Drug Guideline

Summary: Dextran 40 is a plasma volume expander used in the management of hypovolaemic shock.

Approved by: ICU Medical Director

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Replaces Existing Drug Guideline: March 2004


1. Introduction:

The Aims / Expected Outcome of this drug guideline:

Dextran 40 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

Actions

• Dextran 40 is a glucose polymer that expands plasma volume, thus improving blood pressure. Due to the colloidal osmotic effect of dextran, fluid from the interstitial space will be drawn into the intravascular space causing an expansion of the current plasma volume. These effects may last between 24 – 72 hours.
• Its anti-thrombotic action is due to:
  ➢ Its antiplatelet activity resulting from the ability to reduce plasma von Willebrand's factor and cause a mild defect in platelet adhesion
  ➢ Its ability to cause defective fibrin polymerization and increase the lysability of clots
  ➢ Increased blood flow rates secondary to the ability to expand blood volume
• Dextran 40 may also have the advantage of improving the microcirculation independently of simple volume expansion. As a result, the slugging of blood occurring in shock syndromes may be minimized
• About 70% is excreted in urine within 24 hours.

Indications.

• Dextran 40 reduces blood viscosity and inhibits sludging or aggregation of red blood cells. It is used in the prophylaxis and treatment of postoperative thromboembolic disorders in surgical procedures associated with a high risk of thromboembolic complications.
• In conditions where improved circulatory flow is required.

Contraindications

• Hypersensitivity to dextran or corn products.
• Severe congestive cardiac failure, renal failure, liver failure.
• Hypervolemic conditions, pulmonary oedema.
• Severe bleeding disorders, acute haemorrhage.
• Patients requiring sodium restriction.
• Severe thrombocytopenia

Precautions

• Administer with care to patients with an increased risk of pulmonary oedema, congestive cardiac failure.
• Caution with chronic liver disease (bleeding disorders) and renal disease.
• The solution may crystallise when stored at low temperatures.
• Patients need to be closely monitored for hypersensitivity reaction

Significant interactions

• May interfere with blood typing, cross match and Rh determination – take these samples prior to administration of dextran.
• Administer as a dedicated infusion to avoid incompatibilities with other infusions.
• Interacts with abciximab (platelet aggregation inhibitor), and results in an increased risk of a bleeding episode.

Adverse effects

• Severe and fatal anaphylactic reaction (< 1%), including marked hypotension, nausea, dyspnoea, generalised urticaria and fever – observe closely during the initial commencement of infusion.
• Fluid overload, pulmonary oedema.
• Increased local bleeding in surgical wounds.
• Prolonged infusion may cause thrombophlebitis.
• May interfere with blood glucose analysis, yielding false high results.
• May cause acute renal failure. The mechanism of the effect is unclear but suggestions include an increase in plasma oncotic pressure that decreases filtration pressure in the glomerulus and hence decreases glomerular filtration rate, obstruction within the tubules, or a direct toxic effect on renal cells.

Presentation
Dextran 40: (10% dextran 40 in 5% Glucose or 0.9% Sodium Chloride.)

Administrations Guidelines
Dextran 40 is for administration by intravenous infusion only.

Thrombosis prevention – begin dextran during surgical procedure
• 500mL over 4-6 hours at the end of surgery. The dose is repeated as 500mL over 4 - 6 hours (125mL/hr – 85mL/hr) on the next day and subsequent alternate days for not more than 10 days.

Clinical Considerations
• Dextran may progressively affect oxygen-carrying capacity, coagulation factors and plasma proteins – and may overload the circulation. Thus dextran is contraindicated in severe cardiac and renal failure and with patients with bleeding disorders.
• Monitor CVP during administration and observe for evidence of pulmonary oedema.
• Monitor for evidence of anaphylactic response.
• Infusion should be ceased in the presence of oliguria or renal failure.
• Observe patient for signs of bleeding, oozing at puncture sites, check urinalysis.
• Blood specimens for typing and cross-match and for blood glucose levels need to be performed prior to the commencement of dextran.

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

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