Exploring Microbial Community Alterations during Hospital Animal-Assisted Intervention Programs

Kathryn R. Dalton, PhD VMD MPH*; Karen C. Carroll, MD; Elizabeth A. Grice, PhD; Meghan F. Davis, PhD VMD MPH
* Presenting author, Contact: kdalton4@jhu.edu

Johns Hopkins Bloomberg School of Public Health

Background

- Animal-assisted interventions (AAI) are increasingly used by healthcare facilities
- Numerous benefits to patients
- Pathogenic and commensal microbes could be transferred between patients and therapy animals

Objectives

- Quantify microbial sharing between patients and therapy dogs
- Determine if contact level and a dog decolonization intervention modifies sharing

Methods

- Sampled nares of kids and therapy dogs before and after AAI visits
- Contact based on interaction time and key behaviors between kids & dogs
- Control and intervention visits with a dog topical chlorhexidine intervention
- Sequenced the 16S rRNA gene V1-3 region

Summary

- **Microbes are shared between pediatric patients and therapy dogs during AAI visits**
- Therapy dog can serve as vector in microbial sharing between patients
- Higher kid-dog contact linked to greater microbial sharing
- Intervention blocked dog pathway, but microbial sharing still occurred between patients
- Infection control efforts should reflect all possible pathways of microbial transmission

Results

- 105 samples (79 patient, 26 dog) over 13 visits
- Increased alpha diversity in patients and dogs in control visits, and decreased in intervention visits

Learn More

Future Directions

- Multi-center randomized clinical trial
- Temporal stability of microbial changes and health outcomes

Funding

NIH Eunice Kennedy Shriver National Institute of Child Health and Human Development
Morris Animal Foundation
Johns Hopkins ERC
Canine Health Foundation
American Kennel Club Canine Health Foundation

Figure 1: Microbial Pathways during Animal-Assisted Intervention Programs

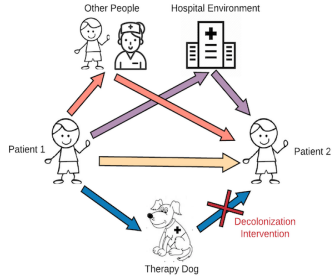

Figure 2: Difference in Beta Distance Post–Pre Visit, by Contact Level and Visit Type