I. Introduction

A. Sepsis is responsible for 9.3% of all deaths in the United States annually, with an incidence of over 750,000 cases, or 3 per 1000 population. Septic shock remains the most common cause of death in the intensive care unit with an associated mortality rate of 30-60%. Adrenal insufficiency may be associated with septic shock. There is now evidence to support the use of Corticosteroids in patients with established septic shock especially those with documented adrenal insufficiency. As supported by the Surviving Sepsis Campaign and multiple recent randomized controlled trials, Corticosteroid therapy in the septic shock patient has a positive effect on hemodynamics and reduces time spent on vasopressor therapy.

The use of certain medications (Etomidate, Dilantin, Phenobarbital, Rifampin, Ketoconazole) may alter adrenal cortisol synthesis. Adrenal dysfunction in this situation may benefit from Corticosteroid treatment. However, this clinical practice guideline pertains only to adrenal dysfunction in the presence of septic shock.

II. Purpose

A. An evidence-based approach has been developed to minimize the incidence of practice variability in surgical critical care patients through standardized treatment guidelines for the treatment of adrenal insufficiency in septic shock.

III. Intervention

A. Suspect Adrenal Insufficiency in patients who are known or suspected sepsis and:

1. Remain vasopressor dependent after euvolemia is established. (See resuscitation in septic shock CPG).

2. Unresponsiveness to vasopressor escalation despite adequate volume resuscitation.
B. Patient populations excluded from CPG:
   1. Patients status post adrenalectomy or adrenal surgery.
   2. Patients with chronic steroid use.
   3. Patients who carry a diagnosis of primary adrenal insufficiency.

C. Diagnostic testing
   1. A cosyntropin stimulation test is no longer recommended for the
diagnosis of adrenal dysfunction related to septic shock. If adrenal
dysfunction is suspected, then treatment should be initiated.

D. Treatment regimen
   1. If adrenal insufficiency is suspected, do not delay treatment while
waiting for laboratory results
   2. Initiate hydrocortisone 50 mg every six hours x 5 days with a rapid
taper (50 mg q 12 hrs x 3 days, 50 mg q 24 hrs x 3 days, then stopped; for
a total of 11 days).
   3. Fludrocortisone (50 mcg qd) is considered optional if hydrocortisone
is used.
   4. Hydrocortisone should be weaned when vasopressors are no longer
required or if no effect is seen in 24-48 hours.
Bibliography


CLINICAL PRACTICE GUIDELINE MANUAL

UNIVERSITY OF PENNSYLVANIA MEDICAL CENTER
HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
Surgical Critical Care
Department of Surgery
Department of Anesthesia & Critical Care

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Last Review: July 19, 2008

Clinical Practice Guidelines (CPGs) are meant to standardize and optimize care and decrease variability in practice. They are intended to be used as framework for the delivery of patient care in the surgical critical care units. CPGs are a combination of evidence-based medicine and accepted practices in critical care medicine. CPGs are intended to provide decision support for the management of the majority of patients, and are not proposed as directives, rules, or policies. They are not substitutes for clinical judgment. Deviations from the CPGs are expected when deemed medically necessary; all exceptions should be documented in the medical record and require discussion between the Surgical Critical Care attending and the attending of the primary or consulting service.
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## Adrenal Dysfunction in Septic Shock

**Algorithm**

1. Pt in Septic Shock
2. Euvolemia established?
   - Yes
   - No
     - See resuscitation guideline
3. Pt remains vasopressor dependent?
   - Yes
     - Consider drawing random cortisol level
   - Yes
     - Adrenal Insufficiency suspected?
       - Yes
         - Initiate Hydrocortisone 50mg q 6 hours x 7 days with rapid taper (11 days total)