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# Rhabdomyolysis and secondary renal failure in critically ill surgical patients

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Lindsey S. Sharp M.D.<sup>a</sup> ... David V. Feliciano M.D.<sup>a</sup>

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## Abstract

### Background

Rhabdomyolysis accounts for up to 28% of the causes of posttraumatic acute renal failure requiring dialysis. Clinically significant rhabdomyolysis is poorly characterized biochemically and difficult to diagnose.

### Methods

A retrospective review of all surgical, trauma, burn, and pediatric surgical patients admitted to Grady Memorial Hospital in Atlanta, GA, from January 1995, through April 2002 was performed. Patients were screened for serum creatinine, base deficit, serum

creatinine kinase (CK)  $\geq 1,000$ , presence of myoglobinuria, or if they had a clinical diagnosis of rhabdomyolysis by an attending surgeon.

## Results

The sequential addition of admission laboratory values for serum creatinine  $\geq 1.5$  mg/dL (positive predictive value [PPV] = 33%), base deficit  $\geq 4$  (PPV = 52%), serum CK level  $\geq 5,000$  U/L (PPV = 80%), and myoglobinuria increases the ability to predict which patients will develop dialysis-requiring acute renal failure after an episode of rhabdomyolysis. Patients with maximum CK  $\geq 5,000$  are also at increased risk for persistent renal insufficiency (Cr  $\geq 2.0$  mg/dL).

## Conclusions

An algorithm for testing at-risk surgical patients was developed and may aid in the early diagnosis of clinically significant rhabdomyolysis.



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## Keywords

Acute renal failure; Myoglobinuria; Posttraumatic renal failure

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