SESLHD GUIDELINE COVER SHEET

NAME OF DOCUMENT	Subcutaneous Administration of 4% Glucose and 0.18% Sodium Chloride in the treatment of hypernatraemia and dehydration in **selected aged care patients with advanced dementia**
TYPE OF DOCUMENT	GUIDELINE
DOCUMENT NUMBER	SESLHDGL/069
DATE OF PUBLICATION	September 2020
RISK RATING	Low
LEVEL OF EVIDENCE	NSQHS 2020 “Clinical Governance Standard”, Comprehensive Care Standard” and “Communicating for Safety Standard”
REVIEW DATE	September 2025
FORMER REFERENCE(S)	N/A
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KEY TERMS	Hypernatraemia, hyperdermoclysis, dementia, subcutaneous route, dehydration
SUMMARY	This document is a guideline for the administration of Subcutaneous Administration of 4% Glucose and 0.18% Sodium Chloride in the treatment of hypernatraemia and dehydration in selected aged care patients with advanced dementia. The document provides a framework for Medical Officers, Nurse Practitioners and Registered Nurses to work within in order to maintain patient safety and optimal clinical outcomes.

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Subcutaneous Administration of 4% Glucose and 0.18% Sodium Chloride in the treatment of hypernatraemia and dehydration in selected aged care patients with advanced dementia

Section 1 – Patient Selection Criteria

The following criteria must be met for patients to be considered appropriate for administration of subcutaneous 4% glucose and 0.18% sodium chloride under this guideline:

- The patient has a diagnosis of advanced dementia
- The patient has a diagnosis of hypernatraemia and/ or dehydration
- Other treatment options have been explored and are not considered suitable for the patient
- The patient is under the care of a Geriatrician/Nurse Practitioner for the duration of the treatment

Section 2 – Background

The subcutaneous administration of 4% glucose and 0.18% sodium chloride may be indicated in the treatment of hypernatraemia and dehydration in **selected aged care patients with advanced dementia.**

The guideline is specifically targeted at treating hypernatraemia and dehydration in selected aged care patients with advanced dementia, and does not apply to patient's not meeting this criteria eg; patients receiving EOLC with dysphagia, reduced or no PO intake

While there is conflicting evidence within the literature regarding the efficacy of this treatment option, the subcutaneous administration of 4% glucose and 0.18% sodium chloride is considered to be safe and appropriate for selected aged care patients (including those with advanced dementia) and may be a useful option for patients who are agitated.

Consideration of this treatment option needs to be made in consultation with the family and/ or carer, who must consent to the treatment after careful consideration of the risks and benefits.

This guideline must be used in conjunction with the below procedures:

Palliative Care: administration of Adult Subcutaneous fluid

Subcutaneous Needle Insertion and Management

Safety When Working Offsite - Manual for Staff, Managers and Others involved in Working Offsite:

Work Health and Safety - Risk Management for Staff Working Off Site Procedure

Policy Statement

The purpose of this guideline is to provide clinical guidance and a framework to ensure the safe administration of subcutaneous 4% glucose and 0.18% sodium chloride to adult patients in a hospital, residential aged care or community setting.

EXCLUSION CRITERIA
Any patients regardless of age without a diagnosis of advanced dementia, dehydration and hypernatraemia

Section 3 - Principles

The subcutaneous administration of 4% glucose and 0.18% sodium chloride must be prescribed under the direction of a Geriatrician or suitably qualified Nurse Practitioner in accordance with the patient selection criteria outlined in Section 5. Appropriate consent must be obtained from the person responsible prior to the commencement of this treatment.

This treatment may be initiated in the following clinical environments:

- Hospital
- Residential Aged Care Facility (RACF)
- Private Residence (Community setting)

For administration in a RACF, appropriately skilled staff must be available at all times for the duration of the treatment.

For administration in a private residence, there must be a carer present at all times for the duration of the treatment.

EXCLUSION CRITERIA

Unavailability of Appropriately skilled staff member or carer at all times for the duration of the treatment

Subcutaneous fluid administration is contraindicated in the following instances:

- Poor skin integrity (e.g. scar tissue, infection, recent radiation)
- Anorexic or cachectic patients
- Presence of cardiovascular shock
- Fluid overload (e.g. pulmonary oedema, pleural effusion, generalised oedema in limbs)
- Cardiac failure
- Pulmonary oedema
- Hyperosmolarity

Section 4 - Definitions

Hypodermoclysis – Also called continuous subcutaneous infusion (CSCI), involves the administration of fluids and electrolytes into the subcutaneous layer of the skin where there is an extensive lymphatic and blood vessel system through which fluids can be absorbed. It is a technique used to treat mild to moderate dehydration (The Joanna Briggs Institute Recommended Practice). Hypodermoclysis (Older Adult). The Joanna Briggs Institute EBP Database, JBI@ovid.2017;JB12135)

Dementia - an acquired condition of the brain characterised by multiple cognitive impairments, severe enough to cause a decline in social or occupational function, and not better accounted for by delirium or depression (Australian and New Zealand Society for Geriatric Medicine 2017, Position Statement No 28, Dementia in Older People).

Subcutaneous route - The subcutaneous (SC) route is one of the most versatile routes of administration in that it can be used for both short term and very long term therapies. The injection of a drug or the implantation of a device beneath the surface of the skin is made in the loose interstitial tissues the anterior surface of the thigh, or the lower portion of the abdomen. The site of injection is usually rotated when injections are frequently given. (UNC Eshelman School of Pharmacy 2019/ The Pharmaceutics and Compounding Laboratory)

Hypernatraemia - An electrolyte imbalance consisting of a rise in serum sodium concentration. Hypernatraemia is defined as a serum sodium concentration of >145 mmol/L (normal serum sodium concentration is in the range of 135-145 mmol/L). Severe hypernatraemia has variously been defined as a serum sodium concentration of >152 mmol/L, >155 mmol/L, or >160 mmol/L; Hypernatraemia represents a deficit of water relative to sodium and can result from a number of causes, including free water losses, inadequate free water intake, and more rarely, sodium overload. Unlike hyponatraemia, hypernatraemia is always associated with serum hyperosmolality (BMJ Best Practice Ramin, J and Todd, S 12/2019)

Dehydration – Dehydration results from a decrease in total body water content either due to less intake or more fluid loss. Common symptoms of dehydration are dry mouth/ tongue, thirst, headache and lethargy (Shaheen N.A and Algahtani, A.A et al 2018)

Nurse Practitioner - A nurse practitioner is an advanced practice nurse endorsed by the NMBA who has direct clinical contact and practises within their scope under the legislatively protected title ‘nurse practitioner’ under the National Law; and therefore qualifies them to utilise the extensions to clinical practice including; prescribing, referral, diagnosis, initiation of diagnostics and discharge from care. (AHPRA, Nursing & Midwifery Board of Australia, 2016; NSW Health, Nurse Practitioners in NSW Policy Directive and Guideline)

Section 5 - Responsibilities

Medical Officers and Nurse Practitioners are responsible for:

- Identifying potential patients that may benefit from this treatment
- Obtaining informed consent from the patient's person responsible
- Prescribing 4% glucose and 0.18% sodium chloride for administration via the subcutaneous route
- Specifying follow up instructions to nursing staff and carers including frequency of pathology testing to monitor response to treatment
- Providing medical support for the duration of the treatment

Medical Officers or Nurse Practitioners will:

- Prescribe subcutaneous 4% glucose and 0.18% sodium chloride to be administered where appropriate (i.e. eMR, Adult IV fluid order form SMR120.003), relevant Community Medication Authorisation and Record or individual RACF prescribing procedures/databases)
- Liaise with nursing staff throughout treatment regarding the hydration management of the patient
- Provide for monitoring of electrolyte balance as appropriate for the patient

Nursing staff are responsible for:

- The safe administration of the prescribed subcutaneous 4% glucose and 0.18% sodium chloride as per the following cross references:

  SGH CLIN 170 Extended Community Care (ECC) Nursing Assessment Requirements in the ECC Setting

  PD2013_043 Medication Handling in NSW Public Health facilities

  NSW Ministry of Health PD2017_032 Clinical Procedure Safety

  NSW Ministry of Health PD2012_069 Health Care Records - Documentation and Management

  NSW Ministry of Health PD2017_013 Infection Prevention and Control

  SESLHDPR/422 Palliative Care: administration of Adult Subcutaneous Fluid:

SESLHDPR19-Subcutaneous Needle Insertion and Management

PD2016_058 User-applied Labelling of Injectable Medicines, Fluids and Lines

- Providing education and support to carers regarding monitoring requirements during treatment
- Monitoring patient for any signs of adverse reaction and escalating any concerns to the prescribing medical officer/nurse practitioner
- Facilitating follow up with the prescribing medical officer/nurse practitioner

Nursing staff will:

- Be familiar with the relevant policies and procedures referred to in this document prior to administering subcutaneous 4% glucose and 0.18% sodium chloride to patients
- Document all actions in the patient's medical record

Residential Aged Care Facility staff are responsible for:

- Ensuring that appropriately skilled staff are available to monitor the resident for the duration of the treatment
- The safe administration of the prescribed subcutaneous 4% dextrose and 0.18% sodium chloride as per individual facility policies/ guidelines.
- Monitoring the resident for any signs of adverse reaction and escalating any concerns to the prescribing medical officer/nurse practitioner
- Facilitating follow up with the prescribing medical officer/nurse practitioner

Section 6 – Administration

- Due to the nature of subcutaneous fluid administration and the slow infusion time, it is recommended that fluids be administered via gravity flow administration sets

- In clinical settings where infusion pumps are the preferred method infusion rates should not exceed 42mL/per hour - this would equate to 1 litre of fluid being administered over a 24hr period
SESLHDPR/422 Palliative Care: administration of Adult Subcutaneous Fluid:

- Fluid bags must be labelled with date and time of commencement and anticipated completion time. IV lines must also be labelled with appropriate sticker stating the subcutaneous route of administration (sticker will detail date and time the line was attached to the BD saf-T intima catheter)
User-applied Labelling of Injectable Medicines, Fluids and Lines
National Standard for User-applied Labelling of Injectable Medicines, Fluids and Lines

- For site selection and care, please refer to SESLHDPR19-Subcutaneous Needle Insertion and Management

Equipment

- 4% glucose and 0.18% sodium chloride fluid bag as per medical treatment order
- Sharps container
- BD saf-T intima for sub cut administration
- 2% Chlorhexidine Gluconate and 70% Isopropyl alcohol swabs
- Transparent dressing (e.g. Tegaderm IV)
- Appropriate infusion pump (if this is the preferred method over gravity)
- IV stand
- Appropriate intravenous giving set

Procedure

- Explain the procedure and obtain verbal consent as per NSW Ministry of Health PD2017_032 Clinical Procedure Safety
- This procedure requires the use of aseptic technique, as per NSW Ministry of Health PD2017_013 Infection Prevention and Control Check infusion fluid as per NSW Ministry of Health PD2013_043 Medication Handling in NSW Public Health facilities
- If required insert subcutaneous cannula as per SESLHNPD/19 Palliative Care - Subcutaneous Needle Insertion and Management. If using an existing cannula check date of insertion and site prior to administration of any fluid or medication
- Prime the infusion giving set using 4% glucose and 0.18% sodium chloride. Clamp line.
- Wipe subcutaneous port with 2% Chlorhexidine Gluconate v/v 70% Isopropyl Alcohol swab.
- Attach infusion giving set to the subcutaneous cannula using no touch technique.
- Secure line using the appropriate tape.
- Set infusion rate as per prescribed on medication chart/order

- Complete documentation as per NSW Ministry of Health PD2012_069 Health Care Records - Documentation and Management. Complete local documentation in community setting (e.g. patient notes at RACF).

Ongoing Management

- Monitor the infusion site for signs of infiltration or infection at least every 24hrs, and document V.I.P (Visual Infusion Phlebitis Score) in eMR or relevant clinical notes/document record. For example pain, swelling, redness and abdominal distension SESLHDPR/422 Palliative Care: administration of Adult Subcutaneous Fluid:

Symptom	Treatment
Swelling at infusion site, or abdominal distension (if subcutaneous cannula is sited in abdomen)	Contact prescriber to assess if patient is appropriate to continue with subcutaneous fluid replacement. Stop the infusion until the prescriber/team is contacted for directions. Observe for signs swelling is subsiding
Redness, pain, discharge	Contact prescribing medical officer to assess patient Reduce infusion rate by half If the reduced flow rate does not improve symptoms, change the subcutaneous cannula site Remove old subcutaneous needle Document assessment findings in the patient's medical record and nursing care plan

Section 7 - Ongoing Patient Assessment

- Attend at least every 24hrs as a minimum as applicable to the clinical environment eg; inpatient, home or RACF
- Monitor and document patient's pain utilising a validated non-verbal pain assessment tool such as the Abbey Pain Scale or PAINAD
- Monitor and document subcutaneous insertion site for signs of adverse reaction
- Monitor and document carer stress or concern
- Attend appropriate pathology testing to monitor patient's response to treatment as per prescribing medical officer/nurse practitioner
- Escalate any clinical concerns to the medical office/nurse practitioner for review
- Monitor and document patients response to treatment (observations should be monitored for signs of fluid overload and any concerns should be escalated to the medical officer)
- Document all observations and findings in eMR or relevant clinical notes/document record
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Section 8 - Expected Outcomes

- The hypernatraemia is expected to resolve within a reasonable time frame from the commencement of the subcutaneous infusion of 4% Glucose and 0.18% Sodium Chloride (eg 48hrs)

- The continuation of the treatment should be considered according to improvements in sodium levels in response to the subcut fluids after a 48hr period. If there have been no significant improvements in the hypernatraemia or clinical presentation of the patient, it is recommended for the prescribing Geriatrician to review continuation of the treatment

- If there is no clinical improvement and/or significant resolution of the hypernatraemia after 48hrs of treatment, discontinuation should be considered. Non-invasive comfort measures and/or palliation should be considered via discussion with prescribing geriatrician and patient's family

Section 9- Documentation

Inpatient and Community Setting

- All clinical notes and correspondence must be documented and uploaded into the Electronic Medical Record as per the NSW Health PD 2012 069 Health Care Records- Documentation and Management
- For community clients, a “Community Medication and Authorisation Record” (Document # SO168 02/2009) or equivalent to specific workplace must be completed by a Medical Officer and uploaded to EMR when the treatment has been completed

Residential Aged Care Facility Setting

- Clinical notes and medication charts must be completed according to each facilities’ guidelines and policies regarding documentation. Documentation for the episode should also be retained and uploaded to the Electronic Medical Record as per the NSW Health PD 2012 069 Health Care Records- Documentation and Management

Section 10- references

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Revision and Approval History

Date	Revision no:	Author and approval
May 2020	Draft	Draft for Comment
July 2020	Draft	Approved by Executive Sponsor
July 2020	Draft	Processed by Executive Services prior to submission to Quality Use of Medicines Committee
August 2020	Draft	Approved by the Quality Use of Medicines Committee
September 2020	Draft	Approved by Clinical and Quality Council Published by Executive Services