

## Community Engagement

### Biostatistics, Epidemiology, and Research Design

#### A CTS Team Approach to Wastewater-Based Epidemiology of Non-Typhoidal Salmonella in Gainesville, FL

Andrew Rainey, Lisa E. Emerson\*\*, Mariola J. Edelmann, Anthony T. Maurelli

University of Florida

**OBJECTIVES/GOALS:** The goal of this project is to apply wastewater-based epidemiology to determine the trends of NTS through analysis of influent wastewater, and to isolate and identify circulating serotypes among samples that are representative of the human population in Gainesville, FL. **METHODS/STUDY POPULATION:** This study is being conducted in Gainesville, FL, a suburban city in North Central Florida with approximately 133,997 residents served by two wastewater reclamation facilities (WRF). Fifty-three weekly influent composite wastewater samples were collected between September 2020 and September 2021 from each WRF. Wastewater samples were processed using an adsorption-based sample concentration method and invA genetic target for NTS DNA detection and quantification via qPCR. The quantified NTS DNA wastewater concentration from each WRF was summed to determine the overall concentration. Bacterial isolation was conducted on stored wastewater of qPCR positive samples using EPA method 1682. Recovered isolate serotypes were identified through whole-genome sequence analysis. **RESULTS/ANTICIPATED RESULTS:** Overall, NTS was positive in Gainesville wastewater in 48/53 weeks between September 2020 – September 2021. 83/106 (78%) samples tested positive for NTS from both WRFs. The mean wastewater concentration from each WRF was 3.53 (Main St.) and 3.31 Log<sub>10</sub> invA Genetic Copies/L. The overall mean city concentration was 6.85 Log<sub>10</sub> invA Genetic Copies/L. There were sustained periods of NTS in the wastewater during the months of December-February and May-August. There was no observed seasonal trend in NTS wastewater concentrations over the study period. Culture-based methods will provide a comprehensive review of circulating serotypes that are responsible for both clinical and subclinical infections within the community. **DISCUSSION/SIGNIFICANCE:** Florida has an incidence of NTS twice the national average. Clinical surveillance is the current standard for community surveillance of NTS. Only 28% of NTS cases are identified in a clinical setting, leaving a major gap in community surveillance. This project has helped fill this gap and provided a comprehensive community-level assessment of NTS.

\*\*Lisa E. Emerson has been added as an author. An erratum detailing this change has also been published (doi:10.1017/cts.2022.416).

\*Blue Ribbon Awardee; <sup>1</sup>Gold Ribbon Awardee

© The Author(s), 2022. The Association for Clinical and Translational Science. This is an Open Access article, distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives licence (<https://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is unaltered and is properly cited. The written permission of Cambridge University Press must be obtained for commercial re-use or in order to create a derivative work.

101

#### Characterization of Hub and Spoke Facilities for Study of Surgical Care within United States Health Systems

Kristy K. Broman, Elizabeth Ross, Rob Weech-Maldonado, Smita Bhatia  
University of Alabama at Birmingham

**OBJECTIVES/GOALS:** An increasing number of hospitals and provider groups are consolidating into larger health systems, which hold potential to improve access to and quality of surgical cancer care through clinical integration across sites. In order to study clinical integration, we sought to develop: **METHODS/STUDY POPULATION:** Hospital data from the American Hospital Association were merged with data from the Agency for Healthcare Research and Quality's Compendium of United States Health Systems. For each health system with more than one acute care hospital, the hospital with the highest surgical volume (inpatient and outpatient) was categorized as the hub hospital while all other hospitals were categorized as spokes. We evaluated the concentration of case volumes at hub versus spoke hospitals and compared characteristics of these hospitals and their surrounding communities using univariate and multivariable logistic regression analyses. **RESULTS/ANTICIPATED RESULTS:** Within 624 health systems containing 3,554 hospitals, 355 hospitals were characterized as hub hospitals and had 2,645 affiliated spoke hospitals (median 17 spokes per hub, range 2-151). Hub hospitals performed a median of 68% of all surgical cases (25th-75th percentile 44-87%) and were concentrated in metropolitan (88.5%) and urban areas (11.5%) with none in rural areas; spoke hospitals were located in metropolitan (67%), urban (28%) and rural (5%) areas. On multivariable analysis, spoke hospitals were more often located in rural and small urban counties (OR 9.49, CI 4.57-19.70) and took care of a higher percentage of patients with less than high school education (OR 1.06 for each 1% increase, CI 1.03-1.10) but with lower poverty rates (OR 0.90 for each 1% increase in % poverty, CI 0.86-0.95). **DISCUSSION/SIGNIFICANCE:** For integrated health systems with multiple acute care hospitals, surgical volume is highest at a single hub hospital, supporting use of a hub-spoke taxonomy. Patient populations in counties with hub versus spoke hospitals differ in urban-rural location, poverty rates, and education level, which may impact access to quality care.

104

#### COVID-19 Exposure and Care-Seeking Behaviors Among Vulnerable Urban Adolescents and Young Adults—Baltimore, Maryland USA

Marshae Nickelberry<sup>1</sup>, Pamela A. Matson<sup>2</sup>, Allison Agwu<sup>2</sup>, Kathryn Van Eck<sup>2</sup>, Jamie Perin<sup>2</sup>, Jenell Coleman<sup>2</sup>, Maria Trent<sup>2</sup>

<sup>1</sup>Vanderbilt University Medical Center and <sup>2</sup>Johns Hopkins University Schools of Medicine, Nursing, and Public Health

**OBJECTIVES/GOALS:** This study seeks to determine the relationship between fear of COVID-19 infection and care-seeking behaviors including provider visit and telemedicine utilization among vulnerable adolescent and young adults in Baltimore, Maryland **METHODS/STUDY POPULATION:** Participants enrolled in the COVID-19 Youth study were 13-25 years old and recruited from four existing