

Information about the patient/ relatives/ other persons who might reasonably access a syringe if it was not in a lockbox:	

1.	Do any of the above have addiction/s to illicit substances?	YES/NO
2.	Do any of the above have a cognitive impairment and/or lack insight in relation to risks?	YES/NO
3.	Potential for diversion?	YES/NO
4.	Potential risk of self-harm?	YES/NO
5.	Any other reasonably foreseeable risks which might lead to harm?	YES/NO
Where the answer to any of the above is yes, this should exclude the above named patient from receiving medication from a CSCI which is not in a lockbox.		

Completed by name:

Signature: **Date:**

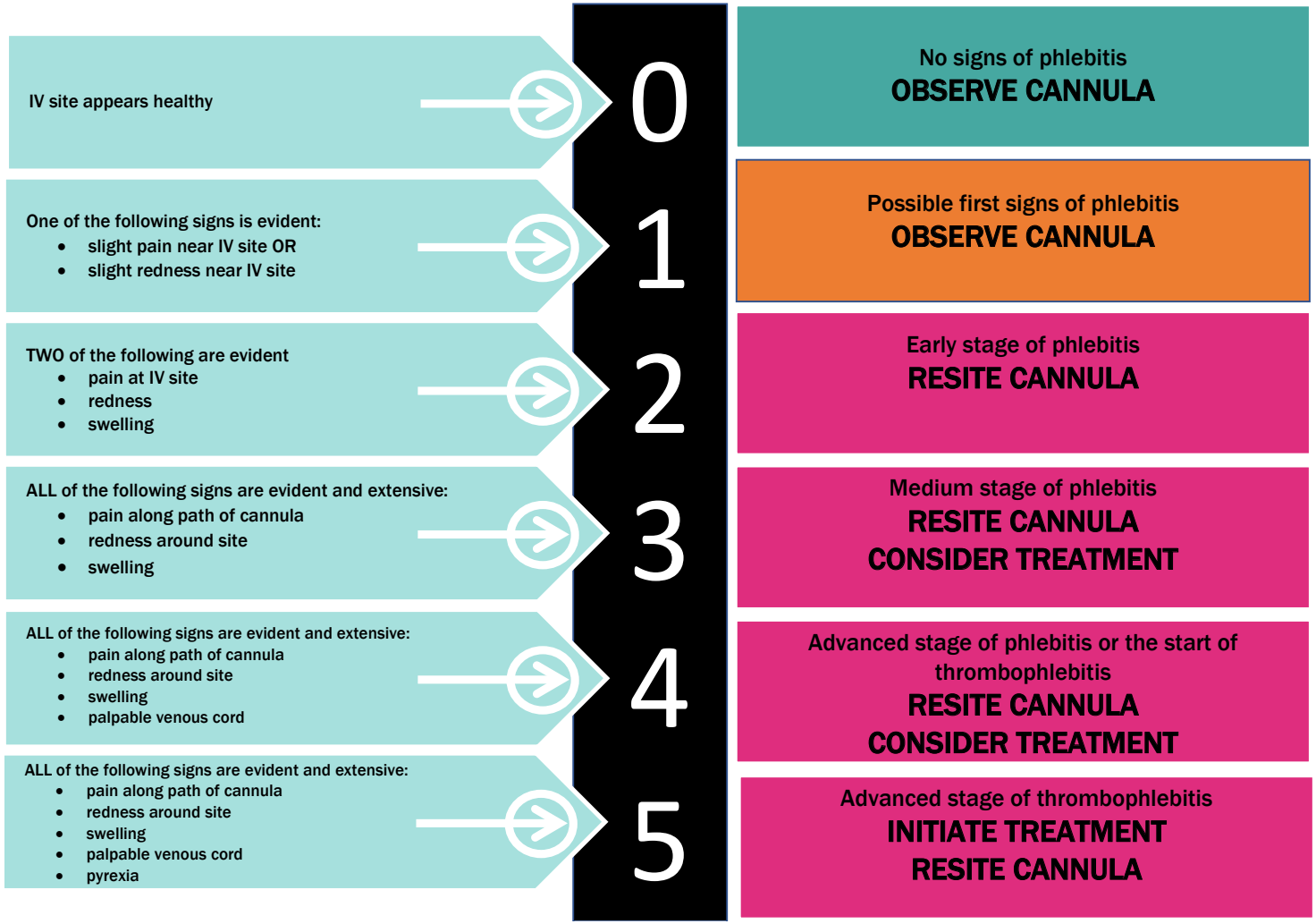
Approved by name:

Signature: **Date:**

Appendix 8

Visual Infusion Phlebitis Scale

Visual infusion phlebitis scale Source: Cited in RMH (2020) Original source: Jackson (1998) 'Infection control—a battle in vein: infusion phlebitis'. *Nursing Times*, 94(4), 68, 71.



Appendix 9

Audit tool for syringe pump infusion site

To meet recommendations as outlined in the Regional Guidance Document for Subcutaneous Syringe Pump Use in Adults, all organisations should carry out an audit twice annually of subcutaneous syringe pump infusion sites to maintain best practice and patient safety.

Audits to be completed twice yearly.
Documentation required to complete audits is included below:

- **Review of 5 health care records of patients with a syringe pump by Ward Nurse/Community Nurse/District Nurse**

  - Audits should be completed 6 monthly to provide assurance of compliance with organisation policy.
  - 5 patients with a syringe pump insitu should be randomly picked from a patient caseload.
  - Some care settings may not have 5 patients during the month of June or December with a syringe pump however they should seek to audit those patients with a syringe pump during another month throughout the year.

- **Audit outcome and action plan summary**

  - This document is to be used alongside organisational policy for subcutaneous syringe pump use to provide assurance of compliance and identify any gaps in knowledge and areas for action.
  - The details from this audit document should be shared with all relevant staff by the ward sister or charge nurse, district nurse etc.
  - The outcome from this audit document should be shared at organisational Governance Assurance meetings.

Completed forms to be saved as follows:

>Each organisation should add details of where completed forms are to be saved as evidence of good governance for service areas.

Syringe pump infusion site audit

Department / Facility / Ward:	
Date and time reviewed:	
Auditor Details	
Name:	**Job Title:**
Audit Date:	**Signature:**

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment
Documented evidence of Infusion line being labelled with removal date indicated (may not be applicable in some circumstances if patient has limited areas suitable for infusion)					
Documented evidence that Visual Infusion Phlebitis (VIP) score is being used to assess infusion site					
Documented evidence of the cannula being secured to the patient's skin					
Evidence of the cannula being rotated every 72 hours – (this time frame may be wavered for patients with poor site access)					

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment
Documented evidence of infusion site being observed for erythema, pain, swelling or redness every 4 hours for inpatient settings or at each visit from community nurse					
Did the infusion site become infected? – If yes; a) was this recorded in health care records? b) was there evidence of actions taken?					
Did the infusion site become inflamed? -If yes; a) was this recorded in health care records? b) was there evidence of actions taken?					
Where appropriate is there documented evidence of the cannula being re-sited when inflammation/ infection occurs?					

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment	Yes/No/N/A/ Comment
Evidence of Infusion line being replaced when the combination of medications is changed as this may be the cause of irritation at the infusion site.					
Evidence of safe storage of pumps.					
Evidence of battery check processes recorded accurately – weekly/ monthly as per organisations policy					
Evidence of tracking log of transfers recorded accurately					
Signature of Auditor					

Audit Outcome and Action Summary Plan – (Any areas of concern/ improvement should be identified in this document)

Name:	**Position / Job Title:**
Locality:	**Specialty / Service:**
Audit Title:	
Brief summary:	
Results: The audit standards were all achieved: Yes / No *(please circle)* Change in practice is required: Yes / No *(please circle)*	
Action: Please complete the action plan section overleaf if standards not achieved or change in practice is required	
Dissemination of results:	
Who needs to be aware of the audit results?	
If not yet informed, please address this in the action plan overleaf	
Approximate date for re-audit:	

Head of Service Signature:	
Name (printed):	
Date:	

Professional Lead Signature	
Name (printed):	Date
Date copied to Governance Manager	

Assurance meeting sign off (6 monthly)

Date of Assurance Meeting			
Impact of audit results (Risk):	**Do any of the following apply?** (please circle) See guidance table below	**Yes**	**No**

RISK: Moderate	Major	Catastrophic
• Repeated failure to meet internal professional standards or follow protocols • Challenging recommendations that can be addressed by action plan	• Repeated failure to meet regional/national standards • Repeated failure to meet professional standards or failure to meet statutory functions/ responsibilities • Critical report	• Gross failure to meet external/ national standards • Gross failure to meet professional standards or failure to meet statutory functions/ responsibilities • Severely Critical report

Post Audit Action Plan (if appropriate)

	Action	'Implement By' Date	Staff Member Responsible	Responsible Manager	Change Stage (see key)	
1						**Change Stage Key** 1. Agreed but not yet actioned 2. Action in progress 3. Partial implementation 4. Full implementation completed
2						
3						
4						

(Add additional rows to the action plan, if necessary)

Appendix 10

Regional competency document

Syringe Pump Competency Document

HSC Health and Social Care

Regional Syringe Pump Competency Document

Evidence of Supervised Practice

Published April 2025. To be revised 2028.

Evidence of Supervised Practice

Programme Title:	Syringe Pump Competency Document
Programme delivery type:	Virtual learning environment / face to face (delete as appropriate)
Certificate available:	Yes / No (delete as appropriate)
Name of supervisee	
PIN No: (if applicable)	
Job Title:	
Organisation:	
Area of practice	

This record of supervised practice should commence as soon as possible after completion of the level 2 syringe pump introductory training to consolidate learning and application to practice.

If competency is failed then a new episode of training and supervised practice must take place.

The Registrant should inform their line manager when competent on completion of competency-based workbook and supervised practice.

It is the responsibility of the registrant to undertake required update training, please refer to local policy for guidance.

PREPARATION

- Review regionally agreed Guidance Document for Subcutaneous Syringe Pump use in Adults.
- Review local policy on organisation intranet/policy library.
- Complete Level 2 - syringe pump introductory training.

OBSERVATION

Participants must arrange to observe the clinical skills, undertaken by a competent professional, in the clinical practice area prior to commencing their supervised practice. The number of occasions clinical skills must be observed by a competent professional should be agreed locally and detailed within organisational policy.

Observation	Date and signature of supervisor

All observed practice must comply with level 2 syringe pump training.

Competency Assessment

On all clinical occasions, the staff member must:	Date and signature of supervisor	Date and signature of supervisor	Date and signature of supervisor	Date and signature of supervisor	Date and signature of supervisor
Introduce themselves to the patient Explain the procedure, provide privacy Gain consent, either orally or written Wash their hands and wear the relevant PPE Ensure the patient is comfortable					

Core skills The staff must:		**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**
Preparation						
1	Reviewing equipment - Are there signs of damage? - Check configuration settings, service, date and time. - Is the pump clean? - Is the pump and infusion set compatible? - Ensure the correct battery compatibility for the pump is insitu (as per manufacturers instructions) - Demonstrate an awareness of what actions to take when a syringe pump is not working/is damaged					
2	Prepare the syringe with medication, as prescribed					

Core skills The staff must:		**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**
3	Attach a signed syringe label which has been dated - Two registered nurses (hospital) One registered nurse within the community setting					
4	Attach the infusion set and manually prime the line					
5	Ensure battery is in place or inserted (Device depending)					
6	Power on and observe pre-loading					
7	Check battery level (%)					
8	Load and confirm correct syringe					
9	Review data on screen (volume, duration and Rate) Confirm infusion programme summary screen - ensure pump delivery is 24 hours					
Initiating						
10	Recognise and choose the most appropriate sites for subcutaneous line placement and label the subcutaneous line					
11	Connect infusion set/cannula to patient					

Core skills The staff must:		**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**
12	Start infusion					
13	Check and confirm infusion is running					
Monitoring						
14	Check 30 minutes after infusion is commenced and then a minimum of 4 hourly monitoring for inpatient and 24hours in community					
15	Demonstrate how to use the lockbox					
16	Awareness of when to complete an individual patient review					
17	Check volume infused (VI)/ volume to be infused (VTBI) with infusion running					
18	Review pump data to ensure pump running correctly to time					
19	Check battery level with infusion running					
20	Activate keypad lock					

Core skills The staff must:		**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**
21	Check to ensure there are no kinks or occlusions within the infusion set. If any kinks or occlusions are identified and cannot be rectified then ensure the infusion and the infusion set are changed.					
22	Document as per local policy					
23	Recognise alerts and be able to take appropriate action once the alert is triggered.					
24	Recognise alarms and be able to take appropriate action once the alarm is activated.					
25	Know what to do in the event of an infusion error or device failure and know how to report an incident.					
Discontinuing						
26	Ensure the line has a sterile universal Luer-Lok™ cap applied prior to removal from pump to prevent the patient receiving a bolus dose of medication when removing syringe pump.					

Core skills The staff must:		**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**	**Date and signature of supervisor**
27	Deactivate keypad lock.					
28	Be able to correctly close down the device.					
29	Remove syringe from device and return barrel clamp to down position					
30	Based on device in use, correctly store with or without a battery in situ					
31	Clean and store the device as per local policy and procedures					
32	Undertake monitoring checks, completing calculations					

Statement of competence on completion of supervised practice:

[insert name] has been supervised as recorded above

[insert name of skill] in practice

Signature of supervisee **Date**

Signature of supervisor **Date**

Action plan if required

Issue/problem identified	Action agreed	Timescale	Outcome and signatures

Appendix 11

NHS National Patient Safety Rapid Response Report

NHS
National Patient Safety Agency

Rapid Response Report

NPSA/2010/RRR019

From reporting to learning — 16 December 2010

Safer ambulatory syringe drivers

Issue
Ambulatory syringe drivers are widely used in palliative care and for long term care in the community and in hospital. As a result they are often used to deliver opioids and other palliative care medication. Over-infusion of these medications can cause death through respiratory depression, while under-infusion can leave the patient in pain and distress.

While the majority of syringe drivers and pumps used in healthcare have rate settings in millilitres (ml), some older types of ambulatory syringe drivers have rate settings in millimetres (mm) of syringe plunger travel. This is not intuitive for many users and not easy to check. Errors include the wrong rate of infusion caused by inaccurate measurement of fluid length or miscalculation or incorrect rate setting of the device. Dose errors also occur because of different models using mm per hour or mm per 24 hours. Other issues include syringes becoming dislodged, inadequate device alarms and lack of internal memory (a technical issue which makes establishing the reason for any over or under-infusion difficult).

Evidence of harm
Between 1 January 2005 and 30 June 2010 the NPSA received reports of eight deaths and 167 non-fatal reports involving ambulatory syringe drivers. Four of the deaths were reported in 2009. Many of these incidents described infusions that had either run through much quicker than expected or had not infused at all.

Reducing the risk
Older types of ambulatory syringe drivers with rate settings in millimetres of syringe plunger travel have already been removed from the market in Australia and New Zealand. Some cancer centres and palliative medicine centres in the UK have replaced all their mm-calibrated ambulatory syringe drivers with ml-calibrated devices which include additional safer design features. Therefore a co-ordinated approach and timescale for the changeover will help to minimise additional risks arising from the introduction of safer equipment.

For IMMEDIATE ACTION by all organisations in the NHS and independent sector who use ambulatory syringe drivers. Deadline for ACTION COMPLETE is 16 December 2011.

An executive director, nominated by the chief executive, working with the clinical users, chief pharmacist, and procurement and equipment management personnel should by 16 December 2011:

1. Develop a purchasing for safety initiative that considers the following safety features before ambulatory syringe drivers are purchased:
    a) rate settings in millilitres (ml) per hour;
    b) mechanisms to stop infusion if the syringe is not properly and securely fitted;
    c) alarms that activate if the syringe is removed before the infusion is stopped;
    d) lock-box covers and/or lock out controlled by password;
    e) provision of internal log memory to record all pump events.
2. Agree an end date to complete the transition between existing ambulatory syringe drivers and ambulatory syringe drivers with additional safety features (as soon as locally feasible, and within five years of this RRR).
3. Take steps to reduce the risks of rate errors while older designs of ambulatory syringe drivers remain in use, based on a locally developed risk reduction plan which may include: raising awareness, providing information to support users with rate setting, and using lock-boxes.
4. Take steps to reduce the risks during any transition period when both types of design are in use, including:
    a) reviewing and updating policies and protocols to include the safe operation of all designs of ambulatory syringe driver in local use;
    b) revising user training programmes to include the safe operation of all designs of ambulatory syringe driver in local use.

NHS Evidence accredited provider
NHS Evidence - provided by NICE
www.evidence.nhs.uk

Further information
Supporting information on this RRR is available at www.npsa.nhs.uk/rrr. Further queries email rrr@npsa.nhs.uk or telephone 020 7927 9500. The NPSA has informed NHS organisations, the independent sector, commissioners, regulators and relevant professional bodies in **England and Wales.**

Gateway ref: 14877

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