# PROTECTING HERD HEALTH

*An Animal Disease Biosecurity Coordinated Agricultural Project*

## From the project director's desk...

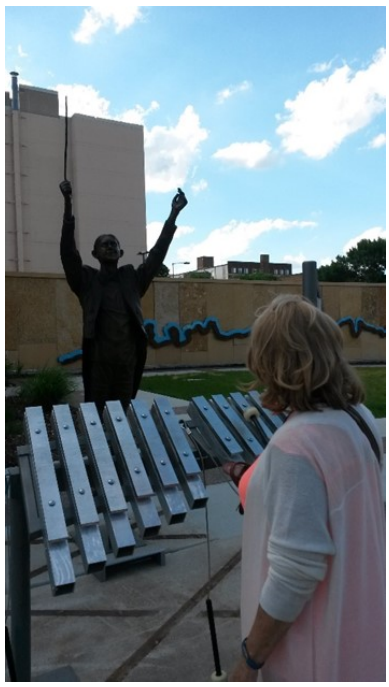
**Dr. Julie Smith, DVM, PhD**

Julie playing the street xylophone.

Like the child conductor embodied in this sculpture in Mankato, MN, I enjoy leading this project with playful enthusiasm. Matt Myers assisted in designing and facilitating the project team meeting that took place in Mankato in June where the talents of the team were shared and celebrated. Plenty of opportunities were provided for team members to interact across disciplines. This led to productive discussions and solid plans for moving forward.

Several members of the team joined advisor Steve Dritz at the headquarters of Christensen Farms (CF) for a visit and tour. We learned how their management team has integrated new layers of biosecurity into protecting the health of sows and hogs in their system. Based on the demonstrated potential for porcine epidemic diarrhea virus (PEDv) to spread through contaminated feed (or vehicles), CF created a tiered biosecurity designation of sites within their system and directs feed deliveries accordingly. We also visited one of the truck/trailer wash bays, which are an essential part of their system biosecurity program.

Our project has focused on factors associated with the spread of PEDv, which does not trigger a federal response to eradicate the disease. However, diseases with trade implications and significant animal losses are within the scope of our project's goal of enhancing the capacity of food animal industries to mitigate the consequences of any new, emerging, or foreign animal disease. To learn about Minnesota's experience with highly pathogenic avian influenza (HPAI) in 2014-15 , we invited Dr. Sally Noll of the University of Minnesota to speak with us. She described the role of Extension in support of response and recovery activities. While quick to indicate that Extension is not a response organization, the need for integration with ICS information sharing activities was made clear.



Street sculpture in Mankato, MN.

A culture of biosecurity promoted by top management along with biosecurity built into the barn (such as Danish entry systems) to promote compliance by workers with direct animal contact appear to be key elements of a successful biosecurity program. As disease threats emerge and evolve, decision-makers must assess (and re-assess) the potential for various routes of transmission to spread disease and weigh the costs of disease against the costs of installing and implementing biosecurity safeguards. Sustainability will elude those that select a less than optimal biosecurity strategy for their particular situation.

The combined power of the simulation games and agent based model simulations of systemic disease spread developed by the Social-Ecological Gaming and Simulation (SEGS) laboratory members of the team (based at UVM) is becoming more and more apparent. These tools are intentionally designed to assist with decision making, but they also will facilitate the development of effective messaging and educational outreach.

Meeting in Mankato has given us valuable access to industry stakeholders; however, we are looking forward to meeting in January 2018 in Orlando and inviting many of our advisors to join us.

Here's to health in 2018.
Julie

# Guest editorial by Dr. Steve Van Wie

# If you want to change the world . . .

I grew up on a family farm mid-way through the last century. My family scratched a living from a few cows; made "do" when necessary and abhorred going into debt. Salesmen were sent packing with the phrase "If it don't make milk, we're not interested". Computers, cell phones and robotic milking machines were not even on the horizon. A really big farm had 150 cows. Today you're not big until you have 3,000 cows!

After witnessing the carnage wrought by foot-and-mouth disease (FMD) in England in 2001, back home I wanted to make sure the same event did not repeat on US soil. The term "biosecurity" had barely been coined. It was foreign to the average farmer. I'd tell my story time and again suggesting that farmers, suppliers and their employees "button up". Close the barn door. Restrict access. Invest a few dollars to practice good "biosecurity", whatever that was. Responses ranged from "Hasn't happened yet" to "Not in my back yard" and "I'll do it if someone pays me to". No sale, Steve. My impassioned sales pitch was being met with "If it don't make milk, I'm not interested"!

Then I realized something. No matter where I went, my audience was always the same. It was a predictable mix made up largely of strong, independent men over 50 who had been bribed to attend a meeting at the Co-Op with the promise of a free lunch. No one needed to tell them how to farm. Despite 9/11 and the constant message that terrorists will attack us, in rural America, down on the farm, there was no perceived threat and no motivation to take protective actions. In essence, "I'm too busy, gotta farm."

When Julie first proposed what is now ADB-CAP, I thought my friend and like-minded colleague of over a decade had gone stark raving crazy. She was running down a rabbit hole full of alphabet soup. That was until I had the privilege of meeting the entire project team in Mankato last June. Then I realized that Julie had pulled together a truly inter-disciplinary team from across the US. Ecologists, economists, educators, and communication specialists are collaboratively assisting one another.

But why, I wondered, did Julie recruit people who write computer games? Web designers? Social media experts? With ADB-CAP Julie had seen what I had not. She had realized why we as veterinarians and extension folks had been unsuccessful with our PowerPoint driven biosecurity messages directed at an aging audience that has no real intent of changing. We needed to target a more malleable audience in new ways. Look no further than the groups that were targeted in the successful campaigns to increase seat belt use and decrease tobacco use!

True and lasting changes in behavior can only evolve by speaking to the next, not current, generation of farmers. Our messages must be adapted to reach them in their language and via channels that they, not we, are comfortable using when receiving them. The farmers who will feed the world in decades to come absorb information far less at formal meetings and far more on Facebook, YouTube and Instagram. Their entertainment and education may come from playing a computer game or simulation on their smart phone. It's obvious isn't it? If you want to change the world, you have to start with the young!

Steve

# June 2017 Meeting Highlights: Dr. Sally Noll on HPAI

**Dr. Julie Smith, DVM, PhD**

Although our grant has focused on the swine industry's recent experience with porcine epidemic diarrhea (PED), collaborators at the June meeting in Mankato expanded their horizons with a presentation on another devastating disease, highly pathogenic avian influenza (HPAI). HPAI triggers an emergency response to eradicate the disease unlike the response made to the emergence of PED. Experiencing HPAI was devastating to the turkey industry in Minnesota, which is the nation's top turkey producing state, responsible for about 41 million birds annually.

Dr. Sally Noll, Professor in Animal Science at the University of Minnesota, joined us to share her perspectives on the turkey industry's experience with HPAI. As part of her research and extension responsibilities, she has led programs on turkey nutrition and management, particularly biosecurity. Because of her expertise and connections with the turkey industry, which was seriously impacted by the HPAI outbreak in 2015, Dr. Noll was highly involved in communicating with turkey farmers during the response. She noted that the outbreak brought with it a huge emotional impact as farmers lost birds, lost income, had to lay off employees, and wondered when they would be able to repopulate. She indicated that Extension doesn't "do" response, but they are certainly a resource and focused on what could be done to improve biosecurity in the moment and in the long-term. She assisted with training farmers on using the "Danish entry" system and other ways to protect their flock's health.

Figuring out where to focus efforts to keep HPAI out next time depends on knowing what factors were most responsible for disease entry and spread. To this end, the Center for Animal Health and Food Safety in the College of Veterinary Medicine at the University of Minnesota conducted a case-control study and reported the findings in a report titled, Epidemiologic Study of HPAI H5N2 among Turkey Farms 2015. The study was conducted by surveying turkey farmers, about half of whom had farms affected by HPAI, and asking them to describe their farm, surrounding environment including presence of wild birds, and management practices. Farms were similar in terms of size and type of production. One of the biggest risk factors for infection was being near another infected farm. In essence, once disease entered a facility, multiplication of virus increased the infective load in the neighborhood. Farms which disposed of dead birds through a rendering service were then at greater risk of infection (because the rendering pickup truck moves from farm to farm). On the other hand, farms that implemented more disease control protocols were at a lower risk of becoming infected. Later in the outbreak, use of a vehicle wash station/spray area and simply being located on non-asphalt roads were identified as important risk factors for HPAI. Specific recommendations generated by this study were to plant perennial crops in fields closest to turkey barns (because tillage was associated with infection early in the outbreak) and to place the rendering bins well away from production barns or require that rendering trucks be cleaned and disinfected. My take away is that practical challenges with cleaning and disinfection of large vehicles makes placement of bins with access points that prevent overlap between tracks of farm and off-farm vehicles an important consideration. This is an example of the line of separation concept that factors into secure food supply plans.

# Snapshot from Feed Mill Tour

Several members of the project team toured the Christensen Farms feed mill and truck wash facility in Sleepy Eye, MN, ahead of the meeting in Mankato. (Feed receiving bay is pictured left.) We appreciated meeting with the management team and learning how they approach minimizing the likelihood of transmission of disease into the mill and among facilities. As Dr. Steve Dritz shared in a presentation on feed mill biosecurity, this is an area of heightened concern in the swine industry since the discovery of PEDv in 2014.

## Snapshots from June Meeting

Team members gathered in Mankato, Minnesota, for project updates and interdisciplinary interactions.

Inter-disciplinary discussions continue around the tables.

Collaborators interacting during a poster session.

## Branding Update

Check out our final logo! Many thanks to Maxwell Kuchenreuther for his dedication to seeking and responding to feedback on earlier designs.

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## Collaborating Institutions

**Our team is comprised of people from many great universities and organizations!**

The University of Vermont

Kansas State University

Iowa State University

University of Central Florida

Washington State University

Montana State University

USDA

technology for learning center

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