

## CLINICAL PRESENTATION

- » Cardiac
  - » Females have better cardiac function in the face of sepsis
  - » Estradiol improves cardiovascular function
  - » Estradiol improves rapid restitution of blood volume
- » Renal
  - » 60-70% of those with septic shock develop Acute Kidney Injury
  - » **Women** are less likely than **men** to receive dialysis

## PREGNANCY

- » Sepsis is one of the 4 main causes of mortality during pregnancy
- » Pregnancy can mask early signs of sepsis
- » Increased sepsis risk with
  - » premature delivery
  - » postpartum hemorrhage
  - » emergency cesarean section



## SEX STEROIDS

**Sex Hormones Modulate the Immune Response: Is Female Sex Protective?**

- » **Estrogens** can be both immunosuppressive and immunostimulating in sepsis
  - » High estrogen levels can increase the anti-inflammatory effect
  - » Low estrogen levels can increase the pro-inflammatory effect
- » **Progesterins** are anti-inflammatory and beneficial to autoimmunity
- » **Prolactin** has pro-inflammatory properties
- » **Postmenopausal** women lose the estrogen advantage
- » **Androgens** are generally immunosuppressive and beneficial to autoimmunity

## TREATMENT

- » Early Goal Directed Therapy (EGDT) reduces 29-day mortality rate in both sexes
- » **Women** are less likely to receive EGDT
- » **Women** are less likely to receive ventilation therapy in ICU
- » **Women** are more likely to receive excessive tidal volumes if ventilated
- » **Women** experience longer delay in initiating antibiotic therapy

## MORTALITY

- » In animal studies, male sex is consistently associated with adverse outcomes
- » Conflicting data in humans: Does gender matter?
  - » There may be disparities in care, database sources, or comorbidities
  - » There are gender-based treatment disparities.

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[sexandgenderhealth.org](http://sexandgenderhealth.org)