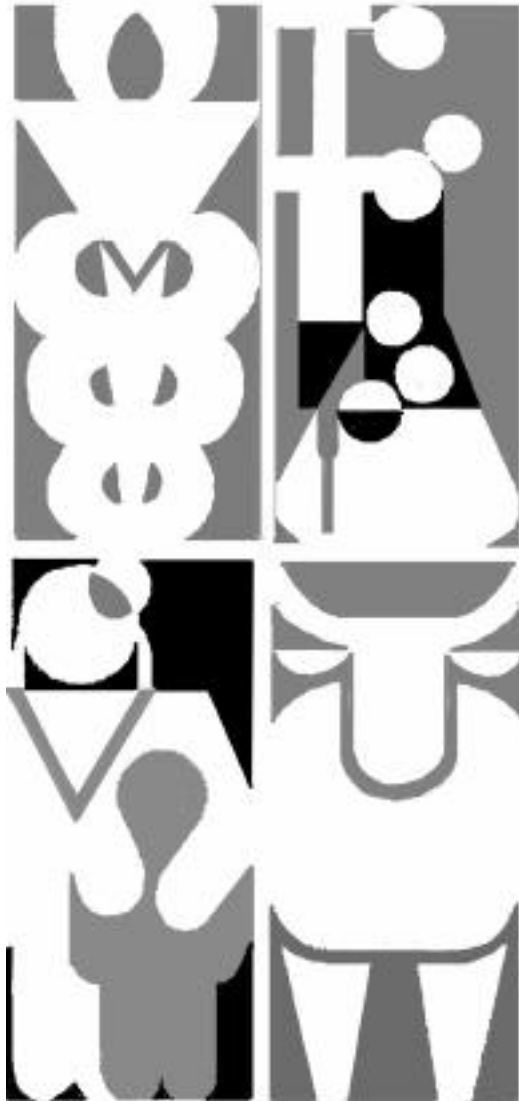


# NEWSLETTER



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ATVPHPM is committed to developing and fostering the academic base for veterinary public health and preventive medicine

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# ASSOCIATION NEWS

## How to Contact ATVPHPM

Applications for membership, accompanied by a check for \$15 payable to the ATVPHPM, should be sent to:

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Membership application forms are available online at:

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Current and past issues of the ATVPHPM Newsletter are also available online at:

<http://www.cvm.uiuc.edu/atvphpm/>

## Dr. Ronald D. Smith, ATVPHPM Newsletter Editor, Receives National Award for Distance Education

Dr. Ronald D. Smith, of Urbana, Ill., was among a select few who won a 2000 American Distance Education Consortium (ADEC) "Excellence in

College and University Distance Education National Award" at its March meeting in Washington, D.C. Dr. Smith was honored for his pioneering work using the World Wide Web for education in veterinary medicine and food safety. ADEC is a nonprofit organization of 58 state universities and land-grant colleges.

The award recognizes work that is effective, creative, and collaborative and faculty members who have commitment to high standards for distance education. A professor of epidemiology and preventive medicine at University of Illinois College of Veterinary Medicine in Urbana, Dr. Smith placed the entire veterinary curriculum on line. His asynchronous programs, "Food Safety CAI" and "Virtual Rounds", support learning within and outside of the college.

"My Virtual Rounds case-based veterinary medical exercises are designed to introduce students to clinical problem solving, epidemiologic concepts, and evidence-based medicine," noted Dr. Smith. The program draws on the most current online resources, which are critical for the success of veterinarians, and other health professionals. Dr. Smith further commented, "I am honored to have my work recognized by such a prestigious national organization. The ADEC award has helped focus local and national attention on efforts by all of us to enhance higher education through innovative approaches to distance education."

In 1997 Dr. Smith received the Merck AgVet Creativity Award for innovative and creative use of the Internet for teaching. He speaks widely to veterinary and public health audiences on the educational aspects of computers and the Internet.

Details of the ADEC award recipients and their distance education programs can be found at: <http://www.adec.edu/user/current/2000/UKnewsrel.html>. ADEC's "Guiding Principles for Distance Teaching and Learning" can be found at: [http://www.adec.edu/admin/papers/distance-teaching\\_principles.html](http://www.adec.edu/admin/papers/distance-teaching_principles.html).

# CORRESPONDENCE

## **Dr. Scott Cornwell, Fl '82, Makes Inroads In Bosnia...Assists In Viral Disease Efforts**

Reprinted with permission

FLORIDA veterinarian  
The University of Florida-College of Veterinary  
Medicine  
Spring-Summer 2000

by SARAH CAREY

Dr. Scott Cornwell's war stories will make you cry.

A veterinarian whose heart lies not only with helping animals, but also with helping people, Cornwell's service-to-country commitment led him to join the Army Reserves as an undergraduate student at Clemson.

His military affiliation has provided Cornwell with opportunities to visit countries all over the world for the past 18 years. None of these tours, however, have had the heartbreaking impact of his recent visit to Bosnia.

"I'd done other Reserve missions in Haiti, Guyana, El Salvador, Bolivia, Ecuador and Panama," said Cornwell, '82, who is originally from Fort Myers and continues to practice privately in the area. "But this trip was different, as it gave us the opportunity to really get involved with the politics of the country."

Cornwell belongs to a civil affairs battalion that serves as a sort of liaison between the military and civilian population. There were veterinarians and lawyers in his unit, and much of their activity focused on issues involving the return of refugees who had fled the country in wartime.

"Some areas were devastated and people were not getting any help," Cornwell said. "We tried to assist in making these areas more self sufficient and harmonious."

Devastated by a war that officially ended five years ago, Bosnia still suffers from the aftermath, both physically and psychologically, Cornwell said. "Veterinary medicine is probably one of the most important issues in Bosnia right now," he said. "The people there need so badly to become more self sufficient agriculturally. Many animals were killed during the war and we know that animal disease has greatly affected livestock."

Zoonotic diseases including trichinosis, q-fever, leishmaniasis, rabies, brucellosis, and echinococcosis are known to exist in the region.

"There are no uniform border checkpoints," Cornwell said. "More than 400 entry points have been identified in this small country, and these are controlled very independently by different groups."

When the war ended, the Dayton agreement provided for the country to be divided into two entities. One, known as the Federation, is populated primarily by Croats and Muslims. The other, the Republic of Srpska (RS) is inhabited primarily by Serbians. Additionally, the Federation is divided into "kantons", some of which have their own policies and regulations.

"The international community will only recognize Bosnia's policies when they become unified under some central office," Cornwell said, adding that the two entities refuse to cooperate on central issues, such as border policies.

The extent of the animal disease problem is difficult to pinpoint, however, due to a lack of communication in the region. Ethnic differences and language barriers, coupled with an absence of infrastructure capability, add to the problem's complexity.

For example, Cornwell received a call from the University of Sarajevo regarding a wolf suspected of being rabid. The caller wondered if Cornwell could assist in sending a brain sample to the World Health Organization's Virology Center in Tubingen, Germany.

He did, and the test confirmed rabies.

"The World Health Organization (WHO) was really excited about hearing from Bosnia," Cornwell said. "No one from Bosnia had been in contact with them since before the war."

Cornwell arranged to go to Germany to help facilitate better communication between the veterinarians at the University of Sarajevo and WHO.

"Right before I was supposed to leave, someone from the University called me to say that another wolf had attacked some people and wanted to know if I could take another sample to Germany." Once more, Cornwell complied and the sample again tested positive.

"From that point, a collaboration started between the folks at the University and the people at the WHO virology center," he said.

While the WHO laboratory is considered the information and diagnostic center for all of Europe, there are three diagnostic labs in Bosnia: One in Mostar, run by Croatians; one in Sarajevo, primarily Muslim; and one in Banja Luka, operated by Serbians.

"The problem is the politics that pervade everything in that country," Cornwell said. "In Banja Luka, instead of sending reports to Sarajevo, they'd send everything to Belgrade in Serbia...and up until recently, the guys in Mostar were sending everything to Zagreb, Croatia."

Cornwell said he tried to work toward a goal of having all reports sent through Sarajevo, as its laboratory was the best in the region.

"It looks like we've made some progress, even though I was only there for seven months," Cornwell said. "You'd really need to be there longer to make a lasting difference."

He hopes his military replacement will continue to pursue that goal.

Veterinary facilities in Bosnia are owned by the local kantons, Cornwell said.

"The veterinarians do charge for their services, but the prices are quite low," he said. "One woman brought in a puppy that had suffered physical trauma and the price for examining the dog was around \$12. With the average income in Bosnia working out to \$150-\$200 per month, most people are unable to afford this amount."

Most Bosnian veterinarians, "would just kiss the ground if someone from the U.S. would come over and give them some information and communication," Cornwell said.

Through his dealings with the University of Sarajevo, Cornwell met a young veterinarian named Ramiz Velic,

who approached him one day with an e-mail from UF's Dr. Paul Gibbs.

"I said, 'I know this guy,'" said Cornwell, who recalled Gibbs as one of his former professors.

It turned out that Velic had submitted an abstract to present a paper at a scientific meeting in France. Part of his paper dealt with the discovery of a strain of equine influenza virus that had not been seen in many years.

Gibbs, who is involved with an equine influenza recombinant vaccine project at UF, was intrigued.

Cornwell was able to help the two communicate, despite the language barrier.

"With Scott's assistance, we have arranged for the WHO Equine Influenza Reference Center in Newmarket, England to work with Bosnia and establish whether a type of influenza virus we thought was extinct might indeed be still active in Bosnia-Herzegovina," Gibbs said.

In addition to his veterinary work, Cornwell found himself involved in other activities that reinforced his awareness of an environment where murders, torture and other wartime atrocities were a way of life - and continues to haunt survivors.

He spent three days working with a mass grave exhumation, participating as an observer and partner to a fellow reservist, an attorney, who needed someone to go with him.

"It was pretty intense," Cornwell said.

It's obvious that Cornwell, who was unsuccessful in extending his military stay in Bosnia, feels his work there is not done.

"I can't not go back," he said. "Sarajevo is a beautiful little European city with nice restaurants and hotels, if you can believe it. I never felt in danger. But the general, prevailing attitude is pretty hopeless because the country itself is dysfunctional."

## INTERNET RESOURCES

### **NASDA Releases Food Safety Guide Online**

NASDA's Research Foundation has made the "Food Safety State and Federal Standards and Regulations" manual available on the Internet on NASDA's website at

<http://www.nasda.org/>. The book describes how food is regulated at the federal, state, and local level. It was developed by NASDA's Research Foundation through the National Center for Agricultural Law Research and Information with a grant from the U.S. Food and Drug Administration (FDA).

The new online manual provides an overview of food safety regulation for persons employed in agricultural production, transportation and warehousing, food processing, and wholesale and retail marketing, as well as for educated consumers. The primary audience for the document is non-lawyers who need to know how food safety laws affect their business; but, it is also a useful reference for lawyers and other conducting food safety law research.

The document includes a description of federal legislation and regulation, as well as chapters outlining state and local laws and regulations governing food safety. It also describes how food safety laws regulate specific types of businesses, such as restaurants and grocery stores. (Contact: Charlie Ingram or Rick Kirchoff)

### **Interesting Website for Electronic Agriculture Journals**

From: Will Hueston <wh73@umail.umd.edu>

Colleagues - A note from our librarian alerted me to the following website of agriculture-related web-based journals. You can search the full text of these journals. Just don't ask me why it is called "Tomato Juice"!  
<http://hegel.lib.ncsu.edu/stacks/serials/tomato-juice/>

### **EpiVetNet**

From: Dirk Pfeiffer <pfeiffer@rvc.ac.uk>

I am pleased to announce that EpiVetNet can now be accessed on two different sites:  
<http://epiweb.massey.ac.nz> and  
<http://www.rvc.ac.uk/epivetnet>

### **Salmonella Surveillance on Internet - Global**

Source: WHO/WER, Vol. 75 / No. 29, July 21, 2000

Global Salm-Surv (GSS), WHO's Salmonella surveillance and laboratory support project, is now accessible on the Internet, at:  
<<http://www.who.int/salmsurv>> Initiated in January 2000, GSS is a collaborative project of WHO, the WHO collaborating centre for foodborne disease surveillance (Atlanta, United States) and the Danish Veterinary Laboratory (Copenhagen, Denmark).

GSS is a global network of over 150 individuals from 108 laboratories and 66 countries involved in the surveillance of Salmonella from humans, animals and food. The primary goal of this network is to strengthen the Salmonella surveillance capacities of national and regional laboratories.

Global Salm-Surv consists of the following:

1. An international, online accessible database that contains: contact information of national or regional salmonellosis laboratories; descriptions of laboratory responsibilities, laboratory methods and types of samples received; annual surveillance summary results of most frequently isolated salmonella serotypes.
2. Data sharing and communication between laboratories and individuals via e-mail, web, electronic discussion group and/or fax.
3. Participation in internal and external quality assurance systems. This is a useful tool for the production of reliable laboratory results of consistently good quality. A recent WHO survey determined that less than 50% of laboratories performing antimicrobial resistance testing of Salmonella isolates participated in any formal system of quality assurance.
4. Training courses on surveillance of salmonellosis and antimicrobial resistance in Salmonella. The aim is to provide training in the following:
  - (1) standardized laboratory methods for the isolation, identification and antimicrobial-susceptibility testing of foodborne Salmonella;
  - (2) interpretation of results; and
  - (3) utilization of foodborne disease surveillance and antimicrobial resistance.
5. Selected reference testing services for a limited number of Salmonella isolates per participant. Selected testing services available to GSS participants include serotyping and phage typing of Salmonella, and antimicrobial-susceptibility testing of Salmonella (and occasionally other foodborne bacteria).

Global Salm-Surv is part of WHO's endeavours to strengthen the capacities of its Member States in the surveillance and control of major foodborne diseases and to contribute to the global effort of surveillance and containment of antimicrobial resistance in foodborne pathogens. Eventually, it is intended to extend the network to other major foodborne pathogens. Individuals and laboratories who are not currently members but are interested in participating in WHO's Global Salm-Surv should fill out the request form available on the website.

### **OIE Manual**

From: "Bruce Akey" <BAkey@vdacs.state.va.us>

The OIE Manual of Standards for Diagnostic Tests and Vaccines is now accessible on-line through the OIE website at [www.oie.int](http://www.oie.int), the direct URL is [http://www.oie.int/a\\_html.htm#ONL](http://www.oie.int/a_html.htm#ONL)

## NEWS & COMMENTARY

### **Animals in Disasters Course Update**

From: "Sebastian Heath" Sebastian.Heath@att.net

This is to let you know that I have updated <http://www.animaldisasters.com> where you can see the proposed outline for the course on Livestock and Disasters.

A page on developing Local Animal Care Plans (LACP) has been added to the Information Page. The guidelines are based on the plan developed in Tippecanoe County, IN, which were recognized by FEMA in January of this year as an "Exemplary Practice".

This outline is based on the meeting held on April 3 and 4, 2000 at the Emergency Management Institute, Emmitsburg, MD. If you would like a copy of the original minutes of that meeting please contact me directly.

Although the course schedule is progressing slower than expected, I have no doubt that this course will be completed.

As ever comments are most welcome. Please also note my new address below.

Sebastian.Heath@att.net  
1650 Harvard Street, NW, Apt. 210  
Washington, DC 20009-3727  
Ph/ Fax: 202.332.2738/ 9  
<http://www.animaldisasters.com>

### **Online Presentations of ICEID Conference 2000**

International Conference on Emerging Infectious Diseases 2000 Online Presentations

Hear the Audio, See the Slides!

The conference is over but you can still participate in ICEID 2000. Selected ICEID sessions are now available on-line from our website <http://www.cdc.gov/eid> or at <http://www.cdc.gov/iceid>.

ICEID 2000 was held July 16-19, 2000, in Atlanta, GA and attended by over 1800 public health professionals representing many specialty areas. The program included plenary sessions and symposia with invited speakers, presentations on emerging infections, and oral poster presentations. Major topics included current work

on surveillance, epidemiology, research, communication and training, bioterrorism, and prevention and control of emerging infectious diseases, both in the United States and abroad.

### **New Slaughter Inspection System Improves Food Safety**

July 17, 2000

Food Safety and Inspection Service -- Press Release

WASHINGTON --The U.S. Department of Agriculture's Food Safety and Inspection Service announced today that its HACCP-based inspection models project is beginning to produce results showing dramatic improvements in food safety and other consumer protection concerns, according to preliminary data now available for young chickens. "What this project is about is getting closer to perfection. The system of inspection that we are testing has reduced food safety defects in young chickens by at least 92 percent in plants that are participating in the project" said Thomas J. Billy, FSIS Administrator. "The data are preliminary, but they are very significant results that we want to share with the public."

On June 30, a three-judge panel of the U.S. Court of Appeals for the District of Columbia reversed a lower court ruling supporting the project and sent it back for further proceedings.

"We are very disappointed by the court's decision," said Billy. "The preliminary data show that it is possible to design a system of inspection that is superior to the one currently in place in terms of improving food safety, and we have a public health obligation to continue our modernization efforts." The agency is exploring all options and is continuing the project pending further proceedings.

Under the HACCP-based inspection models project, FSIS has established performance standards for food safety and non-food safety defects that require improved performance by industry. FSIS conducts continuous inspection with verification to ensure that these standards are met and that products can receive the marks of inspection. Participating plants must revise or develop new process control systems to meet these new performance standards that address both food safety and other consumer protection concerns.

Approximately 30 plants that slaughter young chickens, hogs, and turkeys have begun participating in the project, but data from plants operating under the models are available only for young chickens at this time. The poultry data are complete for seven plants, and additional data for nine additional poultry plants will be forthcoming. The data were collected by Research Triangle Institute, an independent consulting firm.

Two categories of defects are considered food safety related because they could pose a food safety hazard to consumers. In the first category, which includes septicemia and toxemia, the new system led to a 100 percent reduction in defects in birds that passed inspection. In the second food safety category, which includes fecal contamination, defects were reduced by 92 percent. For the five categories addressing conditions that do not pose a food safety hazard to consumers, improvements were documented in four of the five categories.

Billy noted that the agency has received messages from both inspectors and veterinarians assigned to plants participating in the project who expressed disappointment with the recent court decision and believe, based on their own experiences, that the new system is superior to the one the Agency is using in all other poultry plants. "One veterinarian said that the project was a step forward for inspection. An inspector with 19 years of experience with the agency said the birds she has seen are much cleaner than before, and she would like to see the project continue for the protection of the consumer. Another inspector said simply that 'the system works'."

### **New Voluntary National Initiative to Assure Consumers of Pork's Safety**

June 9, 2000

National Pork Producers Council

<http://www.nppc.org/NEWS/0000612Trichinae.htm>

Pork producers are launching a program to dispel any consumer concerns of the existence of Trichinae in today's pork products. The program, announced during World Pork Expo June 8-10 in Indianapolis, Ind., is seen as a model for future on-farm food safety programs. *Trichinella spiralis*, a nematode parasite, is found throughout the world and is capable of infecting many warm-blooded animals including swine. While government health officials have shown the swine infection is quite rare, less than .013 percent, a public perception of trichinae infections in pork still exists with some consumers.

"In modern pork production systems, there is essentially no risk to pigs of acquiring *Trichinella* infection, and the absence of the parasite from domestic pigs raised in

these systems has been established through extensive testing," according to Barb Determan, a producer from Early, Iowa, and President Elect of the National Pork Producers Council (NPPC).

The Trichinae Herd Certification Program is a pre-harvest, checkoff-funded pork safety program that will provide documentation of swine management practices that minimize risk of exposure of swine to the trichinae parasite. Determan, who chairs the Pork Safety Committee, said the program establishes a set of criteria that enable producers to market swine that are not considered a risk to human health due to exposure to this parasite. The program was cooperatively developed by USDA agencies (Animal and Plant Health Inspection Service, Agricultural Research Service, Cooperative States Research, Education and Extension Service, Food Safety and Inspection Service), NPPC, and the pork processing industry.

The Trichinae Herd Certification Program will begin an expanded pilot test this summer in Iowa, Minnesota, Nebraska and South Dakota, with continuation through the end of 2001. It has four key elements: 1) veterinarians working with their producers to ensure that trichinae risk factors are minimized on their farms; 2) an on-farm audit to document the absence of trichinae infection risks; 3) a statistical sample of the trichinae certified herd will be tested at slaughter using diaphragm digestion or antibody testing to verify the absence of infection; and 4) USDA veterinarians will conduct random "spot audits" of certifications to ensure completeness and the integrity of the program.

"Trichinae certification is an approach to food safety that holds the promise of being superior to the individual testing of pigs at slaughter which is the trichinae inspection process currently being used by countries we compete with in the international marketplace," Determan said. "Certification will allow the U.S. to better compete in the fresh pork international market and it will help change the perceptions of pork held by our own domestic consumers. With the cooperation of producers, veterinarians, packers, and the government, we may be able to remove trichinae as a consumer concern."

"The lack of a national testing or on-farm programs to address trichinae may be an impediment to the U.S. pork industry reaching its full market potential internationally," Determan said. "That's why producers decided to fund this checkoff effort to enhance the value of U.S. pork to domestic and international customers."



## **U.S. Codex Delegates Seeks Public Comments Regarding Standard Setting Activities**

June 20, 2000  
USDA -- FSIS Press Release  
<http://www.fsis.usda.gov/OA/news/codexcomments.htm>

WASHINGTON, June 20, 2000--U.S. delegates to the Codex Alimentarius Commission are seeking public comments regarding the sanitary and phytosanitary standard setting activities of the Codex commission. The delegates are seeking comments both on standards currently under consideration and recommendations for new standards, covering the time from June 1, 1999 to May 31, 2000 and June 1, 2000 to May 31, 2001

These standards address food hygiene, labeling, veterinary drug residues, food additives and contaminants, pesticide residues, methods of analysis and sampling, commodity groups, and food import and export inspection and certification systems. New work is beginning on foods derived from products of biotechnology, animal feed, and fruit and vegetable juices.

Codex seeks to ensure that the world's food supply is safe, wholesome, free from adulteration, and correctly labeled. This goal is pursued by promoting the adoption and implementation by governments of food standards, codes of practice, and other guidelines developed by Codex committees.

The lists of standards along with other Codex documents are available electronically at

<http://www.fao.org/waicent/faoinfo/economic/esn/codex>.

Written comments may be submitted to FSIS docket clerk, Docket #00-005N, U.S. Department of Agriculture, Food Safety and Inspection Service, Room 102, Cotton Annex, Washington, D.C., 20250-3700. Comments will be available for public inspection at the docket clerk's office Monday through Friday between the hours of 8:30 a.m. and 4:30 p.m.

## **Residue Survey**

August 7, 2000  
Lean Trimmings -- National Meat Association  
Edited by Jeremy Russell

Officials from USDA are visiting cow slaughter plants across the country to ascertain whether the onsite USDA veterinarians are following agency guidelines for the monitoring of residues. They are also determining whether the disparity in the level of testing between

plants is appropriate. A report on the survey is expected in early September.

Supervisory veterinary medical officers in slaughter facilities are professionals. They are the highest qualified individuals in the FSIS in-plant field force. While it is politically popular to suggest that the inspection program has moved away from the "poke and sniff" inspection techniques, veterinarians are responsible for ensuring that the livestock entering slaughter plants are fit for the food supply.

The role of the veterinarian is somewhat similar to that of the medical doctor who has a variety of tests—of eyes, ears, mouth, and other body parts—to determine whether further laboratory testing may be necessary.

Ante- and postmortem inspection techniques are used to make determinations about pathology and animal disease. Although they may be misunderstood and underappreciated at times, veterinarians continue to provide a very important role in the inspection program. NMA supports the active role of veterinarians in the FSIS program.

## **Use of Antimicrobials in Food Animals: New Who Recommendations**

August 18, 2000  
World Health Organisation Weekly Epidemiological Report  
No. 33, 2000, 75, 265–272  
<http://www.who.int/wer>

WHO has just released global principles aimed at mitigating the risks related to the use of antimicrobials in food animals. Among other uses, antimicrobials kill bacteria in animals used for human food.

Over 70 experts from human and veterinary medicine, national licensing authorities, pharmaceutical companies and international organizations (such as the Food and Agriculture Organization of the United Nations (FAO) and the World Animal Health Organization), met from 5 to 9 June 2000. They discussed 6 important areas of intervention: antimicrobial registration, distribution/sales, advertising, surveillance, education/training and prudent use.

The new recommendations are designed for use by governments, veterinary and other professional societies, industry and academia. Some of the most important measures included in the new Global principles for the containment of antimicrobial resistance due to antimicrobial use in animals intended for food are:

--obligatory prescriptions for all antimicrobials used for disease control in food animals;

- termination or rapid phasing-out of the use of antimicrobials for growth promotion if they are also used for treatment of humans in the absence of a public health safety evaluation;
- creation of national systems to monitor antimicrobial usage in food animals;
- prelicensing safety evaluation of antimicrobials with consideration of potential resistance to human drugs;
- monitoring of resistance to identify emerging health problems and timely corrective actions to protect human health;
- guidelines for veterinarians to reduce overuse and misuse of antimicrobials in food animals.

Overuse and misuse of antimicrobials in food animals contribute to the emergence of resistant forms of disease-causing bacteria. Such resistant bacteria can be transmitted from food animals to humans, primarily via food. Infections can result that are difficult to cure because the resistant bacteria do not respond to treatment with antimicrobials.

One example is the emergence of antimicrobial-resistant Salmonella bacteria in food animals in Europe, Asia and North America which have caused diarrhoea, sepsis (blood-poisoning) and death in humans. Another example is Enterococci infections which present severe treatment problems, particularly in immunocompromised patients, because these bacteria have become resistant to all available antimicrobials.

WHO had already convened meetings of experts in 1997 and 1998 to identify and assess the risks associated with the use of antimicrobials in food animals. These meetings recognized the existence of the risk for public health and encouraged WHO to develop principles for prudent use of antimicrobials in food animals. This is one part of WHO's Global Strategy for the Containment of Antimicrobial Resistance.

WHO has just issued a major new report on the use of antimicrobials in treating all types of infectious disease:

Overcoming antimicrobial resistance – WHO report on infectious diseases 2000. (Document WHO/CDS/2000.2. I, which can be obtained on request from: CDS Information Resource Centre, World Health Organization, 1211 Geneva 27, Switzerland)

## Safer Food

September 7, 2000  
The Associated Press  
Philip Brasher

ST. LOUIS -- According to this story, new farming methods and animal vaccines are making food such as eggs and pork safer to eat and now scientists are working

on ways to eliminate from cattle one of the deadliest pathogens of all, E. coli O157:H7, a bacterium that poisons beef and also gets into drinking water and on crops through manure runoff.

Federal officials were cited as saying at a government-sponsored conference on food safety that improving farming practices was the most promising way to prevent foodborne illnesses. Stephen Sundlof, director of the Food and Drug Administration's Center for Veterinary Medicine was quoted as saying, it is "one of the areas that gets the least amount of attention and one that is the most important to improving food safety."

Catherine Woteki, the Agriculture Department's undersecretary for food safety was cited as saying the time could come when foodborne pathogens "will be dramatically reduced" because of changes in the way animals are raised.

The federal US Centers for Disease Control and Prevention estimates that an estimated 76 million Americans suffer a foodborne illness each year. Scientists say E. coli first appeared in cattle in the late 1970s but now shows up in entire herds. It was found in 28 percent of the cattle entering Midwest slaughterhouses last summer.

The story says that research is under way on vaccines that would prevent cattle from carrying the bacteria, on feed additives that would eliminate it from the animals, and new methods of composting manure so it can be used as fertilizer without contaminating crops or ground water. The new feed additives contain good bacteria that are supposed to drive the E. coli out of a cow's digestive system, a process known as "competitive exclusion."

Some cases where new vaccines or farming practices have shown success:

- Improved sanitation practices, including better control of manure and rodents, on egg farms has been reducing rates of salmonella contamination in egg-laying hens. McDonald's Corp. recently announced it is going to ban the practice among its egg producers of "forced molting," the withdrawal of food and water that has been linked to higher rates of salmonella.

- New chicken vaccines for salmonella are waiting approval at the FDA.

- A disease-causing worm, trichinae, was virtually eliminated from hogs when farmers quit feeding garbage to them.

One pathogen that is unlikely to be affected by changes in farm practices is Listeria monocytogenes, a bacteria that is common throughout the environment. It gets on hot dogs and other meat products inside processing plants. Caroline Smith DeWaal, a food-safety expert

with the Center for Science in the Public Interest, an advocacy group, was cited as saying that cost-conscious farmers won't change farming practices unless the government forces them to do so, adding, "Industry and producers need the government to come in and give them that mandate ... so everyone is having to make those same expenses of doing business."

## **Human Ingestion of Bacillus Anthracis-Contaminated Meat**

September 15, 2000  
CDC MMWR

On August 25, 2000, the Minnesota Department of Health (MDH) was notified by the Minnesota Board of Animal Health (MBAH) of *Bacillus anthracis* isolated from a steer on a farm in Roseau County, Minnesota. The infected steer was one of five dead cattle found in a pasture on August 20. On the basis of phage typing of isolates cultured from tissues and blood samples by the North Dakota State University Veterinary Diagnostic Laboratory, *B. anthracis* was confirmed. This report describes the management of and public health response to human exposure to meat contaminated with anthrax.

On July 24, the farmer who owned the infected steer also had killed, gutted, and skinned a cow that was unable to rise. A local veterinarian approved the slaughter of the cow for consumption by the farmer's family. Immediately after slaughter, the farmer took the carcass (carcass X) to a custom meat-processing plant; on July 31 and August 1, carcass X was processed. Two family members ate hamburgers made from carcass X on August 15 and steaks on August 19; three other family members ate hamburgers on August 20. A sixth member prepared the meals and also may have eaten contaminated meat. All meat was reported to have been well cooked. To investigate the possibility that they had eaten contaminated meat, the family members were interviewed by MDH on August 25. Two reported gastrointestinal illness; one reported 1 day of diarrhea approximately 48 hours after eating meat from carcass X, and the second reported 3 days of abdominal pain, diarrhea, and a temperature of 102.3 F (39.1 C) beginning 24-36 hours after consumption. Both recovered without treatment. The family was advised by MDH not to eat any more of the meat, to contact a physician, and to begin antibiotic prophylaxis with ciprofloxacin (500 mg, orally, twice daily).

On August 29, samples of carcass X tested by the MDH Public Health Laboratory (MDH PHL) were found to contain gram-positive bacilli on microscopic examination. *B. anthracis* contamination was confirmed at MDH PHL and the U.S. Army Medical Research Institute for Infectious Diseases through culture on blood agar, presence of a capsule, lack of motility,

gamma-phage test, and fluorescent antibody to cell wall polysaccharide and capsular antigens. On the basis of this exposure to meat highly contaminated with *B. anthracis*, the family was advised to continue chemoprophylaxis, and vaccination with anthrax vaccine was initiated (Anthrax Vaccine Adsorbed\*, Bioport Corporation, Lansing, Michigan).

The Minnesota Department of Agriculture (MDA) contacted the custom meat processing plant on August 28 and placed a hold on all meat processed after carcass X. On August 29, MDA inspected the plant; sanitation practices were satisfactory. Seven carcasses had been processed after carcass X. Owners of meat from the carcasses were advised not to eat any of the meat and were asked to return meat to a central location for incineration; all the meat products were accounted for and none had left Minnesota. Samples from the other carcasses and environmental swabs collected after plant cleaning tested negative for *B. anthracis*.

Reported by H Kassenborg, DVM, R Danila, PhD, P Snippes, MT(ASCP), M Wiisanen, M Sullivan, MPH, KE Smith, DVM, N Crouch, PhD, C Medus, MPH, R Weber, MS, J Korlath, MPH, T Ristinen, R Lynfield, MD, HF Hull, MD, Minnesota Dept of Health. J Pahlen, Roseau County Home Health Care, Roseau; T Boldingh, DVM, Minnesota Board of Animal Health, K Elfering, G Hoffman, Minnesota Dept of Agriculture, St. Paul. T Lewis, A Friedlander, MD, H Heine, PhD, R Culpepper, MD, E Henchal, PhD, G Ludwig, PhD, C Rossi, MS, J Teska, PhD, J Ezzell, PhD, E Eitzen, MD, US Army Medical Research Institute for Infectious Diseases. Food Safety and Inspection Svc, Animal and Plant Health Inspection Svc, US Dept of Agriculture. Epidemiology Program Office, Meningitis and Special Pathogens Br, Div of Bacterial and Mycotic Diseases, National Center for Infectious Diseases; and an EIS Officer, CDC.

Editorial Note: Anthrax is a zoonotic disease caused by the spore-forming bacterium *B. anthracis*. Human disease usually occurs through cutaneous exposure to infected animal tissue or products. Rarely, inhalation or ingestion of *B. anthracis* spores also leads to anthrax. In the United States during the early part of the 20th century, approximately 130 human cases occurred annually (1); two cutaneous infections have been reported since 1992.

Before this exposure, no animal anthrax cases had been reported in northern Minnesota since recordkeeping began in 1909. However, in adjacent areas of North Dakota during 2000, 120-150 cattle have died of anthrax (L. Schuler, North Dakota state veterinarian, personal communication, 2000), and 11 farms have reported anthrax-related cattle deaths in nearby Manitoba, Canada

(J.G. Spearman, Manitoba Department of Agriculture, personal communication, 2000).

Gastrointestinal anthrax in humans occurs 1-7 days after eating raw or undercooked meat from infected animals (2), and two forms of gastrointestinal disease have been reported (3). Disease affecting the distal gastrointestinal tract results in nausea, anorexia, and fever followed by abdominal pain and bloody stool. The case fatality rate among reported cases ranges from 25%-60% (2). Gastrointestinal anthrax never has been documented in the United States because livestock are vaccinated for anthrax in areas where the disease is endemic; animals routinely are inspected by federal and state meat inspectors before, during, and after slaughter; and raw meat is eaten infrequently. Anthrax has not been documented among the persons exposed to *B. anthracis*-contaminated meat described in this report; however, a serologic test to determine presence of infection is pending. Limited experience with gastrointestinal anthrax complicates recommendations for use of postexposure prophylaxis. An extended duration of therapy is recommended for inhalational exposure because of the persistence of spores resistant to the action of antimicrobial agents (4,5). Upon cessation of chemoprophylaxis, such spores can cause disease several weeks after exposure. No evidence supports the existence of persistent spores associated with gastrointestinal forms of the disease; however, the meat consumed by the family in this report was highly contaminated with *B. anthracis*.

Although possible interventions range from close observation to antibiotics alone to antibiotics with vaccination, because the family was at high risk for anthrax infection, management consisted of an extended course of ciprofloxacin combined with administration of anthrax vaccine. Federal-inspected and state-inspected animal processing facilities are required to perform intensive cleaning after contact with an anthrax-infected carcasses\*\* ; veterinary inspection is not provided at custom meat processors. Slaughter house workers who may be exposed to an anthrax-contaminated carcass should receive medical evaluation for symptoms and for possible treatment.

Management of anthrax in livestock should include 1) quarantine of the herd; 2) removal of the herd from the contaminated pasture, if possible; 3) vaccination of healthy livestock; 4) treatment of symptomatic livestock; and 5) disposal of infected carcasses, preferably by burning. Bedding and other material found around the carcass (e.g., soil) should be incinerated with the carcass and buried (6). Veterinarians notified of sudden death in an animal or of an animal unable to rise should consider anthrax as a diagnosis, especially in areas where anthrax is endemic (6). However the potential risk for animal anthrax exists in all areas of the

United States. Vaccination of livestock in areas where anthrax is endemic is the most effective method of prevention in animals and humans. Cases of anthrax in animals and cases of suspected human exposure should be reported immediately to the state health department, federal animal health officials, and to CDC's National Center for Infectious Diseases, Meningitis and Special Pathogens Branch, telephone (404) 639-3158.

#### References

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\* Use of trade names and commercial sources is for identification only and does not constitute endorsement by CDC or the U.S. Department of Health and Human Services.

\*\* 9 CFR Part 310.9 (2000).

### **Meat and Poultry Inspection Issues**

Posted to ACVPM Message Board by  
Paul.Resweber@usda.gov

9/8/2000

I am the Deputy District Manager for US Department of Agriculture's Food Safety & Inspection Service (USDA FSIS) in the Springdale District. The Springdale District encompasses the states of Arkansas, Louisiana, and Oklahoma with over 300 Federally inspected meat and poultry slaughter and/or processing plants and approximately 900 employees, including approximately 110 veterinarians and approximately 750 trained lay food inspectors.

I would like to take this opportunity to advise you all about and dispel some misconceptions "floating around out there" about meat and poultry inspection. I am sure that either you have encountered some of these in the press/media or, as a public health expert, have been asked about these.

In the most major change since the first meat inspection laws in the 1900s, USDA FSIS have just recently finished overseeing the implementation of Hazard Analysis of the Critical Control Point (HACCP) in January of 2000. Additionally, we are currently piloting the HACCP Inspection Models Project (HIMP) in slaughter plants.

HACCP was a four year phase-in including the year of Pre-HACCP implementation for SSOP. HACCP is now functional in all meat and poultry plants (both state and federally inspected) in the nation. HACCP applies now to all aspects of meat and poultry production from receipt of live animals through slaughter and processing. However, HACCP does not yet apply to the ante-mortem inspection of live animals or the post-mortem inspection of carcasses and viscera in the slaughter establishments. But, in slaughter, all other aspects of the slaughter/evisceration/dressing process are covered under HACCP, except for ante and post mortem inspection. HIMP is the pilot, if successful, that will apply the HACCP principles to ante and post mortem slaughter inspection.

There have been three major media/press "events" lately that may have undermined public confidence in FSIS's meat and poultry inspection process.

Number 1: a press release stated that USDA is now allowing inferior product, such as "chickens with pus" or "meat with cancer", to enter the normal food channels under HIMP. This is totally inaccurate. The new HIMP pilot does not allow passing for food of any carcass or part that was not previously allowed as safe for food by regulations that have been in effect for over 20 years.

Number 2: a press release stated that a three judge appellate court panel has ruled HIMP/HACCP illegal and the product produced, under HIMP/HACCP, is unsafe. This is, again, inaccurate. The lay food inspector's union, an AFGE/AFL-CIO affiliated union, had filed suit against USDA FSIS to stop HIMP. The District Court ruled in USDA's favor. However, on appeal by the union, the appellate court remanded the decision back to the District Court for another "look see". The District Court has not issued another ruling yet. But, the appellate court's language did not in any way discuss the safety of the food produced. The language only questioned legal technicalities on the definition of what constitutes inspection under the

Federal Meat Inspection Act or the Poultry Product Inspection Act.

Number 3: a press release this week called HACCP implementation The Jungle 2000, that is that the conditions under HACCP could and would be as bad as Upton Sinclair documented in the 1900s in his original book, The Jungle. This is, again, absolutely untrue. The products produced are as safe, if not safer, then they were under the older system of inspection. In fact, despite the press release, an inspector in the field, if he/she properly utilizes the HACCP enforcement tools available to them, has more authority/control than before.

I realize this is getting long-so I will end it here. I just wanted to attempt to set the record straight in case any of you had questions or were challenged on these issues.

But I would like to give you two other sources of information on meat and poultry inspection issues, if you find the need for them.

USDA FSIS has a web site at <http://www.FSIS.USDA.GOV>

Also, I am available to answer questions on meat and poultry inspection issues at the e-mail addresses and phone numbers below from approximately 7 AM to 4 PM daily on weekdays.

Just wanted you all to know that the meat and poultry in the USA you are eating is still the safest in the world.

Thank you for this forum.  
Dr. Paul A. Resweber  
Deputy District Manager  
Springdale District Office  
USDA FSIS FO  
PHONE: 501/751-8412  
FAX: 501/751-9049  
E-MAIL: [Paul.Resweber@USDA.gov](mailto:Paul.Resweber@USDA.gov)

### **Epidemiologic Approaches for Food Safety RFP**

Mary Torrence <[MTORRENCE@intranet.reeusda.gov](mailto:MTORRENCE@intranet.reeusda.gov)>

The RFP for NRI's 32.1 Epidemiologic Approaches for Food Safety program is now out. The RFP can be obtained by viewing CSREES's web site: [www.reeusda.gov](http://www.reeusda.gov). The deadline for grant proposals is January 15, 2001. This program provides a unique opportunity for epidemiologists to get larger grant money for epidemiology, field-type studies. Grants can be up to \$1.0 million.

# MEETINGS, WORKSHOPS & COURSES

See the ATVPHPM Web site at <http://www.cvm.uiuc.edu/atvphpm/> for the most current listings.

## Workshop on Epidemiologic Methods and Approaches for Food Safety

There will be a 2 day workshop on October 18-19, just prior to this year's USAHA/AAVLD annual meeting in Birmingham, AL titled "A Workshop on Epidemiologic Methods and Approaches for Food Safety". While the focus of the workshop appears to be the application of epidemiologic methods to food safety, there will be a substantial number of talks concerning diagnosis of pathogens that may be of interest to AAVLD members. The good news is, registration is free. Below is the tentative agenda. For more information see the registration website at: <http://ianrwww.unl.edu/ianr/vbs/wills/Epiconf/index.htm>

### AGENDA:

October 18:

7:30- 8:15 Registration

8:30- 9:00 Keynote presentation - Dr. Jerry Gillespie, Executive Director of Joint Institute for Food Safety Research, DHHS, USDA

9:00- 9:30 Keynote presentation - Dr. Michael P. Doyle, Director of Center for Food Safety and Quality Enhancement, University of Georgia

9:30-10:00 Presentation of "charge" to the conference - Dr. Mary Torrence, USDA-CSREES

10:00- 10:30 Break

10:30- 10:45 Detection of Pathogens - Dr. Richard Isaacson, University of Illinois

10:45- 11:00 Detection of Pathogens - Dr. Scott Hurd, USDA-ARS

11:00- 11:15 Detection of Pathogens - Dr. Jean Guard-Petter, USDA-ARS

11:15- 11:30 Detection of Pathogens - Dr Paul Morley, Colorado State University

11:30- 12:00 Break-out sessions\*, depending on registration, there will be several multi-disciplinary

groups that will discuss questions posed about detection of pathogens

Noon- 1:30 Lunch - On your own

1:30- 1:50 Identification of areas benefited by collaboration - Dr. David Smith, University of Nebraska

1:50- 2:10 Identification of areas benefited by collaboration - Dr. Jeff Bender, University of Minnesota

2:10- 2:30 Identification of areas benefited by collaboration - Dr. John Kaneene, Michigan State University

2:30- 3:00 Break-out sessions that will discuss questions posed about identification of areas benefited by collaboration

3:00- 3:30 Break

3:30-3:50 Other uses for epidemiology - Dr. David Dargatz, USDA-APHIS

3:50- 4:10 Other uses for epidemiology - Dr. Tom Wittum, Ohio State University

4:10-4:30 Other uses for epidemiology - Dr John Maurer, University of Georgia

4:30- 5:00 Break-out sessions that will discuss questions posed about other uses for epidemiology

October 19

8:30- 8:50 Analytical epidemiology - Dr. William Sischo, University of California-Davis

8:50- 9:10 Analytical epidemiology - Dr. Laura Hungergford, University of Nebraska

9:10- 9:30 Analytical epidemiology -

9:30- 10:00 Break-out sessions that will discuss questions posed about analytical epidemiology

10:00- 10:30 Break

10:30-10:50 Use of epidemiology in risk assessments - Dr. Ian Gardner, University of California

10:50- 11:10 Use of epidemiology in risk assessments -  
Dr. Randy Singer, University of Illinois

11:10- 11:30 Use of epidemiology in risk assessments -  
Dr. Mo Salman, Colorado State University

11:30- 12:00 Break-out sessions that will discuss  
question posed about using epidemiology in risk  
assessments

Noon- 1:30 Lunch

1:30- 3:00 Reports from Break-out Sessions

3:00- 3:30 Break

3:30 - 5:00 Panel will summarize and wrap-up.

\*Break-out sessions were scheduled in front of long  
breaks and lunch hours so that discussions could be  
carried on beyond the 30 minutes.

### **Challenges of Emerging Illness in Urban Environments**

Patricia Doyle <dr\_p\_doyle@hotmail.com>

Dates: December 11-12, 2000

Location: New York City, NY (USA)

Venue: The New York Academy of Medicine, 1216  
Fifth Avenue (at 103<sup>rd</sup> Street), New York, NY

Co Sponsors: Department of Community and  
Preventive Medicine of the Mount Sinai School of  
Medicine and The New York Academy of Medicine

With Support from The Nathan Cummings Foundation

Introduction. In July 1999, sixty-two cases of West Nile encephalitis (WNE) with seven deaths were reported in the New York area. The West Nile virus (WNV) epidemic of 1999 is a case study in infectious disease, and is also particularly useful in examining four important public health issues in an ecosystem health context. (1) It is not known how WNV entered the country, changing climactic conditions, modern travel and bird and insect dynamics may have played a role; (2) The WNV epidemic is useful for reviewing the ability of the public health infrastructure to respond to emerging illnesses. Knowledge of conditions favoring emerging illness is crucial in organizing the public health structure to respond to such events; (3) The use of pesticides raise questions regarding vector control in the urban environment; (4) Issues of surveillance, assessment and response, are of relevance both to new illnesses and potential bioterrorist events.

Purpose of the Conference. This conference will review the recent outbreak of West Nile virus in New York City in order to consider the broader context of ecosystem health and emerging illness in an urban environment; to examine the status of the public health infrastructure including surveillance and response; risk communication; and to consider the balance between vector control and environmental health impact. The experience with the West Nile virus in New York City will be used as a case study to illuminate the conference discussion. Participants will develop a set of consensus policy recommendations regarding the public health response to emerging infectious illness in urban settings.

Audience. Participants will represent: public health, infectious disease, emerging illness research, government agencies, elected officials, community health and environmental organizations and the general public. Participation in this conference will be by registration. Online registration will be available September 2000 at [www.nyam.org](http://www.nyam.org).

REGISTRATION BY MAIL, FAX OR WEB  
Fax 212-987-4735/[www.nyam.org](http://www.nyam.org)\*

\* Online registration will be available from the New York Academy of Medicine beginning September 2000.

Payment: Credit card or check payable to: The New York Academy of Medicine  
Office of Medical Education, 1216 Fifth Avenue, New York, NY 10029

If you have a question regarding registration, you may call the Office of Medical Education: (212) 822-7273

For general questions, please call 212-822-7204.

Patricia A. Doyle, PhD  
Please visit my "Emerging Diseases" message board at:  
<<http://disc.server.com/Indices/93896.html>>  
Also my "Emerging Diseases for the 21st Century" website accessible through my message board.

### **Postgraduate Training in Epidemiology and Preventive Veterinary Medicine**

Applications are invited for the professional degree Master of Preventive Veterinary Medicine (MPVM), beginning mid August 2001. Using state-of-the-art methods in epidemiology, the program prepares veterinarians to investigate and evaluate disease and production problems in animal populations and to design, evaluate and implement disease control or other veterinary service programs. A DVM or its equivalent is required for admission.

The MPVM program involves coursework, a research project, and a series of elective courses which permit a veterinarian to select an area of concentration that best fits his or her career goals. Coursework is available in livestock production, analytic and spatial epidemiology, economics, medical statistics, simulation modeling, veterinary medical data management, and research methodology. Research projects may focus on a variety of topics including avian, companion animal, livestock, wildlife and zoological diseases, parasitic and microbial zoonoses, and food-borne infections in humans.

The MPVM program is a one-year program (limited to 24 students); however, some students may require as much as two years. A special part-time program is also available.

The School of Veterinary Medicine administers the program and departments within and outside the School offer courses and research projects. Since its inception, more than 600 veterinarians from over 70 countries have completed the program and have pursued top-level

governmental, academic, and practice careers in epidemiology and preventive medicine.

The application deadline for August admission is March 31, 2001. Scholarships are available on request. For further information or to receive an application write: Bruno Chomel, Director, MPVM Program, Office of the Dean, School of Veterinary Medicine, University of California, Davis, California, 95616. Telephone (530)752-1383. Fax (530)752-2801. E-mail: [bbchomel@ucdavis.edu](mailto:bbchomel@ucdavis.edu). Program information is available on the Web at: <http://www.vetmed.ucdavis.edu/mpvm/mpvm.htm>

Melissa Clinton  
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## SUGGESTED READING

### Sources of Toxoplasma Infection in Pregnant Women: European Multicentre Case-Control Study

July 15, 2000  
British Medical Journal  
BMJ 2000;321:142-147

A J C Cook, lecturer in veterinary epidemiology a, R E Gilbert, senior lecturer in clinical epidemiology b, W Buffolano, consultant paediatrician c, J Zufferey, head of serology laboratory d, E Petersen, head of parasitology department e, P A Jenum, assistant director f, W Foulon, consultant obstetrician g, A E Semprini, postgraduate technician h, D T Dunn, senior lecturer in statistics b, on behalf of the European Research Network on Congenital Toxoplasmosis. a Department of Farm Animal and Equine Medicine and Surgery, Royal Veterinary College, University of London, North Mims, Hertfordshire AL9 7TA, b Department of Paediatric Epidemiology and Biostatistics, Institute of Child Health, London WC1N 1EH, c Università Degli Studi di Napoli Federico II Department of Paediatrics, 80131 Naples, Italy, d Institute of Microbiology, 1011 Lausanne-CHUV, Switzerland, e Statens Serum Institut, DK 2300, Copenhagen S, Denmark, f Department of Bacteriology, National Institute of Public Health, PB 4404 Torshov, N-0403 Oslo, Norway, g Department of Gynaecology and Obstetrics, Academisch Ziekenhuis, Free University of Brussels, Belgium, h Department of

Obstetrics and Gynaecology, Ospedale San Paolo, Milan, Italy

Correspondence to: R E Gilbert [r.gilbert@ich.ucl.ac.uk](mailto:r.gilbert@ich.ucl.ac.uk)

#### ABSTRACT

**Objective:** To determine the odds ratio and population attributable fraction associated with food and environmental risk factors for acute toxoplasmosis in pregnancy.

**Design:** Case-control study.

**Setting:** Six large European cities. **Participants:** Pregnant women with acute infection (cases) detected by seroconversion or positive for anti-Toxoplasma gondii IgM were compared with pregnant women seronegative for toxoplasma (controls).

**Main outcome measures:** Odds ratios for acute infection adjusted for confounding variables; the population attributable fraction for risk factors.

**Results:** Risk factors most strongly predictive of acute infection in pregnant women were eating undercooked lamb, beef, or game, contact with soil, and travel outside Europe and the United States and Canada. Contact with cats was not a risk factor. Between 30% and 63% of infections in different centres were attributed



to consumption of undercooked or cured meat products and 6% to 17% to soil contact.

Conclusions: Inadequately cooked or cured meat is the main risk factor for infection with toxoplasma in all centres. Preventive strategies should aim to reduce prevalence of infection in meat, improve labelling of meat according to farming and processing methods, and improve the quality and consistency of health information given to pregnant women.

### **Controlled Clinical Trials**

<http://www.elsevier.com/locate/conclintrial>

Controlled Clinical Trials is an international journal that publishes manuscripts pertaining to the design, methods and operational aspects of clinical trials. Manuscripts submitted should appeal to a readership drawn from disciplines including medicine, biostatistics, epidemiology, computer science, management science, behavioral science, pharmaceutical science, and bioethics. Full-length papers and short communications not exceeding 1,500 words in the following subject areas will be published:

- Unusual design features of specific trials that may be applicable to other studies
- Organizational structures that facilitate multicenter investigations
- General or specific design and operating features of data processing systems used for maintaining data bases in clinical trials
- Medical, legal, and ethical issues in the conduct of clinical trials

- Management of multicenter investigations
- Methods for assessing patient adherence
- Design of case report forms and other data collection methods for clinical trials
- Quality assurance procedures for error detection in the data generation and processing procedures in clinical trials
- Data auditing practices in clinical trials
- Methods for collecting and reporting adverse event data in clinical trials
- Regulatory requirements for clinical trials
- Patient involvement in the design of clinical trials
- Statistical methods for clinical trials
- Historical review of clinical trials
- Methods and case examples of monitoring clinical trials for evidence of adverse or beneficial treatment effects
- Cost assessment of procedures used for data generation, processing, and auditing in clinical trials
- Assessment of the impact of clinical trials on the practice of medicine
- As the official journal of the Society for Clinical Trials, Controlled Clinical Trials consistently addresses the needs and interests of clinicians and technical personnel responsible for the mounting and monitoring of clinical trials.

Abstracts and table of contents are available in HTML format. ScienceDirect subscribers have access to full-text articles by logging in at <http://www.sciencedirect.com>

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