Dr. Kirk Smith

Dr. Smith grew up on a cattle and grain farm near McHenry, North Dakota. He obtained a B.S. degree in biology from the University of North Dakota in 1982. He then attended lowa State University, where he obtained a Doctor of Veterinary Medicine degree in 1990 and an M.S. degree in Veterinary Preventive Medicine in 1991. He obtained a Ph.D. degree in Veterinary Parasitology from the University of Georgia in 1995. During 1996-1998 he served as an Epidemic Intelligence Service Officer for the Centers for Disease Control and Prevention (CDC); he was stationed at the Minnesota Department of Health (MDH). Since 1999 he has been Supervisor of the MDH Foodborne, Vectorborne, and Zoonotic Diseases Unit. Dr. Smith has a deep personal and professional interest in agricultural safety. particularly infectious diseases acquired from animals in agricultural settings. He has extensive experience in surveillance and investigation of infectious diseases, including those that are most pertinent to agricultural populations and settings. Under his leadership, MDH has developed a nationally renowned outbreak investigation system. MDH has documented numerous zoonotic disease outbreaks due to animal contact. Dr. Smith is a long-time member of the National Association of State Public Health Veterinarians Animal Contact Compendium Committee, for which he currently serves as co-chair. Dr. Smith is a past recipient of the CDC James H. Steele Veterinary Public Health Award (2002), and the American Association of Food Hygiene Veterinarians Food Hygiene Veterinarian of the Year (2009). He has authored or co-authored more than 80 peer-reviewed scientific publications.

Selected Peer-reviewed publications

Smith KE, Zimmerman JJ, Patton S, Beran GW, Hill HT. The epidemiology of toxoplasmosis on Iowa swine farms with an emphasis on the roles of free-living mammals. *Vet Parasitol*. 1992;42:199-211.

Smith KE, Zimmerman JJ, Bolin CA, Beran GW, Hill HT. A survey of house mice (*Mus musculus*) from lowa swine farms for infection with *Leptospira interrogans* serovar bratislava. *Can Vet J.* 1992;33:742-44.

Smith KE, Besser JM, Hedberg CW, Leano FT, Bender JB, Wicklund JH, Johnson BP, Moore KA, Osterholm MT, and the Investigation Team. Quinolone-resistant *Campylobacter jejuni* infections in Minnesota, 1992-1998. *New Eng J Med*. 999;340:1525-32.

Centers for Disease Control and Prevention. Human ingestion of *Bacillus anthracis*-contaminated meat - Minnesota, August 2000. *Morb Mortal Wkly Rep.* 2000;49:813-16.

Naimi T, LeDell K, Boxrud D, Groom A, Steward C, Johnson S, Besser J, O'Boyle C, Danila R, Cheek J, Osterholm M, Moore K, Smith K. Epidemiology and clonality of community-acquired methicillin-resistant *Staphylococcus aureus* in Minnesota, 1996-1998. *Clin Infect Dis.* 2001;33:990-96.

Bender JB, Smith KE, McNees AA, Rabatsky-Ehr TR, Segler SD, Hawkins MA, Spina NL, Keene WE, Kennedy MH, Van Gilder TJ, Hedberg CW. Factors affecting surveillance data on *Escherichia coli* O157 infections collected from FoodNet sites, 1996-1999. *Clin Infect Dis.* 2004;38 Suppl 3:S271-78.

Kassenborg HD, Hedberg CW, Hoekstra M, Evans MC, Chin AE, Marcus R, Vugia DJ, Smith K,Ahuja SD, Slutsker L, Griffin PM. Farm visits and undercooked hamburgers as major risk factors for sporadic *Escherichia coli* O157:H7 infection: data from a case-control study in 5 FoodNet sites. *Clin Infect Dis.* 2004;38 Suppl 3:S271-78.

Smith KE, Stenzel SA, Bender JB, Wagstrom E, Soderlund D, Leano FT, Taylor CM, Belle-Isle PA, Danila R. Outbreaks of enteric infections caused by multiple pathogens associated with calves at a farm day camp. *Pediatr Infect Dis J.* 2004;23:1098-04.

Smith KE, Anderson F, Medus C, Leano F, Adams J. Outbreaks of salmonellosis at elementary schools associated with dissection of owl pellets. *Vector Borne Zoonotic Dis.* 2005;5:133-36.

Wright JG, Tengelsen LA, Smith KE, Bender JB, Frank RK, Grendon JH, Rice DH, Thiessen AB, Gilbertson CJ, Sivapalasingam S, Barrett TJ, Hancock DD, Angulo FJ. Multidrug-resistant *Salmonella* typhimurium in four animal facilities. *Emerg Infect Dis.* 2005;11:1235-41.

Wedel SD, Bender JB, Leano FT, Boxrud DJ, Hedberg C, Smith KE. Antimicrobial-drug susceptibility of human and animal *Salmonella* Typhimurium Isolates, Minnesota, 1997-2003. *Emerg Infect Dis*. 2005;11:1899-1906.

Castor ML, Wagstrom EA, Danila RN, Smith KE, Naimi TS, Besser JM, Peacock KA, Juni BA, Hunt JM, Bartkus JM, Kirkhorn SR, Lynfield R. An outbreak of Pontiac fever with respiratory distress among workers performing high-pressure cleaning at a sugar-beet processing plant. *J Infect Dis.* 2005:191:1530-37.

Kiang KM, Scheftel JM, Leano FT, Taylor CM, Belle-Isle PA, Cebelinski EA, Danila R, Smith KE. Recurrent outbreaks of cryptosporidiosis associated with calves among students at an educational farm programme, Minnesota, 2003. *Epidemiol Infect*. 2006;134:876-86.

Lopes VC, Wedel SD, Bender JB, Smith KE, Leano FT, Boxrud DJ, Lauer DC, Velayudhan BT, Nagaraja KV. Emergence of multidrug-resistant *Salmonella enterica* serotype Newport in Minnesota. *Clin Infect Dis.* 2006;43:210-13.

Liesener AL, Smith KE, Davis RD, Bender JB, Danila RN, Neitzel DF, Nordquist GE, Forsman SR, Scheftel JM. Circumstances of bat encounters and knowledge of rabies among Minnesota residents submitting bats for rabies testing. *Vector Borne Zoonotic Dis.* 2006;6:208-15.

Mukherjee A, Cho S, Scheftel J, Jawahir S, Smith K, Diez-Gonzalez F. Soil survival of *Escherichia coli* O157:H7 acquired by a child from garden soil recently fertilized with cattle manure. *J Appl Microbiol*. 2006;101:429-36.

Swanson SJ, Snider C, Braden CR, Boxrud D, Wunschmann A, Rudroff JA, Lockett J, Smith KE. Multidrug-resistant Salmonella Typhimurium associated with pet rodents. *New Engl J Med*. 2007;356:21-8.

Voetsch AC, Kennedy MH, Keene WE, Smith KE, Rabatsky-Ehr T, Zansky S, Thomas SM, Mohle-Boetani J, Sparling PH, McGavern MB, Mead PS. Risk factors for sporadic Shiga toxin-producing *Escherichia coli* O157 infections in Foodnet sites, 1999-2000. *Epidemiol Infect*. 2007;135:993-1000.

Yew AH, Merrell RT, Zubkov AY, Aksamit AJ, Hu WT, Manno EM, Scheftel J, DeVries A, Neitzel D, Danila R, Smith KE, Rupprecht CE, Holzbauer S. Human rabies - Minnesota, 2007. *Morb Mortal Wkly Rep.* 2008;57:460-62.

Fuller CC, Jawahir SL, Leano FT, Bidol SA, Signs K, Davis C, Morgan M, Teltow G, Jones B, Sexton RB, Davis GL, Braden CR, Deasy MP, Smith KE. Multi-state *Salmonella* Typhimurium outbreak associated with frozen vacuum-packed rodents used to feed snakes. *Zoonosis Publ Hlth.* 2008;55:481-87.

Smith KE, Medus C, Meyer SD, Boxrud DJ, Leano F, Hedberg CW, Elfering K, Braymen C, Bender JB, Danila RN. Outbreaks of salmonellosis in Minnesota (1998 to 2006) associated with frozen, microwaveable, breaded, stuffed chicken products. *J Food Prot.* 2008;71:2153-60.

Hedican E, Smith K, Jawahir S, Scheftel J, Kruger K, Birk R, Goplin JL, Garvey A, Schmitt D, Trampel DW, Perry CA, Sotir MJ, Angulo FJ, Sharapov U, Barton Behravesh C. Multistate outbreaks of *Salmonella* infections associated with live poultry-United States, 2007. *Morb Mortal Wkly Rep.* 2009;58:25-9.

Hedican EB, Medus C, Besser JM, Juni BA, Koziol B, Taylor C, Smith KE. Characteristics of O157 versus non-O157 Shiga toxin-producing *Escherichia coli* infections in Minnesota, 2000-2006. *Clin Infect Dis.* 2009;49:358-64.

Holzbauer SM, DeVries AS, Sejvar JJ, Lees CH, Adjemian J, MCQuiston JH, Medus C, Lexau CA, Harris JR, Recuenco SE, Belay ED, Howell JF, Buss BF, Hornig M, Gibbins JD, Brueck SE, Smith KE, Danila RN, Lipkin WI, Lachance DH, Dyck PJ, Lynfield R. Epidemiologic investigation of immune-mediated polyradiculoneuropathy among abattoir workers exposed to porcine brain. *PLoS One.* 2010; 5:1-10.

Robinson TJ, Cebelinski EA, Taylor C, Smith K. Evaluation of the positive predictive value of rapid assays used by clinical laboratories in Minnesota for the diagnosis of cryptosporidiosis. *Clin Infect Dis.* 2010;50:e53-e55.

Hedican E, Miller B, Ziemer B, Lemaster P, Jawahir S, Leano F, Smith K. Salmonellosis outbreak due to chicken contact leading to a foodborne outbreak associated with infected delicatessen workers. *Foodborne Pathog Dis.* 2010;7:995-7.

Rounds JM, Hedberg CW, Meyer S, Boxrud DJ, Smith KE. *Salmonella enterica* pulsed-field gel electrophoresis clusters, Minnesota, USA, 2001–2007. *Emerg Infect Dis.* 2010;16:1679-85.

Dunn JR, Smith KE, Blackmore C, Castrodale L, Wohrle R, Wright JH. Compendium of measures to prevent disease associated with animals in public settings, 2011: National Association of State Public Health Veterinarians, Inc. *MMWR Recomm Rep.* May 6, 2011;60(RR-04):1-24.

Barton Behravesh C, Jones TF, Vugia DJ, Long C, Marcus R, Smith K, Thomas S, Zansky S, Fullerton KE, Henao OL, Scallan E. Deaths associated with bacterial pathogens transmitted commonly through food: Foodborne diseases active surveillance network (FoodNet), 1996-2005. *J Infect Dis.* July 2011;204(2):263-7.

Rounds JM, Boxrud DJ, Jawahir SL, Smith KE. Dynamics of *Escherichia coli* O157:H7 outbreak detection and investigation, Minnesota 2000-2008. *Epi Infect*. 2011;epub ahead of print, November 18.

Lowther SA, Medus C, Scheftel J, Leano F, Jawahir S, Smith K. Outbreak of *Salmonella* Subspecies IV infections associated with contamination from bearded dragons. *Zoonoses Public Health*. 2011;3(1):e3.

Rounds JM, Rigdon CE, Muhl LJ, Forstner M, Danzeisen GT, Koziol BS, Taylor C, Shaw BT, Short GL, Smith KE. Non-O157 shiga toxin-producing *Escherichia coli* infections associated with venison *Emerg Infect Dis.* February 2012;18(2).

Smith KE, Wilker PR, Reiter PL, Hedican EB, Bender JB, Hedberg CW. Antibiotic treatment of *Escherichia coli* O157 infection and the risk of the hemolytic uremic syndrome, Minnesota. *Ped Infect Dis J.* 2012;31:37-41.