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# Mechanisms of Left Ventricular Thrombus Formation in Heart Failure With Reduced Ejection Fraction: Novel Insights From Two-Dimensional Speckle Tracking Echocardiography

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receiving the alert, ED pharmacists reviewed the patient profile, including differential diagnosis; antibiotic allergies, reactions and/or previous tolerance; recent bacterial cultures; and any antibiotics already ordered, to assess dose and spectrum of coverage. Pharmacists intervened as needed to ensure patients received appropriate broad spectrum antibiotics. Antibiotics were defined as broad spectrum in the same manner as by the Centers of Medicare and Medicaid Services in its Early Management Bundle, Severe Sepsis/Septic Shock. Education was provided to physicians, nurses and pharmacists to encourage timely administration. Outcomes to be measured include mean time to broad spectrum antibiotics, percentage of patients who received broad spectrum antibiotics within 1 hour of presentation, and percentage of patients who received broad spectrum antibiotics within 3 hours of presentation.

**Results:** Pre-alert intervention, patients who were coded with the ICD-10 codes for sepsis, severe sepsis or septic shock in May 2016 (n=65) were analyzed to determine mean time to broad spectrum antibiotics ( $2.81 \pm 1.63$  hours), percentage of patients who received broad spectrum antibiotics within 1 hour (3.1%), and percentage of patients who received broad spectrum antibiotics within 3 hours (67.7%). Post-alert outcomes will be reported at Aurora Scientific Day.

**Conclusion:** To be reported at Aurora Scientific Day.

### **Mechanisms of Left Ventricular Thrombus Formation in Heart Failure With Reduced Ejection Fraction: Novel Insights From Two-Dimensional Speckle Tracking Echocardiography**

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**Background:** Patients suffering from heart failure with reduced ejection fraction (HFrEF) are at increased risk for left ventricular (LV) thrombus and subsequent thromboembolism, yet anticoagulation is not routinely recommended for left ventricular ejection fraction (LVEF) alone. We sought to determine the role of two-dimensional speckle tracking echocardiography (2D-STE) to quantify regional changes in cardiac function associated with LV thrombus, which may prospectively guide anticoagulation.

**Purpose:** Help enable cardiovascular clinicians to use 2D-STE to evaluate regional strain patterns among patients with HFrEF with and without LV thrombus. Our results suggest that statistically lower regional longitudinal strain patterns in a well-matched cohort identified patients with thrombus. The postulate that these patterns existed prior to the formation of thrombus remains to be tested. Our results warrant further investigation with a larger prospective cohort.

**Methods:** We retrospectively identified patients with LVEF  $\leq 35\%$  who had LV thrombus (n=12) and a matched (in demographics and LVEF) cohort who did not have LV thrombus (n=36). We performed offline 2D-STE longitudinal strain analysis. Descriptive statistics were used to compare variables.

**Results:** The average age of identified patients was  $62.7 \pm 15.0$  years; 71% were male. LVEF was not statistically different. LV end-diastolic diameter was increased in LV thrombus group ( $6.2 \pm 1.1$  cm vs  $5.5 \pm 0.65$  cm,  $P=0.014$ ). LV thrombus group had consistently reduced regional strain in the inferior wall ( $-5.3 \pm 3.9$  vs  $-8.3 \pm 4.1$ ,  $P=0.033$ ), at the apex ( $-5.3 \pm 4.4$  vs  $-8.9 \pm 4.0$ ,  $P=0.012$ ), and in the left anterior descending coronary distribution ( $-5.3 \pm 3.4$  vs  $-7.8 \pm 3.4$ ,  $P=0.031$ ). There was no significant difference in global longitudinal strain or strain dispersion.

**Conclusion:** Among patients with HFrEF, LV thrombus is associated with reduced longitudinal strain in inferior and apical regions and in the left anterior descending territory.

### **Challenges in Delivering Refugee Health Systems**

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**Background:** Aurora Health Care is the major health care system providing care to refugees in Milwaukee, where half of Wisconsin's refugee population resides. Like many other institutions caring for refugee patients, Aurora faces significant challenges when trying to address refugee health needs. Even with the assistance of medical interpreters, cultural differences, language barriers and limited patient health literacy, as well as lack of knowledge of refugee patients' backgrounds, are major obstacles encountered by health care providers in this setting.

**Purpose:** This quality improvement study aims to assess Aurora providers' perceptions of the benefits and barriers to working with refugee patient populations.

**Methods:** An online survey was distributed to health care providers and staff at two academic family practice clinics before and after a 5-session educational series. Each educational session delivered monthly focused on refugee cultural awareness. Mental health providers and former refugees working as case managers or interpreters provided education about the main refugee populations in Wisconsin and the refugee resettlement process. The survey assessed participants' perceptions about providing health care to refugees. Participants were asked to respond to questions on a Likert scale from 1 to 7 (ie, strongly disagree to strongly agree) and to two questions comprised of rank choices investigating barriers to effective health care delivery. Responses to questions on Likert scale  $\geq 5$  were lumped into an agreement category, while all others were considered a disagreement. Fisher's exact test was used to compare pre- and posteducation responses.

**Results:** Perception about new medical knowledge and cultural competency had statistically significant increase comparing pre- and postintervention data ( $P=0.0474$ ). Insufficient interpreter services and insufficient time for appointments were ranked the top barriers to providing health care services to refugees before and after intervention. Participants also ranked refugees' poor understanding of the U.S. health care system as the biggest challenge in delivering care for refugee patients before and after intervention, followed by communication with resettlement agencies in the preintervention survey and cultural differences in the postintervention survey.

**Conclusion:** Promotion of cultural awareness and proficiency within groups delivering primary care to refugees can be a valuable tool when trying to overcome obstacles.

### **Identifying and Targeting Age-Related Colorectal Cancer Screening Rate Disparities in Family Medicine Residency Clinics**

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