Indications:

Patients who arrive to the STICU with an open abdomen after initial DCL for trauma (not sepsis or other emergency general surgical procedure).

Contraindications:

1. Serum sodium >160 mEq/L

Dosing:

1. 3% normal saline is infused at a rate of 30 cc/hr by peripheral line or central venous catheter. If phlebitis should occur, the infusion should be stopped and access to a larger peripheral vein or a central vein should be obtained.
2. This is the patient’s maintenance intravenous fluids and should not be titrated.
3. Resuscitation with crystalloid, colloid, or blood products should continue as dictated by the patient’s clinical picture.
4. HTS is discontinued as maintenance fluid replacement once the fascia is closed or 72 hours, whichever comes first.

Background:

The use of damage control laparotomy (DCL) in severely injured trauma patients to attenuate or avoid the “bloody vicious cycle” of acidosis, coagulopathy has been associated with improved survival. Unfortunately, failure to achieve fascial closure after DCL is not uncommon and carries a tremendous economic and morbidity burden. Failure to achieve early fascial closure (within the first 7 days) may result from intestinal and/or retroperitoneal edema, recurrent abdominal compartment syndrome, and continued coagulopathy, acidosis, or hypothermia. The open abdomen has multiple physiologic implications, including increased insensible losses, protein losses, and nutritional demands. The open abdomen also may result in significant morbidity, including, but not limited to incisional hernias, gastrointestinal fistulae, intraabdominal infections, anastomotic leakage, and sepsis/infections.

Extensive research from UTH has demonstrated that hypertonic saline (HTS) prevents and reverses resuscitation induced intestinal edema in rat models. HTS has also been shown to mitigate the systemic inflammatory response secondary to intestinal ischemia-reperfusion injury in rat models.

In the clinical setting, we have shown that replacing standard maintenance intravenous fluids (LR or NS @ 125-150 mL/hr) with HTS (3% NaCl @ 30 mL/hr) in patients undergoing damage control laparotomy for trauma limits intestinal edema, assists in dieresis, and results in early fascial closure.
References:


