Evidence is mounting that human health may be affected in communities where industrial food animal production (IFAP) facilities are located. IFAP facilities are large animal operations where animals live in confined areas in densely populated numbers. IFAP, as expected, produces large amounts of animal waste. Mass treatment of animals with antibiotics used for both treatment and prevention appear to be factors driving bacterial drug resistance in these animals and their waste are also agents of human illness such as E. coli and Salmonella. Earlier IFAP research has assessed community health risks associated with people living near swine and dairy/veal operations. Poultry operations have not been examined to date.

**Background**

Poultry can carry several types of bacteria that cause diarrheal illness in people. Salmonella, Campylobacter and E. coli are among the top causes and can contaminate undercooked chicken or eggs. Thorough cooking of meat and eggs will avoid acquiring these potentially dangerous pathogens that most often sicken the very young and the very old. It is unknown whether poultry production operations affect people living nearby.

Environmental contamination from poultry operations has the potential to spread bacteria beyond the farm to nearby communities. These pathogens colonize animals at an early age and spread quickly through a flock. From the poultry houses, bacteria may enter the larger community environment through several pathways. Examples include aerosolized particles or dust emitted through ventilation fans, pests such as flies, and the spread of poultry waste on crop fields as a fertilizer. Bouts of heavy rainfall may facilitate the spread of these harmful bacteria into surface and ground waters.

**Fisher Research Project**

Drs. Poulsen and Schwartz sought to explore whether poultry IFAP may affect the health of nearby communities through these pathways. Their project took advantage of an extensive database of electronic health record (EHR) data from Geisinger, a large integrated health system that serves approximately 1.6 million patients across central and northeastern Pennsylvania, an area with many IFAP facilities. Geisinger provides primary care services to over 500,000 patients living in this region which offered an exceptional opportunity to study effects of IFAPs across 38 counties. The collaboration with Geisinger allowed study of the health outcomes of tens of thousands of people for relatively low cost.

This project evaluated whether proximity of patient residences to high-density poultry production operations was associated with risk of gastrointestinal illnesses or community-acquired pneumonia. Proximity among patients with these illnesses was compared to proximity in persons without the illnesses, frequency-matched on age, sex, and year of contact with the health care system, while adjusting for sociodemographics and other variables.
The Fisher Center is profoundly proud of her accomplishments, but others have noticed as well. The Fisher Center award was Dr. Simner’s first research grant, and this provided the important pilot data for winning a prestigious R21 award from the National Institutes of Health (NIH). Moreover, data from the study have already generated 15 peer-reviewed publications benefiting 24 collaborators beyond the microbiology laboratory in the Johns Hopkins Epidemiology and Infection Control Department, Antimicrobial Stewardship Program as well as Biomedical Engineering and Computational Biology.

Such efforts bringing together expertise is highly robust. Such team science is also highly important for new faculty who are beginning their research careers to establish contacts and collaborators for future efforts. Private philanthropy dollars are more important than ever to allow innovative projects such as Dr. Simner’s, as traditional research sponsors such as the NIH now rarely grant funds to projects that are only hypothetical but instead are now more conservative and require preliminary data before considering. Recent staylines at the National Institute of Allergy and Infectious Diseases/NIH for first-time applicants such as Dr. Simner fell to an all-time low of 14% this year, whereas twenty years ago the percentage funded was higher than 30%.

Internal research programs such as the Fisher Center Discovery Program are more important than ever as a catalyst for sponsoring young investigators to productive careers that can lead to improved patient care. The generosity of Sherri and Ken Fisher who provided the initial funding for these pilot grants since 2013 has had a substantial magnifying effect as well as many others who have contributed. So far, the Fisher Center Discovery Program has meant that 25 primary investigators have taken the initial awards of typically 40,50,000 dollars each, and now these funds have led to nearly 34 million dollars in new research grants and 64 publications with more to follow. On behalf of the Fisher Center and the awardees, I am so thankful for the inspired philanthropy that has allowed the Center to help spur such success.

With best wishes for a happy and healthy 2019.
A number of Fisher Center affiliated faculty presented, received awards or volunteered, making for an outstanding 2018 ID Week, held October 3-7 in San Francisco, CA.

Presenters

Former Fisher Center Discovery Program (FCDP) grant recipients presented their research as an oral presentation, poster abstract, or symposium presentation. These include Meghan Davis, PhD, DVM, MPH (FCDP 2014); Pranita Tamta, MD, MHS (FCDP 2014); and Patricia Simner, PhD (FCDP 2016).

Award Recipients

Aaron M. Milstone, MD, MHS, received the 2018 Society for Healthcare Epidemiology of America (SHEA) Mentor Scholar Award for his commitment to mentoring fellows and junior faculty. Dr. Milstone is an Associate Professor of Pediatric Infectious Diseases and Epidemiology at Johns Hopkins University. He is Associate Hospital Epidemiologist at Johns Hopkins Hospital and the Pediatric Lead for Infection Prevention for Johns Hopkins Health System. He serves on multiple national committees and writing groups guiding practices to prevent healthcare associated infections (HAIs) and emergence of antibiotic resistance. Dr. Milstone is a Fisher Center Discovery Program grant recipient in 2013 for Development and Clinical Evaluation of Laboratory Methods to Identify Reduced Antiseptic Susceptibility in Organisms Causing Healthcare Associated Infections and in 2017 for Impact of Heterogeneous Resistance Mechanisms on Hospital Transmission of Carbapenem-Resistant Enterobacteriaceae (CRE).

Volunteers

Michael T. Melia, MD reviewed abstracts. Dr. Melia received data support from the Fisher Center for his Nocardia research and is co-investigator on several Lyme disease research projects.

Fisher Center Board Members were active at ID Week. Karen Carroll, MD and Paul Auwaerter, MD, MBA served on the ID Week Program Committee. Dr. Carroll was an author on several oral and poster presentations and was a symposium moderator. Dr. Auwaerter led the symposium on New and Updated Guidelines.

Richard Moore, MD, was an author on several posters.

ISDA Leadership

At the recent ID Week, Cynthia Sears, MD, assumed the Presidency of the Infectious Diseases Society of America (IDSA). Having served IDSA in numerous capacities, Dr. Sears has gained a special appreciation for the Society’s contributions through federal advocacy, improving member services, and educating the public about the value of ID specialists. As president, she looks forward to continuing to further the Society’s strategic priorities with a special emphasis on supporting young clinicians and researchers and recruiting the next generation of physician-scientists into the field of infectious diseases. Dr. Sears was recently honored by the American College of Physicians, receiving the Harriet P. Dustan Award for Science as Related to Medicine, for outstanding nationally or internationally recognized work in science. Dr. Sears is a 2013 Fisher Center Discovery Program grant recipient for Does Disruption of Host Microbiota Modify

Global Health Security

At ID week, CDC Director, Robert Redfield, MD, had a conversation with Dr. Auwaerter concerning global health security. Dr. Redfield stated, “Global health security and preparedness is the overarching mission of the CDC,” he said. “It is critical for the CDC to continue to prepare here and help other nations prepare for health emergencies.” Adding, “We need to take time to build a strong public health foundation both here and abroad.” That includes addressing the growing threat of antimicrobial resistance, which, Redfield said, “some people don’t see as a security concern but really is one of the biggest.”

Discussion was held on response to pandemics, including flu, as a significant health risk. Global pandemics “would cause massive disruptions on transportation, supply chains and other healthcare services, on top of the human health toll,” per Dr. Daniel Jernigan, director of the CDC’s influenza division.
Thank you to those who contributed so generously to support environmental infectious disease research and education in the past six months. Such gifts help facilitate innovative research, especially targeted to early-career investigators.

In particular, we would like to acknowledge

**RECENT PRESENTATIONS**


**RECENT PUBLICATIONS**


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**Funding Our Future**

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In particular, we would like to acknowledge: Helen R. Buck Foundation, Mr. Michael H. Kaplan, Mr. Alan Krasner, Mr. Park Miller, Mr. Thomas Owsley.

**If you are interested in supporting our work, please contact Donna Bolin at 410-550-9893 or dbolin1@jhmi.edu**

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