We identified earlier diagnosis of inflammatory complications from acute gastroenteritis (AGE)-associated medical encounters are used for AGE disease burden estimates, yet the validity of AGE-related ICD codes in both pediatric and adult populations is unknown. We estimated the validity of AGE-related diagnosis codes in these populations using two different multi-regional AGE active surveillance platforms.

**Methods.** Diagnostic codes, demographic and clinical characteristics, and stool pathogen results from AGE-associated medical encounters were obtained for enrolled children <5 years old from seven sites in NVSN from December 1, 2011 to June 30, 2016, and for adult Veterans in four sites from SUPERNOVA from December 1, 2016 to February 28, 2018. SUPERNOVA also enrolled age- and time-matched non-AGE controls. Using AGE cases from the active surveillance networks, sensitivity and specificity of AGE ICD codes were estimated overall and stratified by age and health care setting using exact binomial tests.

**Results.** ICD codes were collected from 14,952 enrolled children <5 years old with AGE, and 625 enrolled adults (525 AGE cases and 100 controls). The sensitivity of all-age AGE codes in children was 54% (9,127/16,952, 95% confidence interval [CI] 54–55%), and in adults was 54% (283/525, 95% CI 50–58%), with a specificity of 100% (100/100; 95% CI 97–100%). Stratified analyses demonstrated higher sensitivity of all-age AGE codes in children in the inpatient as compared with outpatient setting: 59% (417/717, 95% CI 57–62%) vs. 53% (934/1,827, 95% CI 52–54%). In adults, this trend was reversed; all-age AGE codes had a higher sensitivity in the outpatient as compared with the inpatient setting: 72% (50/69; 95% CI 60–83%) vs. 51% (233/456; 95% CI 46–56%), respectively.

**Conclusion.** Across two different AGE active surveillance platforms, one enrolling only children and one enrolling only adults, the estimated sensitivity of all-age AGE ICD codes were similarly low. This suggests that current national estimates for AGE disease burden may be underestimated the true burden of AGE pathogens in the United States, and emphasizes the importance of active, prospective surveillance.

**Disclosures.** All authors: No reported disclosures.

### 2155. Elevated Temperature Results in Earlier Diagnosis of Infectious and Inflammatory Postoperative Complications

_Elias Bajed, DO1; Jennifer Ravichandran, MD2, MS3; Frances Lehrman, DO1; Huma Saeed, MD2; Katherine Kaplan, DO3, DO4; Ronak Parikh, DO2, DO5; Erica Bhamia, DO1; Rema Padman, PhD3; Jennifer Grant, MD3; Mark Talamonti, MD3 and Nirav Shah, MD, MPH3; Internal Medicine, University of Chicago (NorthShore), Evanston, Illinois, Surgery, NorthShore University HealthSystem, Evanston, Illinois, NorthShore University HealthSystem, Evanston, Illinois, University of Chicago, Chicago, Illinois, Healthcare Informatics, Carnegie Mellon University, Pittsburgh, Pennsylvania, Infectious Disease, NorthShore University HealthSystem, Evanston, Illinois, Infectious Diseases/Informatics, NorthShore University Health Systems, Evanston, Illinois_  

**Session:** 236. Healthcare Epidemiology: Epidemiologic Methods  
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**Background.** Medical students are taught that wind, water and wound complications occur at specific post-operative times. This may influence the timing of work-up for specific complications. The goal of this study was to investigate the relationship between post-operative temperature curve and time to diagnosis of inflammatory complications.

**Methods.** We reviewed patients who underwent pancreatectomy at an academic health system from January 2015–February 2018. Clinical data including complications were extracted using definitions set by the National Surgical Quality Improvement Program and temperature was extracted from the Data Warehouse. Time of diagnosis, as determined by labs, microbiologic cultures, radiology and procedures, was extracted for each complication. Group-based trajectory modeling, a technique used to identify distinct clusters of temperature trajectories of patients in the postoperative setting was used to group patients into low- and high-temperature trajectories.

**Results.** Among 195 patients who underwent pancreatectomy, 35.5% (69/195) experienced at least one complication within 30 days of surgery. Of the patients who developed complications, 49% (n = 34) and 31% (n = 35) were classified into the low and high temperature trajectory groups based on their temperature trajectory. For most individual inflammatory complications, time to diagnosis was later in the low rather than high temperature groups (Figure 1) and this was significant when averaging all inflammatory complications (12.7d low and 8.6d high; P < 0.002). Time to diagnosis tended to be later in the high rather than low temperature trajectory but this was not statistically significant when averaging all non-inflammatory complications (11.7d low and 11.9d high; P = 0.65).

**Conclusion.** We identified earlier diagnosis of inflammatory complications in patients with elevated temperature trajectories. There was no difference in timing of diagnosis for non-inflammatory complications. Temperature trajectory modeling may allow for earlier diagnosis of patients at high risk for inflammatory complications.

**Figure 1.** Time to diagnosis by low and high (H) temperature trajectories.

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### 2156. Cyclical Continuum Modeling: A Process-Based Approach to Identifying and Quantifying Health Disparities in Patients with Serious Musculoskeletal Infections

_Nahida Tamezou, MD, PhD4; Alyssa Chiu, DPM, MS5 and Kimberly Page, PhD, MPH, MS6; University of New Mexico Health Sciences Center, Albuquerque, New Mexico_  

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**Background.** Complex infectious disease processes, including serious musculoskeletal infections, may result in differential health disparities at successive phases in a clinical course. Previously, our group innovated the application of cyclical continuum modeling to the study of these complex clinical processes.

**Methods.** Using a retrospective cohort of over 1,600 adult patients in the University of New Mexico Health System with serious musculoskeletal infections, including septic arthritis, osteomyelitis, and/or infectious myositis, we performed preliminary proof-of-concept cyclical continuum modeling analyses. The experiences of patients in different racial/ethnic groups were compared using a logistic regression model adjusted for age and sex. Outcomes in multiple categories were reviewed—primary risk factors for limb loss (e.g., diabetes mellitus and peripheral vascular disease), secondary risk factors for limb loss (e.g., osteomyelitis and multiple musculoskeletal infection types), and outcomes or complications of infection (e.g., sepsis, antibiotic use, and amputation). Preliminary cyclical visualization tools were used to demonstrate differences in health outcomes across racial/ethnic groups.

**Results.** Although significantly younger than other members of the cohort, American Indian/Alaskan Native patients (17.7% of cohort) had high odds of primary and secondary risk factors yet low odds of amputation. Hispanic patients (40.2% of cohort) tended to have high odds of primary and secondary factors as well as amputation. Black non-Hispanic patients (2.6% of cohort) had high odds of primary risk factors and low odds of osteomyelitis, yet Black non-Hispanic patients were most likely to undergo an amputation. Initial cyclical visualization techniques showed promise for comparing the relative distribution of racial/ethnic disparities across the clinical course.

**Conclusion.** Health disparities encountered by patients with serious musculoskeletal infections may be studied using a process-based approach. Future development of cyclical continuum modeling tools should focus on applications of both relative and absolute epidemiological measures and cyclical visualization methods.

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### 2157. Design, Implementation, and Analysis Considerations for Cluster Randomized Trials in Infection Control and Hospital Epidemiology: A Systematic Review

_Lyndsay O’Hara, PhD, MPH1; Natalia Blanco, PhD, MPH1; Surbhi Leekha, MBBS, MPH1; Kristen Stafford, PhD, MPH2; Gerard Slobogean, MD, MPH1 and Anthony Harris, MD, MPH1; Department of Epidemiology and Public Health, University of Maryland School of Medicine, Baltimore, Maryland, 1Orthopaedics, University of Maryland School of Medicine, Baltimore, Maryland_  

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**Background.** A cluster randomized trial (CRT) is a comparative study in which clusters or groups rather than individuals are randomized to interventions or treatments. CRT are being utilized with increasing frequency in the study of interventions in infection control and hospital epidemiology. The aims of this study were (1) to identify critical design, implementation, and analysis principles to consider when planning a CRT of interventions in the healthcare setting and (2) to review published CRT in infection control and hospital epidemiology and synthesize key characteristics of these published studies using the principles identified above.