Critical Care Outreach Teams (CCOTs) exist to deliver highly specialized critical care and surveillance to acute patient care areas outside of the Intensive Care Unit (ICU). CCOTs are instrumental in preventing Failure-to-Rescue (FTR) through the provision of interprofessional education and clinical support (Aitken et al., 2015; Barwise et al., 2016; Mullany et al., 2016). Since the mid-1990s, the use of CCOTs has increased throughout the United States; however, many teams lack consistency in practice and delivery of CCOT services (Stolldorf & Jones, 2017). Despite having the largest expenditure of healthcare dollars in the world, the United States has FTR rates of up to 40%, compared to 17% globally for similar patient populations (Ahmad et al., 2017; Johnson et al., 2015).

The National Health Service (NHS) in the United Kingdom (UK) is committed to decreasing FTR rates by implementing thorough, explicit recommendations and competencies pertaining to the use and governance of CCOTs in its hospitals (National Outreach Forum, 2012). CCOTs in the UK have demonstrated the ability to provide consistent, efficient, and cost-effective care in preventing deterioration among increasingly ill patient populations. Likewise, these CCOTs have improved early recognition and management of patient deterioration in acute care. This initiative has been accomplished with less than half the healthcare dollars spent in the US while simultaneously yielding lower rates of FTR (Johnston et al., 2015).

The purpose of this ongoing scholarly project is to improve quality of and access to CCOT services in alignment with the United Nations and World Health Organization directives regarding universal health coverage and the Sustainable Development Goal of good health and well-being (Organisation for Economic Cooperation and Development, 2017; World Health Organization, 2017). Global partnerships facilitate identification of best practices in CCOT services that may be implemented at the local and regional levels to decrease rates of FTR and improve patient care. Collaboration inculcates a culture of innovation in practice, promoting further development of CCOT services in the US and abroad.

**BODY**

**Approach**

In May of 2017, rapid response nurses from a large, urban academic medical center in the US attended a locally held international conference exposing the nascent team to multiple dimensions of an evolving specialty: critical care outreach. Following the
conference, the team revised its vision and committed to transitioning from rapid response to critical care outreach. This process was enhanced by contacting conference participants from multiple professions and countries via telephone and email for insight pertaining to implementation of best evidence-based practices. An intercontinental mentorship emerged and continued for approximately one year before progressing to an in-person visit to the United Kingdom. Metrics pertaining to emergency response, critical care nursing consultation, proactive patient surveillance, and interprofessional collaboration were maintained and analyzed to facilitate dissemination of significant quality improvement achievements. With rebranding underway, the team successfully garnered institutional enthusiasm and support for international travel. In July of 2018, the team attended and presented at the international conference which was held in Manchester, England, UK. The US CCOT had the opportunity to meet the Critical Care Outreach Sisters with whom they had been collaborating. Face-to-face interaction forged additional opportunities including job shadowing at a large, urban hospital in the UK and attendance at a regional Critical Care Outreach educational session offered by the NHS.

**Discussion**

The first outcome of the UK Collaborative was the creation of the Emergency Response Huddle (ERH). Commonly practiced in the UK, the ERH brings emergency responders from multiple disciplines together at the beginning of each shift with the goal of decreasing time to intervention and improving awareness of patients at risk for deterioration. A team leader is clearly identified, and roles are assigned to all team members prior to an emergency call. The US CCOT was able to observe the UK ERH during their visit and subsequently implemented ERHs on September 1st, 2018. Pre-survey data (N=41) indicated opportunities to improve identification of a team leader (50%), awareness of patients at risk for decompensation (44%), and awareness of patients who underwent high risk laryngectomy or tracheostomy surgeries (56%). A post-survey will be administered in January of 2019.

Early warning scores (EWSs) continue to be a paramount theme of interest between the US and UK teams. Knowledge of EWSs can assist nurses in the early identification of patient deterioration by synthesizing vital sign and physical assessment components (Saab et al., 2017). Prior to the UK Collaborative, the US CCOT used the Modified EWS (MEWS) in the surveillance of acute care patients. The National EWS (NEWS) is used throughout the UK and includes additional respiratory indicators. Learning about the use of NEWS led the US CCOT to perform a retrospective study comparing the effectiveness of MEWS, NEWS, and the Quick Sequential Organ Failure Assessment (qSOFA) in predicting ICU readmissions. The US team determined NEWS most accurately predicted patients requiring readmission to the ICU 24 hours after discharge from ICU (AUC .845, 95% CI = .777, .912). These findings were used to optimize post-ICU transfer surveillance through creation of a risk assessment algorithm that demonstrated both increased sensitivity (16% to 72%) and a statistically significant increase in the diagnostic odds ratio for identifying patients at risk for ICU readmission (OR 16.74; 95% CI = 6.82, 41.12).

Successful CCOTs facilitate effective education for acute care nurses. During the job shadow, the UK CCOT exhibited an established method of educating nurses on a variety of proactive outreach topics. Each member of the UK CCOT was accountable for...
presenting a specific monthly topic with the overall goal of preventing FTR and promoting early detection of deterioration. Unlike the UK, the US CCOT referenced a culture that focused on educating ICU nurses on reactive emergency response. The UK education model has served as a guide for the US CCOT in the planning of Decompensation Assessment Recognition Treatment (DART) Workshops for acute care nurses scheduled to begin in January of 2019. The DART Workshops will consist of structured discussion and case review accompanied by simulations which have demonstrated effectiveness in improving detection of patient deterioration (Bliss & Aitken, 2018). Participants will complete a pre and post-test with collection of demographic data. Simulations will be evaluated utilizing the Rescuing a Patient in Deteriorating Situations (RAPIDS) Tool to facilitate reflection and identification of opportunities to improve recognition of patient deterioration (Liaw, et al., 2011).

Implications
The UK Collaborative continues to gain momentum in sharing and implementing best practices in critical care outreach. In February of 2019, the US CCOT will be hosting two Critical Care Outreach Sisters from the UK. Sustained collaboration will afford the UK CCOT with the experience of healthcare in the US in comparison to a single payer system. They will have the opportunity to shadow multiple acute care units, ICUs, and a level I trauma center. The UK Sisters will be featured speakers at an inaugural, regional Critical Care Outreach Symposium highlighting international differences in CCOT practices including utilization of resources, learning from death, and use of EWS in escalation of care. During their time in the US, the UK Sisters will be co-teaching the DART Workshop where they will have the opportunity to participate in the evidence-based simulations, a resource currently unavailable at their UK hospital (Bliss & Aitken, 2018).

CONCLUSION
Shared passion for a unique specialty provided a foundation for global connection and exchange of knowledge. Best practices in critical care outreach have improved in accessibility and utility promoting early detection of patient deterioration and prevention of FTR. The UK Collaborative has catalyzed engagement and interprofessional participation at the local, regional, and global levels.

Title:
Mobilizing the Power of Global Collaboration to Improve Critical Care Outreach

Keywords:
Critical Care Outreach, Global Collaboration and Rapid Response Teams

References:
Abstract Summary:
This ongoing project details how global collaboration within a shared specialty can positively affect critical care outreach services. An evolving relationship between two Critical Care Outreach Teams is presented with discussion of resulting quality improvement initiatives, identification and implementation of best practices, and considerations for global collaboration sustainability.
Content Outline:
I. Background
1. Purpose of Critical Care Outreach Teams (CCOTs)
   1. Highly specialized care
   2. Prevention of failure to rescue
   3. Early detection of patient deterioration
2. History of CCOTs in United Kingdom
3. Purpose of ongoing scholarly project
   1. Lack of consistency in practice
   2. Improve access to CCOT services in alignment with WHO and UN
   3. Identify best practices
II. Body
1. Approach
   1. Specialty conference attendance, networking, and subsequent mentorship
   2. Tracking metrics and measuring data
      1. Garner institutional support
      2. Facilitate dissemination of quality improvement achievements
2. Discussion
   1. Implementation of emergency response huddles
      1. Decrease time to intervention; clear identification of team lead; role assignment
   2. Pre-survey data
   2. Use of early warning scores (EWS)
      1. Role of EWS in promoting early detection of patient deterioration
      2. Use of EWS in UK versus US
   3. Results of retrospective study comparing Modified EWS, National EWS, and Quick Sequential Organ Failure Assessment
   4. Application of study findings to create a risk assessment algorithm for post-ICU transfers
   3. Education of acute care nurses
      1. UK versus US practices
      2. Development of Decompensation Assessment Recognition Treatment (DART) Workshops
   3. Plan for implementation January 2019
4. Implications
   1. Shared experience in implementing best practice
   2. UK CCOT to visit US CCOT in February 2019
      1. Will be featured speakers at inaugural regional Critical Care Outreach Symposium hosted by US CCOT
   2. Multiple opportunities planned to share UK experience
   3. Guest instructors for DART workshop with exposure to simulation lab
III. Conclusion
1. International connection and exchange of knowledge
2. Improved accessibility to critical care outreach services
3. Global collaboration to stimulate regional engagement
**First Primary Presenting Author**

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**Author Summary:** Holly Losurdo is an experienced critical care nurse who works in the acute care and academic setting. She currently serves as co-lead of a critical care outreach team serving a 697 bed academic medical center. Holly teaches critical didactic and leadership courses at the pre-licensure baccalaureate level. She is presently pursuing PhD studies. Holly is passionate about studying the effects of nurse-sensitive indicators on patient outcomes.

**Second Secondary Presenting Author**

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**Author Summary:** Heather practices as a critical care outreach RN with certifications in critical care and stroke care. Through actively building positive relationships with attending physicians, an idea for unique collaboration was created. This partnership specifically highlights the experiences in pairing expert nurses and medical students as they are emerged into the acute hospital setting as novices physicians.

**Third Secondary Presenting Author**

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**Author Summary:** Brittany Wells has four years neurosurgical ICU experience and has been working as a critical care outreach nurse for one year. She serves as a nurse mentor for the Medical Student Collaborative Mentor and has authored several evidence-based unfolding case studies for the Collaborative.

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Author Summary: Marisa Stratelak is a certified critical care registered nurse who has five years of intensive care experience. Her evidence-based research projects include exploring ways to reduce alarm fatigue as well as preparing for malignant hyperthermia occurrences in the ICU setting. Currently, Marisa works as a Critical Care Outreach nurse, whose vision is to improve early detection of patient deterioration, decrease ICU readmission, and eliminate out-of-ICU arrests.