**DECEMBER Meeting In Review**

**TOPIC:** Early Mobility in the ICU

_Given by Felicia Wong, PharmD (PGY2 Emergency Medicine Resident, Grady Health System)_

On Thursday, December 14, 2017, the Southeast Chapter of Society of Critical Care Medicine welcomed Dr. Lisa C. Harris, Director of Clinical Education and Assistant Professor of Physical Therapy at University of Tennessee at Chattanooga, to our bi-monthly meeting.

Dr. Harris discussed the importance of early mobility in critically ill patients as well as the importance of inter-professional teamwork to help implement early mobility in the ICU.

Dr. Harris began by discussing the importance and benefits of early mobility. Numerous complications can...

**Welcome New SE SCCM Officers!**

We are proud to announce our new officers for the 2018 – 2020 term!

**President:** Megan Van Berkel Patel, PharmD, BCPS, BCCCP (Chattanooga, TN)

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**Member-at-Large:** Andrew Barker, MD (Birmingham, AL)

Want to Become More Involved?

For members interested in joining a committee, please contact us at communications@sccmse.org, and let us know how we can get you involved with the Southeast Chapter of SCCM.
**OCTOBER** Meeting In Review

**TOPIC:** Early Mobility in the ICU

*Written by Ansley Tidwell, PharmD, PGY2 Critical Care Pharmacy Resident, Grady Health System*

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On Tuesday, October 17, 2017 the Southeast Chapter of Society of Critical Care Medicine hosted Dr. Mike Broyles, Director of Pharmacy at Five Rivers Medical Center, to discuss procalcitonin (PCT) use in the intensive care unit. He gave insight on the role of procalcitonin in early sepsis detection, bacterial severity assessment and primarily focused on its role in antimicrobial management.

Dr. Broyles started by showing the high rates of inappropriate antibiotic use in acute care settings in order to highlight the need for better tools to guide antimicrobial therapy.

Procalcitonin is a biomarker produced in response to bacterial infection, and it has been proposed as a tool to help guide antibiotic therapy. Dr. Broyles compared and contrasted procalcitonin with current biomarkers, such as white blood cell count and C-reactive protein, which are used in the evaluation of bacterial infections. Current biomarkers have several limitations including low sensitivity and specificity for bacterial infections. He then discussed the key characteristics that make procalcitonin a more reliable biomarker for bacterial infection. Some of these characteristics include, the high sensitivity and specificity procalcitonin has for bacterial infections and the kinetic features which allow the use of procalcitonin to assess severity of infection as well as to evaluate response to therapy.

Procalcitonin is approved for several indications and most recently has been approved for use in antibiotic management. Dr. Broyles used patient cases to demonstrate the application of procalcitonin in guiding antimicrobial treatment. He highlighted studies showing that procalcitonin guided therapy significantly decreases antimicrobial exposure. He concluded by giving the audience “keys to successful use of procalcitonin” which included education, program ownership, development of order-sets, communication among clinicians and diligence in ordering and tracking PCT results.

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Several barriers exist for the implication of early mobility in intensive care units, ranging from patient-related to structural, cultural, and even processes-related.

Dr. Harris provided several strategies to overcome specific barriers, including implementing protocols for safety, providing staff education, additional PT, OT, and dedicated therapists, as well as multi-professional training and teamwork.

Lastly, Dr. Harris reviewed current consensus and guidelines on safety criteria for active mobilization in mechanically ventilated adult patients.

An interdisciplinary team approach can help achieve successful early mobility. Implementation of early ICU mobility has been shown to be cost effective but also improves patient outcomes and should be considered in all ICU patients.
SE Chapter Members Presenting at SCCM

The Southeast Chapter is proud to list all of the members that presented an abstract at Annual Congress this year. Here are just a few, please click [HERE](#) for a complete list of members and presentations.

A Case of Sweet Syndrome Secondary to Acute Myelogenous Leukemia

...............................................................................................................................Umair Tariq, MD

A Rare Case of Hydroxychloroquine Toxicity Successfully Treated with Intralipid Emulsion Therapy

...............................................................................................................................Megan A. Van Berkel Patel, BCPS, PharmD, BCCCP

A Survey of Procedural Sedation in Children with Autism Spectrum Disorders

...............................................................................................................................Jana A. Stockwell, MD, FCCM

...............................................................................................................................Jocelyn R Grunwell MD, MD, PhD

Abiotrophia Defectiva: A Rare Cause of Infective Endocarditis of the Mitral Valve

...............................................................................................................................Edward Foley, MD

Abrupt Clinical Onset of Chiari Malformation Type 1 Following Minor Trauma in a Pediatric Patient

...............................................................................................................................Hemant Agarwal, MBBS

Addition of Ventilator Parameters Improves Accuracy of APACHE IVa Score

...............................................................................................................................Michael J. Stentz, MD, MS

Addressing Sequelae of Critical Illness in Veterans and Their Families with ICU Diaries

...............................................................................................................................Kelly M. Drumright, CCRN, MSN, RN, CMC

Antibiotics and the Risk of Delirium

...............................................................................................................................Jessica Grahl, PharmD, Joanna L. Stollings, PharmD, BCPS, FCCM

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**SOUTHEAST CHAPTER**

**STUDENT-LED CRITICAL CARE Chats**

Follow us @SCCMSE

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Tuesday, **February 13, 2018**

**Noon - 1 p.m. EST**

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**Bi-monthly Critical Care Topic Discussion**

**Article:**

Age of Red Cells for Transfusion and Outcomes in Critically Ill Adults

by Cooper, D. et al.

The New England Journal of Medicine

2017;377:1858-67. DOI 10.1056/NEJMoa1707572
Adjuvant Use of Ascorbic Acid in Patients with Severe Sepsis and Septic Shock
Daniel Anderson, PharmD Candidate 2017

Background:
Timely diagnosis and appropriate treatment of sepsis has led to a decline in 28-day mortality rate to approximately 25%, but mortality rates in patients presenting with septic shock remains alarmingly high with some estimates as high as 50-60%.1,2 Currently, sepsis treatment centers around aggressive resuscitation, hemodynamic support, and appropriate antibiotic therapy. Ascorbic acid (vitamin C) has gained recent attention as a potential adjuvant treatment modality for patients with severe sepsis and septic shock.3

Ascorbic acid is both anti-oxidant and anti-inflammatory properties, which may confer its activity against sepsis. The systemic inflammatory response triggered by sepsis leads to a decrease in endogenous ascorbic acid which cannot be corrected enterally or through parenteral nutrition because the high concentration required to reach normal levels in critically ill patients exceeds normal daily nutritional intake. Replenishing ascorbic acid levels appears to attenuate this inflammatory response. The anti-inflammatory activity may in part be due to a proposed bacteriostatic effect caused by the anti-oxidant properties of ascorbic acid. This bacteriostatic effect stems from research that has demonstrated an increased production of hydrogen peroxide as a result of ascorbic acid. Specifically, ascorbic acid has been shown to inhibit the growth of Staphylococcus aureus and E. coli in vitro4.

Perhaps the most significant mechanism for ascorbic acid efficacy in sepsis is the beneficial microvascular effects. Currently, no specific therapy to combat injury and death caused by microvascular dysfunction is widely accepted. Progression from sepsis to septic shock is typically accompanied by edema and tissue hypoxemia due to vascular leaking. Ascorbic acid protects the vasculature by buffering nitric oxide imbalances and nitrating proteins. These mechanisms increase the responsiveness to vasopressors, prevent excessive vasodilation, and regulate protein signaling pathways4. Recently, researchers at Sentara Norfolk General Hospital completed a study after three successful case reports involving ascorbic acid use in septic patients.

Methods:
In this retrospective before-after clinical study, medical ICU patients were included if they had a primary diagnosis of severe sepsis or septic shock with a procalcitonin level ≥ 2 ng/mL and received treatment within 24 hours of ICU admission. Patients were excluded if they were less than 18 years of age, were pregnant, or had limitations of care. The treatment group was to receive intravenous vitamin C 1.5 g every 6 hours for 4 days or until ICU discharge, hydrocortisone 50 mg every 6 hours for 7 days or until ICU discharge, and thiamine 200 mg every 12 hours for 4 days or until ICU discharge. The control group did not receive the adjuvant vitamin C, hydrocortisone, or thiamine.

The primary endpoint for this study was to evaluate hospital mortality.

Discussion:
Both the treatment and control groups had 47 patients with similar demographic characteristics. The average age was 58.3 years for the treatment group and 62.2 years for the control group. The treatment group

(continued on next page)
Adjuvant Use of Ascorbic Acid in Patients with Severe Sepsis and Septic Shock (continued from previous page)

was 57% males while the control groups was 49% males. The average SOFA score at baseline was 8.3 in the treatment group compared to 8.7 in the control group. APACHE II scores were similar in both groups as the treatment group had an average score of 22.1 while the control group was 22.6. The primary diagnosis were similar across both groups with pneumonia being the most frequent cause of sepsis followed by urosepsis, bacteremia, and gastrointestinal infections. In both groups, approximately 50% of patients required vasopressors or mechanical ventilation.

Data analysis showed that mortality rate was significantly lower in the treatment group at 8.5% (4/47) than in the control group at 40.4% (19/47) (p < 0.001). Interestingly, none of the patients in the treatment group died from sepsis related complications and instead died from complications of their underlying illness after the completion of their ICU stay. The duration of vasopressor therapy was also significantly lower for the patients in the treatment group compared to the control group (18.3 ± 9.8 vs. 54.9 ± 28.4 P < 0.001). Among patients who met RIFLE criteria for acute kidney injury (AKI), only 10% (3/31) of patients in the treatment group needed renal replacement therapy (RRT) vs 33% (11/30) patients with AKI in the control group went on to require RRT (P < 0.02). The final statistically significant difference between the treatment and control groups was the change in SOFA score after 72 hours. This study found that treatment with vitamin C led to an average change in SOFA score at 72 hours of 4.8 compared with only a 0.9 point change in the control group (P < 0.001).

Conclusions: This study demonstrated improved outcomes for septic patients receiving a combination of intravenous vitamin C, hydrocortisone, and thiamine. None of the patients in the treatment group went on to develop end-organ failure, and none died of sepsis related complications. All three of these agents have been studied in separate studies including the VANISH trial5, a vitamin C study by Fowler et al.6, and the CORTICUS trial7. However, this study demonstrates a synergistic effect that decreases mortality rates and duration of vasopressor therapy and increases SOFA scores at 72 hours. Vitamin C dosing remains controversial though studies demonstrate that a dose of at least 3 grams is necessary for normal levels in critically ill patients. The researchers for this study state that a daily dose of 6 grams may be necessary in combination with hydrocortisone.

References:
Sedation/TTM Study

Dear colleagues: Targeted temperature management (TTM) is recommended following return of spontaneous circulation in comatose adult survivors of cardiac arrest (CA); however, recommendations are limited regarding the pharmacologic management of analgesia, sedation, and paralysis in this patient population. Studies examining the role of TTM exhibited variability in the protocolized use of analgesics, sedatives, and neuromuscular blocking agents (NMBAs). The purpose of this study is to characterize the prescription and monitoring practices of analgesics, sedatives, and NMBAs in adult survivors of CA receiving TTM.

The results of this survey will provide insight on the pharmacologic agents and monitoring strategies used during TTM from institutions internationally. This survey has been tested by other practitioners and should take no more than 15 minutes to complete. Your participation is anonymous, voluntary, and there is no penalty if you choose not to participate. The deadline for completion is February 28, 2018 at 11:59 PM EST.

You may click on the following link or copy and paste the link into your web browser:

[https://redcap.ovpr.uga.edu/surveys/?s=TTRT3AMEPH](https://redcap.ovpr.uga.edu/surveys/?s=TTRT3AMEPH)

Thank you for completing this survey. If you have any questions or comments concerning our survey, please feel free to contact the study investigators, Kaylee Bruner (kabruner@phoebehealth.com) and/or Anthony Hawkins (hawkins@uga.edu).

Thank you for your time,
Kaylee Bruner
PGY-1 Pharmacy Resident
Phoebe Putney Memorial Hospital / The University of Georgia
Albany, Georgia

IRB ID: STUDY00005343

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SAVE THE DATE
Southeast Annual Congress Meeting
Monday, February 26, 2018
Grand Hyatt Texas E
Noon - 1:00 PM

ANNOUNCEMENTS
The Southeast Chapter of SCCM will be awarded the 2018 Chapters Alliance Excellence Award during Annual Congress, being held Feb. 25 - 28 in San Antonio, TX.

Thank You To Our October and December Meeting Sponsors

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