Drug Guideline  Frusemide

Summary:  Frusemide is a short-acting sulfonamide loop diuretic

Approved by:  ICU Medical Director

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Replaces Existing Drug Guideline:  January 2009


1. Introduction:

Patient safety

The Aims / Expected Outcome of this drug guideline:

Frusemide will be administered safely and appropriately without any adverse side effects

Related Policies

• C3.00 Drug prescribing
• C3.01 Drug administration
• C3.01 Administration of IV Medications

2. Drug Guideline: Policy Statement

• All care provided within Liverpool Hospital will be in accordance with infection control, manual handling and minimisation and management of aggression guidelines.
• Medications are to be prescribed and signed by a medical officer/authorised nurse practitioner (NP) unless required during an emergency.
• All drugs administered during an emergency (under the direction of a medical officer/authorised nurse practitioner) are to be documented during the event, then prescribed and signed following the event.
• Medications are to be given at the time prescribed (as close to the time as is possible when multiple drugs require ‘same time’ administration and, when the nurse is caring for more than one patient, recognition is given to a possible short delay to administration – antibiotics and other lifesaving drugs are to be prioritised) and are to be signed by the administering nurse.
• Parenteral medication prescriptions and the drug are to be checked with a second registered or endorsed enrolled nurse prior to administration. The “rights of drug administration” must be followed: right: patient, drug, dose, route, administration, time, reason for the drug, documentation, education and evaluation/outcome.
• Adverse drug reactions are to be documented and reported to a medical officer.
Medication errors are to be reported using the hospital electronic reporting system: IIMS.
Guidelines are for adult patients unless otherwise stated

3. Guideline

Actions¹,²,³
- Frusemide is a loop diuretic.
- It inhibits sodium and chloride reabsorption primarily in the ascending loop of Henle and in the proximal and distal tubules. The inability to reabsorb salt therefore results in a higher osmolality and also decreases the kidney's ability to reabsorb water.
- The action on the distal tubule is independent of any inhibitory effect on carbonic anhydrase or aldosterone.

IV administration produces diuresis within 5 minutes and the effect lasts approximately 2 hours.

Indications¹
- Treatment of edema associated with congestive heart failure.
- Treatment of edema associated with cirrhosis of the liver and renal disease.
- Fluid overload with compromised renal function.
- Oliguria after correction of hypotension and hypovolaemia.
- Adjunctive use in pulmonary edema and cerebral oedema

Contraindications¹
- Hypersensitivity, sulphonamide hypersensitivity.
- Hypovolemia, hypotension and dehydration.
- Anuria

Precautions¹,³
- Electrolyte disturbances such as hypokalaemia, hyponatraemia must be corrected prior to administering frusemide. Careful monitoring of serum electrolytes is necessary during therapy as diuresis can cause electrolyte imbalance.
- Diuresis may cause dehydration, and blood volume reduction, close monitoring of fluid balance is necessary.
- Ototoxicity may occur with rapid administration of high doses of frusemide.
- Patients with allergy to sulfonamides may have crossover allergy to frusemide.

Significant interactions¹,³
- Use with aminoglycosides and certain cephalosporin's may increase the ototoxic and nephrotoxic potential of these antibiotics.
- Lithium levels must be monitored due to decreased renal clearance with frusemide therapy, which may increase the risk of lithium toxicity.
- When administering cardiac glycosides concurrently with frusemide, consider that hypokalemia and hypomagnesemia that may result from frusemide therapy can increase the sensitivity of the myocardium to digitalis.

Adverse effects¹,³
- Hypotension.
- Hypovolaemia.
- Electrolyte losses, especially potassium.
- Dysrhythmias.
- Ototoxicity with rapid infusion.
- Metabolic alkalosis.
- Increased serum levels of uric acid and attacks of gout.
Presentation
Frusemide 20mg in 2mL ampoules.
Frusemide 40mg in 4mL ampoules.
Frusemide 250mg in 25mL ampoules – never administer as a bolus.

Administrations Guidelines
Note:
• Intravenous bolus doses should be administered over 2 – 5 minutes and observe for a prompt diuresis.¹
• The maximal rate of an IV infusion should not exceed 4mg/minute (Ototoxicity may result, especially with high doses).

Cardiogenic Pulmonary Oedema¹
• Give 10 to 20mg frusemide as a slow IV bolus.
• The dose may be repeated after one hour, if required.
• If the patient takes regular frusemide, then the dosage should be given IV over 30 minutes.

Oedema secondary to renal failure ¹,⁴
• Give 20 to 40mg frusemide as a slow IV bolus.
• The same dose may be repeated 2 hours later or may be increased by 20 mg until desired response is achieved.

Clinical Considerations
• Rapid injection or infusion of frusemide has been associated with either reversible or irreversible hearing loss.
• Observe for a prompt diuresis post administration.
• A large diuresis may lead to hypovolaemia and hypotension.
• Solutions with a yellow colour should not be used.³

4. Performance Measures
All incidents are documented using the hospital electronic reporting system: IIMS and managed appropriately by the NUM and staff as directed.

5. References / Links
1. MIMS Online, CIAP: NSW Health Department, Copyright MIMS Australia Pty Ltd.

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