Breakfast of Champions! An Udderly Horrific Outbreak of *E.coli* Associated with Raw Milk Consumption

Presenter: Daniel Ferrell, MPH, District Epidemiologist, Rappahannock-Rapidan Health District

Background: In March 2016, a physician notified the Virginia Department of Health (VDH) of four hospitalized patients with Shiga toxin-producing *Escherichia coli* (STEC) infection, including two with hemolytic uremic syndrome (HUS). All had recently consumed raw milk from a farm in the Rappahannock-Rapidan Health District (RRHD), as part of a herd-share program. For several weeks, RRHD staff received additional reports of patients with STEC or HUS who had also consumed raw milk from the farm.

Methods: Communicable disease staff from RRHD and other affected health districts interviewed ill patients using standardized forms. RRHD, VDH and the Virginia Department of Agriculture and Consumer Services (VDACS) staff visited the farm for inspections and sampling. VDACS assessed milking and bottling operations and collected milk and environmental specimens. One ill shareholder submitted leftover raw milk for testing at the Division of Consolidated Laboratory Services (DCLS). Milk specimens were tested by Enzyme Linked Fluorescent Assay for STEC O157 at VDACS and by culture and pulsed-field gel electrophoresis (PFGE) at DCLS. DCLS tested patient specimens by culture and PFGE.

Results: The exposure in common among interviewed patients was consuming raw milk from the farm. Education was provided to facility owners on preventing equipment contamination, proper sanitation techniques, and the dangers associated with producing unpasteurized milk. The facility voluntarily suspended operations while equipment was cleaned. STEC was not isolated from any environmental or milk specimens collected at the farm. Non-O157 STEC from a private household's raw milk was indistinguishable, by PFGE, from another ill shareholder's isolate.

Conclusion: Based on epidemiological and laboratory evidence, an outbreak of STEC associated with raw milk consumption was identified. Education on potentials points of contamination and a thorough cleaning of the facility were critical to stopping the outbreak. STEC outbreaks related to the consumption of raw milk can be prevented through the pasteurization of milk and milk products.