

Rhabdomyolysis References

The order sets are constructed to be practical and reflect proven standards care based on best available evidence and or preference/ opinion of physicians in the OSF System.

Level of Evidence = LOE

A = Randomized prospective controlled trials (control and intervention group and enrolled prior to measured outcome)

B = Nonrandomized prospective trials

C = retrospective analyses

E = Expert opinion, guideline, consensus statement, textbook summary, articles that summarize

M = Meta-analyses

Q = Economic analyses

Some clinicians prefer to add mannitol (10 grams in 1 liter of 0.45% normal saline) to the intravenous fluid regimen as an agent to force a more rapid diuresis. A review of the literature reveals that its use in rhabdomyolysis is controversial (LOE C).

The original study (JF Eneas, 1979) included twenty patients treated with intravenous infusions of mannitol and sodium bicarbonate, with no controls. Nine responded with improved urine output and survival without requiring dialysis; the other eleven did not respond, requiring an average of 5.3 dialyses, and including one death.

A retrospective analysis (E Homsy, 1997) of 24 intensive care unit patients revealed no difference in outcome between the fifteen treated with normal saline, mannitol, and sodium bicarbonate and the nine treated with normal saline alone.

An animal study (RA Zager, 1991) suggested that the protective effect of mannitol is due solely to its diuretic effect, rather than other suggested protective effects.

In summary, there is a lack of evidence establishing mannitol as a necessary or standard therapy for the prevention of acute renal failure due to rhabdomyolysis; however, no studies were found demonstrating a harmful effect of using mannitol in doses below 200 grams per day. When used in studies, mannitol (10-25 grams per liter) has been added to the regimen only after correcting obvious volume deficits with intravenous crystalloid solutions.

There is a similar quality of data regarding the use of sodium bicarbonate; in particular, the majority of studies have administered mannitol and sodium bicarbonate in combination. **If sodium bicarbonate is used, the urine pH should be followed and kept above 7.0, and the serum ionized calcium should be monitored closely for decreases due to the chelating effects of bicarbonate.**

1. urine output > 300 cc/hr until myoglobinuria ceases (LOE=E)
2. urine pH – goal > 7.0 if alkalinizing (LOE=C)
3. urine myoglobin – if negative then stop alkalinization and decrease IVF (LOE=E)
4. serum CPK – continue IVF until CPK <1000 (LOE=E)
5. calcium – especially if alkalinization which can cause hypocalcemia
6. uric acid – can be elevated due to muscle breakdown (check initially)
7. serum HCO₃ – to monitor acid-base status
8. serum K – can be elevated in rhabdomyolysis

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