

# Does timing of hydrocortisone initiation in septic shock protocol decrease a patient's levophed drip duration?

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## Introduction

Sepsis as defined clinically has a reported death rate in hospitalized patients ranging between 30-45%, thus sepsis irrespective of shock requires swift diagnosis for the further prevention of shock. It has been identified by the World Health Organization as a 'global health priority'. Based on guideline recommendations, treatment of sepsis should be initiated within 1 hour of hospital diagnosis because of the high mortality rate. The role of glucocorticoids in septic shock management has evolved since the 1900s. The research behind the administration of such is to restore the HPA axis from a state of adrenal insufficiency. Currently the use of glucocorticoids in the treatment of septic shock is considered a weak recommendation (2B) on the bases of low-quality available evidence and is administered on a case-by-case basis for refractory shock after IV fluids and vasopressors failed to restore hemodynamic stability. The goal of this study was to determine if timing of hydrocortisone initiation in septic shock decreased length of IV levophed drip duration.

## Hypothesis

Initiation of hydrocortisone at diagnosis of septic shock will decrease length of levophed duration.

## Methods

This was a retrospective, database study conducted in the medical, surgical and neurological intensive care units at Ascension Genesys Hospital in Grand Blanc Michigan. IRB approval was obtained August 13, 2019 from the institutional review board.

**Inclusion Criteria:** Patients admitted from July 2014 to July 2019 with the discharge diagnosis of septic shock with corresponding ICD-10 code were screened for the study. Patients must have received IV administration of vasopressor levophed and hydrocortisone.

Patients were divided into two groups, those who received hydrocortisone on the day of septic shock diagnosis and those with delayed administration of hydrocortisone (2+ days).

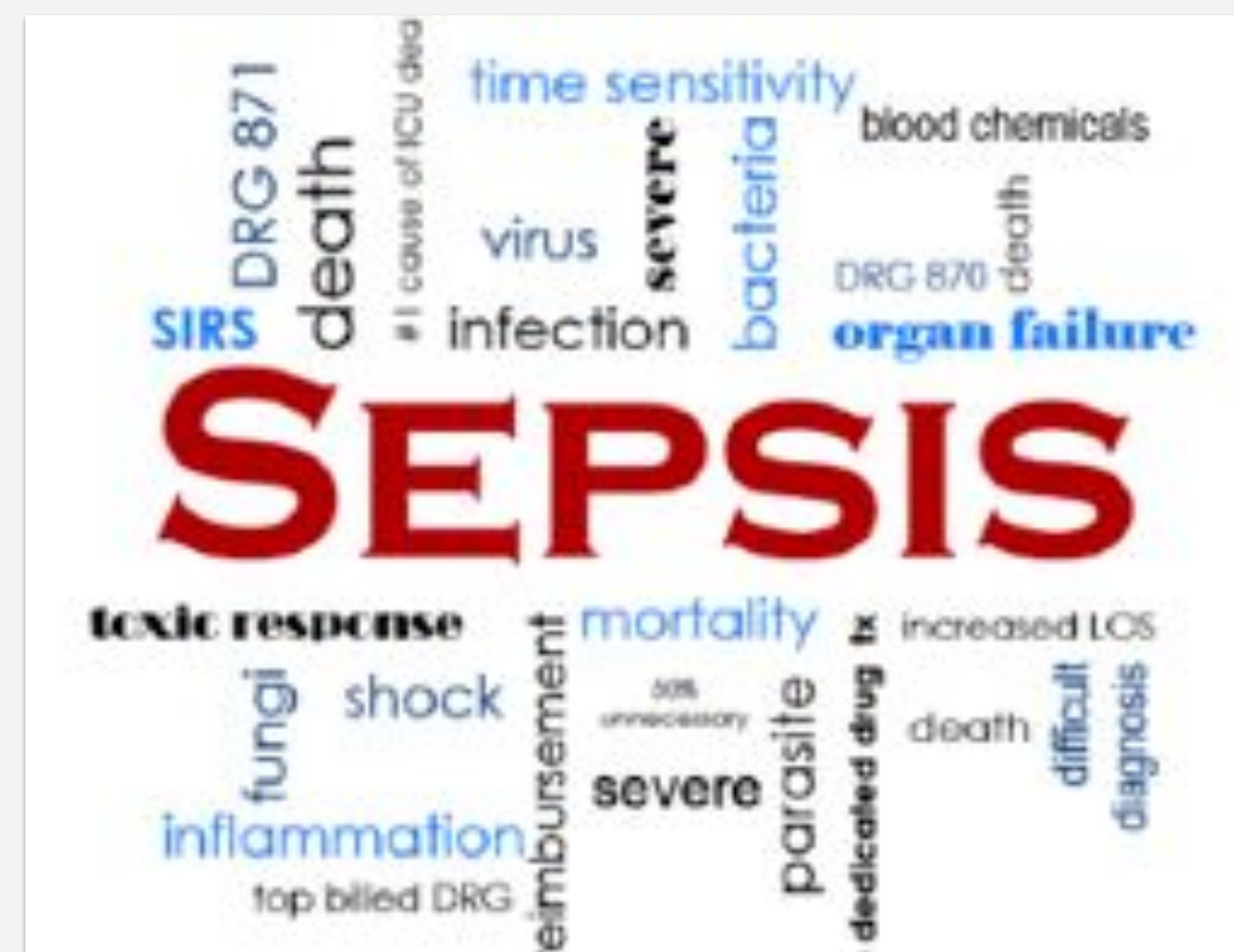
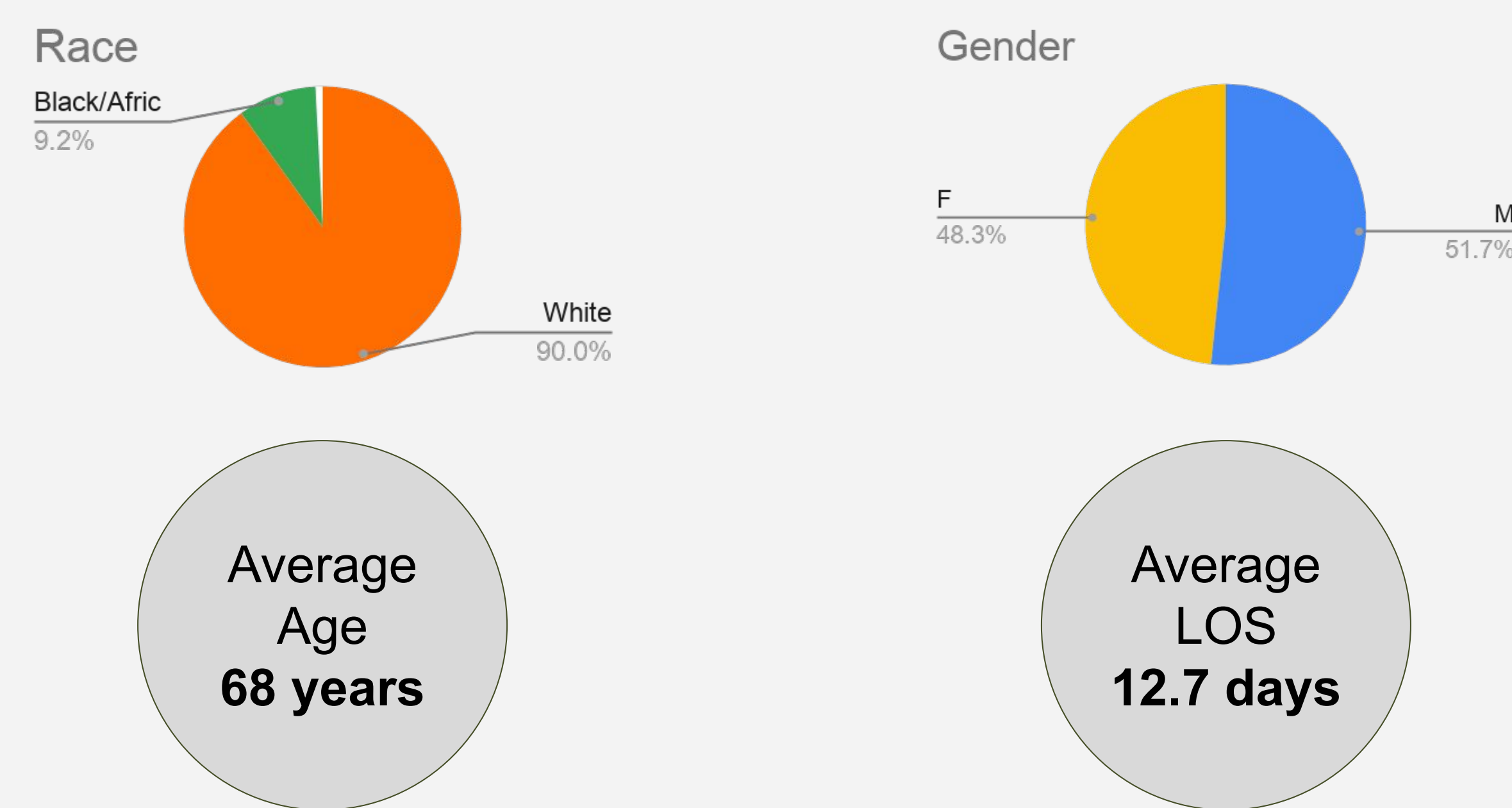
**Primary Outcome:** Duration (days) of levophed administration between the two groups.

## Results

N=120 patients

63 (52.5%) patients had hydrocortisone administered the same day of septic shock diagnosis and 57 (47.5%) patients had delayed administration of hydrocortisone (day 2+) after the diagnosis of septic shock.

In the hydrocortisone at diagnosis group, the mean length of levophed administration was 2.7 days (SD: 1.7). In the delayed hydrocortisone group, the mean length of levophed administration was 5.3 days (SD: 4.2). There is a significant difference in the length of levophed administration between the 2 groups,  $p < 0.0001$ .



## Discussion

At this time there are no standardized guidelines for the use of steroids in septic shock, nationally or at Ascension Genesys Hospital.

The goal of this study was to create a standard of practice for septic shock protocol, with the purpose of shortening overall vasopressor use leading to potential decreased adverse effects, decreased ICU stay, decreased hospital stay and decreased hospital cost.

**Limitations:**

-As this is a retrospective study, all information was gathered from prior documentation and therefore the accuracy of such is unknown.

-Additionally duration of levophed drip was measured in days, not hours; further studies on this subject could include more strict timing of levophed.

-This review did not assess patient's with any other vasopressor other than levophed nor did it assess the length of steroid administration or have a standard of such.

The Primary Outcome was days of IV levophed administration and therefore did not include mortality which could be assessed in a continuation study.

## Conclusion

Current practice of steroids in septic shock is administered on a case-by-case basis. It appears that early administration of hydrocortisone in patients diagnosed with septic shock shows a shorter levophed requirement compared to delayed hydrocortisone use. As such this decrease in the length of vasopressor use, could ultimately spare many adverse effects of levophed use.

## References

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