SODIUM CHLORIDE 0.9% Injection
Intravenous (IV) administration by Accredited Emergency Nurses for Circulation Support or Rehydration

POLICY STATEMENT

This order may only be activated under the specific circumstances set out in the section “Indications” and provided there are no contraindications present.

The administering nurse must be accredited to administer the drug and record the administration on the once only section of the medication chart or fluid chart. This order must be checked and signed by a medical officer within 24 hours, preferably within 4 hours, of activation of the standing order.

This standing order is only valid until the date noted by the Drug and Quality Use of Medicines Committee under the heading "Effective To:" at the end of this document.

1. NURSING ACCREDITATION REQUIREMENTS

Accredited Registered Nurses employed within SESLHD Emergency Departments (ED) who are working in an extended practice nurse or Advanced Clinical Nurse (ACN) capacity must have at least a minimum of two (2) years emergency / critical care experience and must be able to work at a minimum of resuscitation level or above (i.e. triage / clinical initiatives nurse) and/or as approved by the ED Nurse Manager.

2. INDICATIONS

Adult patients (16 years of age and over) able to tolerate intravenous fluids who present to SESLHD Emergency Department (ED) when circulatory support or rehydration via maintenance fluid is required. Sodium chloride 0.9% can be used as the vehicle for many parenteral drugs and as electrolyte replenishment for maintenance or replacement of deficits of extracellular fluid. It can also be used as a sterile irrigation medium.

3. CONTRAINDICATIONS

- Less than 16 years of age
- Congestive heart failure
- Severe renal impairment
- Conditions of sodium retention
- Oedema
- Liver cirrhosis
- Irrigation during electrosurgical procedures

4. PRECAUTIONS

- Do not use unless the solution is clear.
- The entire contents of the bag should be used promptly.
- Excessive administration of sodium chloride 0.9% causes hypernatraemia, resulting in dehydration of internal organs, hypokalaemia and acidosis.
- Monitoring of fluid, electrolyte and acid/ base balance may be necessary.
- Congestive heart failure and pulmonary oedema may be precipitated, particularly in patients with cardiovascular disease or those receiving corticosteroids, corticotrophin or other drugs that may give rise to sodium retention.
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- Sodium chloride 0.9% should be administered with care to patients with hypertension, peripheral or pulmonary oedema, hypoproteinaemia, impaired renal function, urinary tract obstruction, pre-eclampsia and very young or elderly patients.
- Intravenous infusion during or immediately after surgery may result in sodium retention.
- Given that there is a possibility of systemic absorption of irrigation solutions, the same precautions apply.
- **Use in elderly.** For use in elderly, the dose should be based on individual patient assessment, including weight, fluid and electrolyte status and renal and cardiac function.

5. ACTIONS/MONITORING REQUIRED

**Pre administration:**
- A full set of vitals (heart rate, blood pressure, respiration rate, temperature, Glasgow Coma Scale (GCS) and pain score) must be taken prior to administration of Sodium Chloride 0.9%.
- Assessment of hydration status – i.e. observe for signs and symptoms of increased thirst, mild headache, fatigue, dry mucosa, dry skin, dark eyes, dark urine, decreased urine output, dizziness / light-headedness, hypotension and/or tachycardia.

**Documentation:**
- Document patient observations including the patient’s pain score on the ED Standard Adult General Observation (SAGO) Chart and/or electronically within Firstnet.
- The administering nurse must record the administration in ink on the Intravenous Fluid Orders Chart or electronic equivalent as an Emergency Department Standing Order (i.e. “ED-STO”) plus print and sign their name.
- The ED-STO drug order must be countersigned by the medical officer that subsequently assesses and treats the patient within 4 hours.
- The signatures of the administering nurse and nurse checking the medication must be clearly documented on the Intravenous Fluid Orders Chart or electronic equivalent and includes completing the date, time, drug, dose, route and time of administration sections.
- A strict fluid balance chart must be maintained to monitor the patient’s fluid input and output.
- The administering nurse must record in the patient’s progress notes the administration and effect of the intravenous fluid.
- Drugs must be checked and ordered according to hospital policy and adhering to the Ministry of Health Policy Medication Handling in NSW Public Health Facilities PD2013_043.

**Post administration:**
- Evaluate and document therapeutic response to rehydration via sodium chloride 0.9%
- **Re-assessment of hydration status within one hour of administration**
- Observe for signs of fluid overload - increasing shortness of breath / dyspnoea i.e. pulmonary oedema, respiratory failure.
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Senior medical review must be obtained if any of the following occur:
1. Respiratory rate less than 10 breaths a minute
2. SpO2 <92%
3. Systolic blood pressure <100mmHg
4. Heart rate <50 bpm
5. GCS < 14
6. Sedation score >1

- Notify a medical officer if patient meets PACE / Between The Flag criteria\(^2\) or contraindications
- Monitor for side effects and cease infusion if symptoms of adverse effects, interactions or overdose are observed

6. PROTOCOL/ADMINISTRATION GUIDELINES:

Caution: CHECK for allergies and/or contraindications

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sodium Chloride 0.9%</td>
<td>500-1000 mL</td>
<td>IV</td>
<td>Stat for circulation support</td>
</tr>
<tr>
<td>2. Sodium Chloride 0.9%</td>
<td>1000 mL</td>
<td>IV</td>
<td>125 mL/hour (over 8 hours) to maintain hydration</td>
</tr>
<tr>
<td>3. Sodium Chloride 0.9%</td>
<td>10 mL</td>
<td>IV</td>
<td>As required as a flush</td>
</tr>
</tbody>
</table>

7. POTENTIAL ADVERSE EFFECTS/INTERACTIONS:

- Excessive amounts of sodium chloride 0.9% may cause hypernatraemia, hypokalaemia and acidosis.
- Proper use of sodium chloride 0.9% as a vehicle for parenteral drugs or as an electrolyte replacement therapy is unlikely to result in adverse effects.
- Hypernatraemia rarely occurs with therapeutic doses of sodium chloride 0.9%, but may occur in excessive administration.
- A serious complication of this is dehydration of the brain causing somnolence and confusion, which may progress to convulsions, coma and ultimately respiratory failure and death.
- Pulmonary embolism or pneumonia may also result.
- Other symptoms include thirst, reduced salivation and lacrimation, fever, tachycardia, hypertension, headache, dizziness, restlessness, weakness and irritability.
- Infusion of excess sodium chloride 0.9% solution may cause fluid overload or electrolyte imbalance.
- Intravenous administration of solutions may cause local reactions including pain, vein irritation and thrombophlebitis.
- Extravasation of solution may cause tissue injury.
- If any adverse effects are observed during administration, discontinue infusion, evaluate the patient and institute appropriate supportive treatment.
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- Displaced catheters or drainage tubes can lead to irrigation or infiltration of unintended structures or cavities.
- Excessive volume or pressure during irrigation of closed cavities may result in distension or disruption of tissues.
- Inadvertent contamination from careless technique may transmit infection.
- Adverse effects resulting from irrigation of body cavities, tissues or indwelling catheters and tubes are usually avoidable when appropriate procedures are followed.

8. OVERDOSE
- Infusion of excess intravenous fluid may cause hypervolaemia and electrolyte imbalances.
- Excess sodium chloride in the body produces general gastrointestinal effects of nausea, vomiting, diarrhea and cramps.
- Salivation and lacrimation are reduced, while thirst and sweating are increased.
- Hypotension, tachycardia, renal failure, peripheral and pulmonary oedema and respiratory arrest may occur.
- CNS symptoms include headache, dizziness, restlessness, irritability, weakness, muscular twitching and rigidity, convulsions, coma and death.
- If any adverse effects are observed during administration, discontinue infusion, evaluate the patient and institute appropriate supportive treatment.

9. REFERENCES:


Ministry of Health Policy Medication Handling in NSW Public Health Facilities PD2013_043