HYPERTONIC SALINE provides a supranormal concentration of sodium and is generally given in a 3%, 7%, or 7.5% IV solution. The effect is to rapidly draw water from the interstitial space into the intravascular space, rapidly expanding the intravascular volume. Hypertonic saline may also decrease cellular swelling and improve myocardial contractility. If the animal has concurrent interstitial fluid deficits (dehydration), or a disease that results in free water loss (e.g. hyperthermia, diabetes, etc.), administration of hypertonic saline could result in severe hyperosmolality with neurologic complications. Because hypertonic crystalloid solution will leak into the interstitium in <1 hr, combining hypertonic saline with a colloid is recommended to offset the interstitial oedema resulting from interstitial extravasation.

Hyperosmolar solutions include hypertonic saline, Normosol-M® with 5% dextrose, or any isotonic fluid that has glucose or hypertonic saline added. Except for hypertonic saline, the hyperosmolar glucose-containing solutions are meant to be maintenance solutions used in animals in which fluids are not shifting rapidly from the vascular compartment to a third body fluid space. They are usually not used as volume replacement solutions.

Dehydrated adult cattle are administered 2 L of hypertonic saline (approximately 2400 mOsm/L; 8 times normal tonicity) into the jugular vein over 4 to 10 minutes. This will require a 12 g needle or long extension set to obtain an adequate flow rate. Have fresh water available for the animal to drink. If the cow doesn't drink within 5 minutes of hypertonic saline administration, tube cow with at least 5 gallons of water or hypotonic sodium containing electrolyte solutions. Hypertonic saline injection is a one-time deal, it should not be repeated or hypernatremia may result. Hypertonic saline (7.2%) NaCl) should not be administered faster than 1 ml/kg/min; if administered at too fast a rate there is hemodynamic collapse due to vasodilation and decreased cardiac contractility. If hypertonic saline is administered at too slow a rate then the osmotically driven free water shift does not occur and we might as well administer an isotonic crystalloid solution.

*Note fresh water should be available to the animal after hypertonic administration; within 5 mins the animal should drink. If it does not drink, pump 5 gallons of water into the rumen.*

HYPERTONIC CRYSTALLOIDS: For HORSES: Dose: 4 ml/kg, administered as rapidly as possible

Fluid: 5 or 7% saline.

Must be followed up with isotonic volume replacement.

SOURCES:

1. http://www.vet.ohio-state.edu/assets/courses/vm70016/equinefluid.pdf
2. http://www.merckmanuals.com/vet/emergency\_medicine\_and\_critical\_care/fluid\_therapy/the\_fluid\_resuscitation\_plan.html
3. http://veterinarycalendar.dvm360.com/critical-care-sick-cattle-practical-iv-therapy-proceedings?rel=canonical