



Guidelines to support the administration of subcutaneous fluids

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| Type of document | Standard Operating Procedure |
| Target audience | All community staff |
| Document purpose | These guidelines have been written to act as a guide in the decision making process. They are intended to support the nurses undertaking the procedure of commencing and maintaining subcutaneous infusions once the decision has been made to commence treatment. |

| Document consultation | | |
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| AMH – Wirral | N/A | |
| AMH – West | N/A | |
| AMH – East | N/A | |
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| LD services | N/A | |
| CCWC services | Yes | Deputy Director of Operations |
| Corporate services | Yes | Infection Prevention & Control Team |
| Staff side | Yes | District Nurses and Community Matrons |
| Other – | N/A | |
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| CWP documents to be read in conjunction with | HR6 IC1 GR29 CP3 | Mandatory Employee Learning (MEL) policy Infection Prevention and Control Policy Waste Management Policy Health records policy |
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| Training requirements | Yes - Training requirements for this policy are in accordance with the CWP Training Needs Analysis (TNA) |
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| Financial resource implications | No |
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Equality Impact Assessment (EIA)

| Initial assessment | Yes/No | Comments |
|---|--------|----------|
| Does this document affect one group less or more favourably than another on the basis of: | | |
| • Race | No | |

| Initial assessment | Yes/No | Comments |
|---|--------|----------|
| <ul style="list-style-type: none"> • Ethnic origins (including gypsies and travellers) • Nationality • Gender • Culture • Religion or belief • Sexual orientation including lesbian, gay and bisexual people • Age • Disability - learning disabilities, physical disability, sensory impairment and mental health problems | No | |
| Is there any evidence that some groups are affected differently? | No | |
| If you have identified potential discrimination, are there any exceptions valid, legal and/or justifiable? N/A | | |
| Is the impact of the document likely to be negative? | No | |
| • If so can the impact be avoided? | N/A | |
| • What alternatives are there to achieving the document without the impact? | N/A | |
| • Can we reduce the impact by taking different action? | N/A | |
| Where an adverse or negative impact on equality group(s) has been identified during the initial screening process a full EIA assessment should be conducted. | | |

If you have identified a potential discriminatory impact of this procedural document, please refer it to the human resource department together with any suggestions as to the action required to avoid / reduce this impact.

For advice in respect of answering the above questions, please contact the human resource department.

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| Was a full impact assessment required? | No | |
| What is the level of impact? | Low | |

Document change history

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| Changes made with rationale and impact on practice |
| 1. |

External references

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| References |
| <ol style="list-style-type: none"> 1. NHS Halton and St Helens. 2013. Administration of Subcutaneous fluids guidelines 2. Moriarty and Hudson, 2001. Hyperdermoclysis for rehydration in the community. Journal of community nursing, Vol.6, No. 9. 3. Oxford journals.2004. Using subcutaneous fluids to rehydrate older people: current practices and future challenges Vol.97, Issue 11. |

Monitoring compliance with the processes outlined within this document

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| Please state how this document will be monitored. If the document is linked to the NHSLA accreditation process, please complete the monitoring section below. | |
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1. Introduction

This guidance has been developed to highlight the need for a collaborative approach for district nurses and community matrons considering the administration of subcutaneous fluids; also to explore the complexity for the medical and ethical issues in the decision making process with the aim of improving nursing practice and patient outcomes. Due to the relative ease of setting up and administering subcutaneous fluids, the procedure can be carried out in the home by district nurses and community matrons or anyone who possesses the necessary knowledge and skills for safe practice. However, it should be noted that good practice suggests that decisions regarding artificial hydration should involve a multi-professional team, the patient, relatives and carers, but the senior doctor responsible for the care has ultimate responsibility for the decision.

2. Rationale

These guidelines have been written to act as a guide in the decision making process. They are intended to support the nurses undertaking the procedure of commencing and maintaining subcutaneous infusions once the decision has been made to commence treatment.

3. Objectives

These guidelines aim to make nurses aware of the following:

- The evidence base for practice, lifelong learning and professional self-regulation (Zeh 2002);
- Indication for the administration of subcutaneous fluids for patients;
- Ethical and medical considerations in the assessment of patients in which subcutaneous fluids may be considered an appropriate treatment;
- The method of administration of subcutaneous fluids. Ensure they are administered in a safe manner by appropriately, competent staff;
- Practitioners must always adhere to the NMC Code of Professional Conduct (NMC 2008) when considering matters of clinical judgement and professional accountability.

4. Target Group

District Nurses and Community Matrons involved in the care of patients requiring the administration of subcutaneous fluids.

5. Indications for administration of subcutaneous fluids

Dehydration can be a common problem in older people, both at home and in long term care settings. Acute problems and conditions such as mild infections, vomiting and diarrhoea and temporary confusion could all precipitate dehydration because an adequate fluid intake cannot be maintained. Subcutaneous hydration is **not** adequate to correct severe dehydration or electrolyte imbalance. If rehydration is considered essential, alternative methods should be considered.

Relatively small amounts of fluid are administered using this method, e.g. one litre of fluid in a 24 hour period and these can be infused continuously overnight.

Subcutaneous infusions should be used with extreme caution where there is history of cardiac/renal failure or in bleeding disorders in patients who have existing fluid overload and must be subjected to increase diagnostic monitoring.

Generally the following criteria should be met:

- Underlying physical condition is relatively good;
- The patient is willing to have parenteral hydration;
- The patient is experiencing symptoms, e.g. thirst, malaise, delirium, confusion for which dehydration seems the likely cause;
- Increased oral intake is not feasible or manageable;
- Anticipation that parenteral hydration will relieve the symptoms, e.g. in patients with severe dysphasia, vomiting and diarrhoea;
- The patient's relatives understand fully understand that the purpose of the procedure is to relieve symptoms and reduce distress but not to cure.

NB: It is advisable initially to set a provisional time limit for parenteral hydration, (GP to review patient every 24 - 48 hours) (hypodermoclysis) after which further assessment and discussion should be made by the multi-professional team.

5.1 Indications for the administration of subcutaneous fluids in palliative care

In palliative care, indications for the need for parenteral hydration should be symptom led and following discussion with the palliative care team. Dehydration can increase the risk of pressure ulcer formation. Research suggests that artificial hydration should only be used if the patient is in some way distressed and lack of fluid and other measures cannot correct symptoms, for example, drug alteration, hypercalcaemia correction and effective oral hygiene. The primary goal of any treatment in terminal care should be the comfort of the patient and the ethical basis of most clinical decision making is the assessment of the benefit.

There is little evidence that artificial hydration in dying patients influences either survival or symptom control. Dehydration is a common problem with patients in the terminal phase of an illness and is associated with many possible causes. One of the most difficult and uncomfortable symptoms is that of thirst. Drug therapy and medication can also lead to an altered thirst sensation.

6. Contraindications

Subcutaneous fluids should not be used to treat the following conditions:

- Shock;
- Severe dehydration;
- Cardiac failure;
- Pre-renal or renal failure;
- Low platelet or coagulation disorders;
- Existing fluid overload;
- Marked/pitting oedema;
- The patient requests not to have an invasive procedure;
- The sum of the burden of parenteral hydration outweighs the likely benefits;
- The patient is moribund for reasons other than dehydration.

If it is not in the patient's best interest, subcutaneous hydration should not be introduced simply to satisfy relatives / carers who insist that something must be done and communication to this effect must be documented.

NB: If the patient is alone and / or does not have regular family/carer support, it is not advisable to provide artificial hydrations.

The subcutaneous route is not suitable if any of the following apply:

- Skin which has been irradiated;
- Where there is evidence of existing rash;
- Peripheral limbs, e.g. below knee or elbow;
- Bony prominences;
- Lack of sub cut tissue;
- Lateral aspect of upper arm or thigh;
- Mastectomy sites;
- Oedematous tissue;
- Close to stoma or PEG site.

7. Suitable sites for infusion

- Abdomen;
- Chest (avoiding soft breast tissue);
- Lateral aspect of upper arm or thigh;
- Back, usually below shoulder blades (may be useful in confused patients).

Rotation of sites is recommended to minimise tissue damage.

8. Education and training

The organisation will provide training to all district nurses and community matrons who will be involved in the administration of subcutaneous fluids. It is the individual nurse's responsibility to constantly review competence and keep their knowledge and skills updated.

9. Suitable fluids

Sodium Chloride 0.9%

Other fluids may be prescribed, however Sodium Chloride would be the fluid of choice in the administration of subcutaneous fluids.

Note

The manufacturers of fluids for infusion are granted product licensing for the purpose of intravenous infusion only. Therefore the use of these sterile liquids for the purpose of subcutaneous infusion must be considered as an unlicensed procedure. This should be communicated to patients / relatives when gaining consent for the procedure. The medical prescriber must take full responsibility in relation to any adverse effects resulting from its use. The prescriber should complete a request for whom they are prescribing the supply of the specific infusion fluid and the name of the patient for whom they are prescribing the fluid as an unlicensed procedure. Also the prescriber needs to complete the drug administration sheet, giving details of the date the fluid is to be administered, the route and frequency and length of treatment.

10. Patient monitoring

Patients under the care of the district nursing teams and/or community matrons will have their needle site and infusion rate checked at each visit (and between one and three hours after commencing treatment). The infusion site should be checked for:

- Pain / tenderness;
- Redness;
- Inflammation / oedema;
- Leakage;
- Bleeding / bruising;
- Abscess formation;
- Fluid overload.

Patient's families / carers will be instructed by the nursing teams on how to monitor the needle site and what to do in the event on the needle becoming displaced.

The butterfly needle and site should be changed every 72 hours and the change recorded in the patient notes. The giving set should be changed every 72 hours or changed each time the fluids are administered if the infusion is not continuous.

The patient should be checked at each visit for signs of pulmonary oedema, e.g. dyspnoea and peripheral oedema. Signs often associated with pulmonary oedema could include:

- Extreme shortness of breath and difficulty breathing;
- A bubbly, wheezing, or gasping sound when trying to breath;
- Anxiety, restlessness or a sense of apprehension;
- A cough that produces frothy sputum that may be tinged with blood;
- Excessive sweating;
- A blue, grey or pale colouration to skin;
- A rapid irregular heartbeat or palpitations;
- Rapid weight gain and fluid retention;
- Loss of appetite;
- Fatigue;
- Headache;

- A severe drop in blood pressure;
- Ankle, leg and abdominal swelling.

If any of the above signs are observed, the infusion should be discontinued and a General Practitioner (GP) visit should be requested.

The patient should be monitored between one and three hours of the infusion commencing and then monitor for the next 24 hours. Subsequent visits are dependent on the infusion rate and infusion quantity.

11. Complications / side effects

Complications can occur at any time from hours following commencement to over three hours, dependent on the condition of the patient and the fluids infused.

Possible side effects of subcutaneous fluid infusion include generalised oedema, local oedema or local skin reaction; the needle should be removed and re-sited if any of these side effects occur.

12. Calculation / rate of subcutaneous infusion

As the fluid is infused by gravity, an electronic pump to regulate the flow/rate of administration is not required.

To set up a manually controlled drip accurately, the number of drops per minute needed to be given over a given time period should be calculated using the formula below:

$$\text{RATE} = \frac{\text{VOLUME (IN DROPS)}}{\text{TIME (IN MINUTES)}}$$

1. To calculate the volume in drops, it is necessary to know how many drops are contained within one millilitre (ml). This information should be available on the packaging of the administration set, e.g. *the 'Baxter EMC9608 solution administration sets advise that there are 20 drops per ml'*.
2. The total volume of infusion (in mls) to be given is then multiplied by the number of drops per ml to give the total number of drops.
3. To calculate the drop rate per minute, convert the hours into minutes by multiplying by 60 and divide this figure into the total number of drops obtained from (2) above (Hutton 1990)

Examples of calculations:

- a) For 1,000ml to be given over 12 hours

$$\frac{1000\text{mls (volume of infusion)} \times 20 \text{ drops}}{12 \text{ (hours)} \times 60 \text{ (minutes)}} = \frac{20,000}{720} = 28 \text{ drops per minute}$$

- b) For 1,000 ml to be given over 24 hours

$$\frac{1000\text{mls (volume of infusion)} \times 20 \text{ drops}}{24 \text{ (hours)} \times 60 \text{ (minutes)}} = \frac{20,000}{1440} = 14 \text{ drops per minute}$$

These calculations should be rounded up to the whole number and recorded in the patient's records.

13. Equipment required

- Sterile dressing pack with gloves and apron;
- 0.9% sodium chloride 1000L;
- Signed medication authorisation sheet;
- 21-25g butterfly needle infusion set;

- Baxter EMC9608 solution administration sets;
- Semi-permeable film dressing;
- Sharps bin;
- Drip hook;
- 70% Isopropyl Alcohol and 2% Chlorhexidine Gluconate wipes.

14. Guidelines for setting up infusion

| Action | Rationale |
|---|---|
| Wash and dry hands thoroughly or use alcohol based hand wash. This is an aseptic non touch technique (ANTT) procedure. | To comply with universal infection control precautions. |
| This procedure should only be carried out as part of a planned programme of care, following discussion with the patient's medical practitioner, the patient and their families/carers. | To ensure that all other options have been explored and the patient is suitable for this procedure to be carried out in the home. |
| All medications and fluids required for this procedure must be prescribed by the medical practitioner responsible for the patient's care. | To conform to NMC standards for the administration of medicines and to fulfil the legal requirements. |
| Prepare the patient and explain the procedure, including the risks and benefits. Evidence that this has been done must be documented in the patient's record. Consent or implied consent should be sought. | To obtain informed consent and co-operation of the patient. |
| Check the fluid to be administered with the signed prescription sheet. The prescription sheet must be signed together with the dose, infusion rate and route of administration. | To ensure correct type of fluid and quantity administered at correct rate. |
| Ensure all equipment is assembled. | To reduce undue anxiety to the patient and for ease of carrying out the procedure. |
| Prime the administration set and butterfly by ensuring roller clamp is closed, spike the bag of fluids with the administration set up to the first shoulder; Squeeze drip chamber and fill to marked line; open roller clamp to prime the administration set and butterfly needle until fluid appears at the end of the line and the butterfly needle. Check to ensure no large air bubbles are present in the line, run through until no bubble present. | To prevent the formation of air bubbles in the cannula. |
| Assess the patient for a suitable area, abdomen, chest or lateral aspects of upper arm, back or thigh. | To provide a comfortable and safe area for fluid absorption. |
| Ensure that the site is cleaned with 70% Isopropyl Alcohol and 2% Chlorhexidine Gluconate wipe. | To reduce the risk of site contamination. |
| Pinch the skin into a fold. Insert the butterfly needle into the chosen site at an angle of 45 ^o with the bevelled edge facing uppermost. | To promote patient comfort. |
| NB: If blood appears in the line on insertion of the butterfly needle, withdraw immediately and repeat the process. | To ensure that a blood vessel has not been compromised. |
| Coil the butterfly line and place a semi-permeable film dressing over the butterfly site. | To ensure the flow of fluids and security of the line. Also to protect the site from infection. |

| Action | Rationale |
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| <p>Ensure that the patient is comfortable. Inform the patient / carer what actions to take should any problems arise with either the infusion or the site, i.e. stop the infusion.</p> <p>Ensure that the patient / carer has contact details for day, evening and night community nursing services.</p> | To maintain patient's dignity and safety. |
| <p>Open roller clamp to initiate infusion and set the infusion at the prescribed rate using the examples of calculation as above.</p> <p>Record the date and time commenced in the patient records together with the batch number and expiry date of the fluid used.</p> | <p>To ensure fluid is administered in accordance with policy and prescription.</p> <p>To ensure patient safety.</p> |
| <p>Check the infusion site between one and three hours after commencing and then monitor for the next 24 hours.</p> <p>At each visit, check the site for:</p> <ul style="list-style-type: none"> • Local irritation; • Redness; • Tenderness; • Swelling; • Inflammation. <p>Fluid monitoring chart to be used.</p> <p>Re-site as necessary.</p> <p>Recorded in the patient record.</p> | <p>To ensure that any problems are identified quickly and dealt with promptly.</p> <p>To maintain patient comfort and dignity.</p> <p>Ensure adequate and safe absorption of the fluids.</p> |
| <p>The site should be changed at least every 72 hours and / or when complications occur.</p> <p>The site change and reason re re-siting must be recorded in the patient record.</p> | To minimise the risk of infection to ensure the safe administration of fluids |
| Administration sets must be changed at least every 72 hours and the change recorded in the patient records. | <p>To minimise the risk of infection.</p> <p>To comply with manufacturers guidelines.</p> |

15. Guidelines for removal of infusion

| Action | Rationale |
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| Wash and dry hands thoroughly or use alcohol based hand wash. This is an ANTT procedure. | To comply with universal infection control precautions. |
| Turn off the administration set by using roller clamp. | |
| Open dressing pack and remove semi-permeable dressing by using the inside of the bag within the dressing pack. | To minimise risk of infection. |
| Remove butterfly and place sterile gauze over the insertion site. | To minimise risk of infection. |
| Secure gauze with tape | |
| Discard butterfly in sharps bin. Remove administration set from bag, discharge fluid bag into normal household waste. Cut the line underneath drip chamber, discard excess line into household waste and drip chamber into sharps bin. | As per sharps policy |
| Wash and dry hands thoroughly or use alcohol based hand wash. | To comply with universal infection control precautions. |
| Document within nursing notes | |

16. Duties and responsibilities

16.1 Chief Executive

As accountable officer, the Chief Executive must ensure that responsibility to manage the risk is delegated to an appropriate executive lead, as outlined in the executive portfolios.

16.2 Medical Director

The Medical Director has responsibility to ensure the effective delivery of the Trust policy and procedures is considered, documented and implemented appropriately.

16.3 Director of Nursing, Therapies & Patient Partnership

Ensures the effective delivery of the Trust policy and that procedures for ensuring mechanisms for the delivery of subcutaneous fluid guidelines are in place.

Ensures that appropriate training is delivered to all identified staff with regard to the delivery of subcutaneous fluids.

16.4 Senior Health and Safety Advisor

- Ensuring that appropriate information is disseminated to nominated leads within each clinical service unit, with regard to medical devices;
- Receiving and sending all reports and reviewing and monitoring of all adverse incidents relating to medical devices to the external provider responsible for the management of CWP devices;
- Acting as the Trust's nominated Central Alerting System liaison officer (CAS);
- Disseminating Medicines and Healthcare Products Regulatory Agency (MHRA), National Patient Safety Agency (NPSA) information within the Trust;
- Disseminating all alerts issued by the Department of Health, Estates and Facilities Division, National Patient Safety Agency (NPSA), MHRA and any other external agencies relaying safety information.

16.5 Senior Managers (Clinical Directors, General Managers, Modern Matrons, Service Managers)

- Staff are aware of this policy and the processes and procedures within it;
- Where appropriate, ensuring the new guidelines are effectively implemented;
- Ensure that processes are in place to ensure regular checking that practitioners have participated in initial training and then two-yearly updates;
- Confirmation that staff attend CPR and anaphylaxis appropriate training;
- Ensure that staffs participate in regular audit with regard to the above guidelines.

16.6 Individual members of staff

- Attendance at appropriate CPR / anaphylaxis training sessions in accordance with mandatory training programme;
- Attend initial training in the delivery of subcutaneous fluids and then attend two-yearly updates;
- Ensuring the guidelines contained herein are adhered to and followed;
- Reporting any accidents, incidents and near misses in relation to the processes and procedures contained herein.

16.7 Learning and Development Services

- Review and respond to relevant training advice from the Safety and Security Lead regarding these guidelines and ensure appropriate standards of staff training are delivered;
- Ensure that training with regard to delivery of subcutaneous fluids is recorded on the Trust electronic system, any follow up of training is facilitated and numbers of individuals trained are reported to Workforce and Organisational Development Sub Committee (WODSC).

16.8 Clinical Governance Manager

- Will be responsible for ensuring that initial actions will be raised with ward / line managers for immediate action;
- Will be responsible for ensuring that audit results will be reported to Patient Safety and Effectiveness Sub Committee (PSESC) where any gaps / issues will be discussed / actioned.