

## **Prevalence and characterization of verotoxigenic-Escherichia coli isolates from pigs in Malaysia**

06.jun.13

BMC Veterinary Research 2013, 9:109

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<http://www.biomedcentral.com/1746-6148/9/109/abstract>

Abstract (provisional)

Background

Postweaning diarrhea caused by pathogenic *Escherichia coli*, in particular verotoxigenic *E. coli* (VTEC), has caused significant economic losses in the pig farming industry worldwide. However, there is limited information on VTEC in Malaysia. The objective of this study was to characterize pathogenic *E. coli* isolated from post-weaning piglets and growers with respect to their antibiograms, carriage of extended-spectrum beta-lactamases, pathotypes, production of hemolysins and fimbrial adhesins, serotypes, and genotypes.

Results

PCR detection of virulence factors associated with different *E. coli* pathotypes (ETEC, EPEC, EHEC, and VTEC) revealed that VTEC was the only pathotype identified from six swine farms located at north-western Peninsular Malaysia. A low prevalence rate of VTEC was found among the swine samples ( $n = 7/345$ ) and all 7 VTEC isolates were multidrug resistant. Five of these isolates from different hosts raised in the same pen were likely to be of the same clone as they shared identical seropathotypes (O139:H1, VT2e/alpha-hly/F18), resistance profiles and DNA fingerprinting profiles. Two other serotypes, O130: H26 ( $n = 1$ ) and O168: H21 ( $n = 1$ ) carrying virulence factors were also identified. O168: H21 is possibly a new serotype as this has not been previously reported.

Conclusions

The occurrence of VTEC with infrequently encountered serotypes that are multidrug resistant and harbouring virulence factors may be of public health concern. The detection of possible clones in this study also showed that the combination of different typing tools including phenotyping and genotyping methods is useful for molecular epidemiologic surveillance and studies.

## **Proactive systems for early warning of potential impacts of natural disasters on food safety: Climate-change-induced extreme events as case in point**

06.jun.13

Food Control, Volume 34, Issue 2, December 2013, Pages 444–456

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<http://www.sciencedirect.com/science/article/pii/S0956713513002211>

Abstract

According to a recent report of the Intergovernmental Panel on Climate Change, the frequency of certain climate extremes is expected to increase under the influence of climate change. This review presents potential direct and indirect effects of such extremes as well as other severe weather and hydro-meteorological events on the occurrence of hazards in food produced by various agricultural systems. In addition, we review the applicability of early warning systems to warn of the development of food safety hazards induced by natural disasters, with climate-change-induced extreme events as case in point. Monitoring systems focused on food safety hazards may miss - or pick up with delay - the occurrence of new hazards or known hazards in food products in which they previously did not occur. We conclude that, by better use of the available information (being plant-, animal-, human disease-focused systems monitoring weather and other environmental conditions and/or systems

collecting publications on the internet), the negative impact of severe natural events on food safety can be minimized.

### **Listeria illnesses, deaths, and outbreaks – US, 2009–2011**

04.jun.13

barbflog

Doug Powell

<http://barbflog.com/2013/06/listeria-illnesses-deaths-and-outbreaks-us-2009-2011/>

Whenever I get the chance to talk – a food safety lecture, a journalism discussion, coaching girls' hockey – I always work in a reference to Listeria and the risk for moms-to-be.

I have five daughters; one of my daughters has a son; and yet the knowledge of Listeria risk is fleeting.

Doctors and medicals types usually don't help.

The U.S. Centers for Disease Control reports today that older adults, pregnant women, and persons with immunocompromising conditions are at higher risk than others for invasive *Listeria monocytogenes* infection (listeriosis), a rare and preventable foodborne illness that can cause bacteremia, meningitis, fetal loss, and death.

Nationwide, 1,651 cases of listeriosis occurring during 2009–2011 were reported. The case-fatality rate was 21%. Most cases occurred among adults aged  $\geq 65$  years (950 [58%]), and 14% (227) were pregnancy-associated. At least 74% of nonpregnant patients aged  $< 65$  years had an immunocompromising condition, most commonly immunosuppressive therapy or malignancy. The average annual incidence was 0.29 cases per 100,000 population. Compared with the overall population, incidence was markedly higher among adults aged  $\geq 65$  years (1.3; relative rate [RR]: 4.4) and pregnant women (3.0; RR: 10.1). Twelve reported outbreaks affected 224 patients in 38 states. Five outbreak investigations implicated soft cheeses made from pasteurized milk that were likely contaminated during cheese-making (four implicated Mexican-style cheese, and one implicated two other types of cheese). Two outbreaks were linked to raw produce.

Almost all listeriosis occurs in persons in higher-risk groups. Soft cheeses were prominent vehicles, but other foods also caused recent outbreaks. Prevention targeting higher-risk groups and control of *Listeria monocytogenes* contamination in foods implicated by outbreak investigations will have the greatest impact on reducing the burden of listeriosis.

Refrigerated, ready-to-eat foods are out for moms-to-be; we heated soft cheeses, even the ones made from pasteurized milk. Pregnant women with listeria infections often have only mild symptoms or a fever, but their infections can result in miscarriage, premature labor and serious illness or death in their newborns, the report noted.

[http://www.cdc.gov/mmwr/preview/mmwrhtml/mm62e0604a1.htm?s\\_cid=mm62e0604a1\\_w](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm62e0604a1.htm?s_cid=mm62e0604a1_w)

<http://health.usnews.com/health-news/news/articles/2013/06/04/listeria-food-poisoning-hits-elderly-moms-to-be-hardest-cdc>

### **FRANCE: Worldwide outbreak of highly antibiotic-resistant salmonella risks spreading to European poultry farms**

03.jun.13

Institut Pasteur

<http://www.pasteur.fr/ip/easysite/pasteur/en/press/press-releases/2013/worldwide-outbreak-of-highly-antibiotic-resistant-salmonella-risks-spreading-to-european-poultry-farms>

In a study published online May 28th for the Lancet Infectious Diseases medical journal, scientists at the Institut Pasteur in Paris and the Institut Pasteur in Morocco once again bring attention to the rapid worldwide spread of Salmonella Kentucky (S. Kentucky), a bacterium showing resistance to several classes of antibiotics. S. Kentucky is responsible for foodborne infections and has spread at an astonishing rate throughout Africa and the Middle East in the space of only a few years. In this study, the authors note that the bacterium has recently spread to India and South-East Asia and has acquired new resistance, particularly resistance to antibiotics of "last resort". The scientists also point out the considerable risk of this multi-resistant strain spreading to farmed poultry in industrialized countries. This bacterium has already been detected in farmed turkeys in Europe.

Salmonella bacteria are one of the more serious causes of foodborne infections in humans. The bacteria are spread through contaminated food that can range from meat-based products, to eggs, to dairy products. The gastroenteritis that follows infection by these bacteria can be quite severe, particularly in children, the elderly, and immunodeficient patients.

The first strain of multi-antibiotic resistant Salmonella Kentucky (S. Kentucky) was isolated in December 2002 in a French tourist who became ill during a cruise on the Nile river. Since then, this strain of bacteria has been closely monitored by the French National Reference Center (CNR) for Escherichia coli, Shigella, and Salmonella in the Enteric Bacterial Pathogens Unit at the Institut Pasteur in Paris. This has enabled the CNR to identify a rising number of strains isolated in travelers or migrants during trips to Egypt or East Africa (2000-2005) as well as to North Africa (mainly Morocco), the Middle East, and West Africa (2006-2009). This translates to hundreds of cases each year.

A study published by the team of researchers working under Dr. François-Xavier Weill (head of the CNR and the Enteric Bacterial Pathogens Unit at the Institut Pasteur in Paris), in collaboration with the Institut Pasteur in Morocco, looks at the recently expanded contamination zones of S. Kentucky and its ability to acquire new resistance. The scientists data show that the bacterium continues to spread at an astonishing pace, particularly in Mediterranean countries, and that it can now be contracted in India and South-East Asia. In addition, the authors of this study made the troubling observation that a number of strains recently acquired in the Mediterranean Basin are showing a range of resistance towards all antibiotic classes used to treat severe cases of salmonellosis (fluoroquinolones, third generation cephalosporin, and carbapenem).

Dr. Simon Le Hello, co-head of the CNR and lead author of this study, worries that this bacterial strain may soon spread to poultry farms in Europe. Using methods developed by the Institut Pasteur to identify this strain of S. Kentucky, several studies have recently identified the bacterium in farm-raised turkeys in several European countries. If this infection should spread further the direct consequence would be the threat of an epidemic in Europe and the risk of exhausting treatment options because of S. Kentucky's numerous resistances.

As far back as 2011, an international collaboration led by this same team from the Institut Pasteur sounded the alert revealing the emergence of S. Kentucky in African and Middle Eastern countries as well as the principal reservoir in Africa as poultry (chickens and turkeys) and the secondary vehicles as seafood and spices (see our August 3, 2011 press release). At that time, the scientists observed that the bacterium had acquired a series of resistances because of the massive overuse of antibiotics in African poultry farming.

Because of the troubling nature of this study's results, its authors issue the following reminders: firstly, that the non-regulated and excessive use of antibiotics on farm-raised livestock in developing countries presents a major health risk because it

encourages the dissemination of resistant genes to bacteria which, foodborne, could contaminate humans. Secondly, that it is important to monitor S. Kentucky on both national and international fronts. They are therefore calling for this bacterium to be included in national salmonella control programs in the poultry industry.

Illustration – Copyright Institut Pasteur

Caption – Salmonella in scanning electron microscopy (bacillus in red), bacterium responsible for foodborne infections.

For more information

Read our earlier press release on S. Kentucky:

<http://www.pasteur.fr/ip/easysite/pasteur/en/press/press-releases/2011/multi-drug-resistant-Salmonella>

Read our fact sheet on salmonellosis (in French):

<http://www.pasteur.fr/ip/easysite/pasteur/fr/themes-de-recherche-maladies/fiches-thematiques/salmonelloses>

Sources

Highly drug-resistant Salmonella enterica serotype Kentucky ST198-X1: a microbiological study, *The Lancet infectious Diseases*, online May 28, 2013.

Simon Le Hello (1), Dorothee Harrois (1), Brahim Bouchrif (2), Lucile Sontag (1), Dalèle Elhani (1), Véronique Guibert (1), Khalid Zerouali (3), François-Xavier Weill (1) (1) Institut Pasteur, Enteric Bacterial Pathogens Unit, French National Reference Center for Escherichia coli, Shigella, and Salmonella, WHO Collaborating Center for Reference and Research on Salmonella, Paris, France.

(2) Food and Environmental Safety, Institut Pasteur in Morocco, Casablanca, Morocco.

(3) Microbiology laboratory, Ibn Rochd University Hospital, Casablanca, Morocco.

### **Nosestretcher alert: rhetoric of comparing actual with estimated cases of E. coli to make a political point**

04.jun.13

barfblog

Doug Powell

<http://barfblog.com/2013/06/nosestretcher-alert-rhetoric-of-comparing-actual-with-estimated-cases-of-e-coli-to-make-a-political-point/>

Get the data right.

There are many rhetorical flourishes available to advance a particular viewpoint, but they all crumble if the data is wrong.

Mike Baker of the World Society for the Protection of Animals (WSPA) International cites a report by his group in the Huffington Post that allegedly found “the tendency to rear animals in confined indoor spaces, using selective breeds and intensive management methods to dramatically increase production to satisfy voracious consumer demand for meat and other animal products is putting human health in serious danger. ... The report illustrates how intensive farming practices are increasing the risk of these dangerous bacteria in our food chain, as stressed animals become more susceptible to infection.”

It’s one of those arguments which leave the brain comfortably numb; it seems so intuitive, it must be true.

Here’s the nosestretcher: in comparing the intensive methods of cattle rearing in the U.S. with the more bucolic practices in the UK, Baker says “the U.S. has around 73,000 human cases a year, compared to fewer than 1,000 in England and Wales, a significant difference even when the population discrepancy is taken into account.”

Yes, it’s a significant difference, because Baker is comparing estimated cases of E. coli O157:H7 in the U.S. with actual cases of E. coli O157:H7 in the U.K. There are about 500 confirmed cases of E. coli O157:H7 annually in the U.S. Throw in other shiga-toxin producing E. coli and the numbers are higher.

The UK Health Protection Agency stated in 2011, "In the UK the most common form of E. coli is the O157 strain, with the majority of outbreaks linked to open farm visits where children may have been in contact with animals such as sheep, goats, cattle or their environments."

Get the data right.

[http://www.huffingtonpost.co.uk/mike-baker/intensive-farm-health-risks\\_b\\_3377349.html](http://www.huffingtonpost.co.uk/mike-baker/intensive-farm-health-risks_b_3377349.html)

<http://www.hpa.org.uk/NewsCentre/NationalPressReleases/2011PressReleases/110711NewABDVTECguidanceforchildren/>

### **Subclinical infection and asymptomatic carriage of gastrointestinal zoonoses: occupational exposure, environmental pathways, and the anonymous spread of disease**

28.may.13

Epidemiology and Infection / FirstView Article, pp 1-11

R. S. Quilliam, P. Cross, A. Prysor Williams, G. Edwards-Jones, R. L. Salmon, D. Rigby, R. M. Chalmers, D. Rh. Thomas and D. L. Jones

[http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=8913723&utm\\_source=buffer&utm\\_medium=twitter&utm\\_campaign=Buffer&utm\\_content=buffer305f7](http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=8913723&utm_source=buffer&utm_medium=twitter&utm_campaign=Buffer&utm_content=buffer305f7)

#### **SUMMARY**

Asymptomatic carriage of gastrointestinal zoonoses is more common in people whose profession involves them working directly with domesticated animals. Subclinical infections (defined as an infection in which symptoms are either asymptomatic or sufficiently mild to escape diagnosis) are important within a community as unknowing (asymptomatic) carriers of pathogens do not change their behaviour to prevent the spread of disease; therefore the public health significance of asymptomatic human excretion of zoonoses should not be underestimated. However, optimal strategies for managing diseases where asymptomatic carriage instigates further infection remain unresolved, and the impact on disease management is unclear. In this review we consider the environmental pathways associated with prolonged antigenic exposure and critically assess the significance of asymptomatic carriage in disease outbreaks. Although screening high-risk groups for occupationally acquired diseases would be logistically problematical, there may be an economic case for identifying and treating asymptomatic carriage if the costs of screening and treatment are less than the costs of identifying and treating those individuals infected by asymptomatic hosts.

### **391 now sick, mainly kids; 8 multistate outbreaks of human Salmonella infections linked to small turtles**

27.may.13

barfblog

Doug Powell

<http://barfblog.com/2013/05/391-now-sick-mainly-kids-8-multistate-outbreaks-of-human-salmonella-infections-linked-to-small-turtles/>

Four of eight multistate outbreaks of Salmonella linked to small turtles remain under active investigation, according to the U.S. Centers for Disease Control:

- a total of 391 persons infected with the outbreak strains of Salmonella have been reported from 40 states and the District of Columbia;
- 29% of ill persons have been hospitalized, and no deaths have been reported;
- 71% of ill persons are children 10 years of age or younger, and 33% of ill persons are children 1 year of age or younger;
- 45% of ill persons are of Hispanic ethnicity. Information about the association

between reptiles and Salmonella is available in Spanish;

- results of the epidemiologic and environmental investigations indicate exposure to turtles or their environments (e.g., water from a turtle habitat) is the cause of these outbreaks;
- 70% of ill persons reported exposure to turtles prior to their illness;
- 89% of ill persons with turtle exposure specifically reported exposure to small turtles (shell length less than 4 inches);
- 30% of ill persons with small turtles reported purchasing the turtles from street vendors; and,
- 13% reported purchasing small turtles from pet stores.

The Food and Drug Administration has banned the sale and distribution of turtles with a shell length of less than 4 inches in size as pets since 1975.

Full details are available at <http://www.cdc.gov/salmonella/small-turtles-03-12/index.html>.

<http://barfblog.com/2013/02/347-sick-8-multistate-outbreaks-of-human-salmonella-infections-linked-to-small-turtles/>

### **Genome sequences of the Guillain-Barré syndrome outbreak-associated *Campylobacter jejuni* strains ICDCJ07002 and ICDCJ07004**

26.may.13

Genome Announc. May/June 2013 vol. 1 no. 3

Maojun Zhang, Xianwei Yang, Hongying Liu, Xiayang Liu, Yufen Huang, Lihua He, Yixin Gu, Jianzhong Zhang

<http://genomea.asm.org/content/1/3/e00256-13.full>

ABSTRACT

The first world-known and largest outbreak of 36 cases of Guillain-Barré syndrome caused by a preceding *Campylobacter jejuni* infection was reported previously in China. During the outbreak, *Campylobacter jejuni* strain ICDCJ07002 was isolated from a patient with persistent diarrhea for 21 days, and *C. jejuni* strain ICDCJ07004 was from a healthy carrier without any clinical symptoms at the same time. Here, we report the draft genome sequence of strain ICDCJ07002 (1,698,407 bp, with a G+C content of 30.45%) and the genome resequencing result of strain ICDCJ07004 (1,701,584 bp, with a G+C content of 30.51%), and we compared these with the completed genome of *C. jejuni* strain ICDCJ07001.

### **US: CBP's agricultural specialists stop unpasteurized cheese from entering U.S.**

17.may.13

CBP

[http://www.cbp.gov/xp/cgov/newsroom/news\\_releases/local/05172013\\_1.xml](http://www.cbp.gov/xp/cgov/newsroom/news_releases/local/05172013_1.xml)

Lukeville, Ariz. -- U.S. Customs and Border Protection agriculture specialists at the Port of Lukeville discovered nearly 223 pounds of undeclared, unpasteurized cheese in a passenger vehicle May 6.

CBP officers referred a vehicle with California plates for an additional agriculture inspection when the male driver attempted to enter the United States. Prior to the search, the man declared only five kilograms of Mexican cheese. However, when CBP agriculture specialists searched the vehicle they located a commercial quantity of undeclared and intentionally concealed cheese. The concealed, unpasteurized ruminant cheese was seized for not meeting import requirements. The driver was fined for failure to declare the prohibited agriculture product and released.

Commercial quantities of regulated food products must meet the requirements of several federal agencies to be imported properly and safely.

CBP agriculture specialists have extensive training and experience in agricultural and

biological inspection. Their historic mission of preventing the introduction of harmful plant and animal pests into the U.S. provides CBP with the expertise to recognize and prevent the entry of organisms with a potential to devastate entire segments of our agriculture-related economy.

U.S. Customs and Border Protection is the unified border agency within the Department of Homeland Security charged with the management, control and protection of our nation's borders at and between the official ports of entry. CBP is charged with keeping terrorists and terrorist weapons out of the country while enforcing hundreds of U.S. laws.

### **Infant botulism with prolonged faecal excretion of botulinum neurotoxin and Clostridium botulinum for 7 months**

20.may.13

Epidemiology and Infection / FirstView Article, pp 1-5

Y. Derman, H. Korkeala, E. Salo, T. Lönnqvist, H. Saxen and M. Lindström

<http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=892470>

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#### **SUMMARY**

In Finland in April 2010, a 3-month old baby was diagnosed with type A infant botulism. He excreted botulinum neurotoxin and/or Clostridium botulinum in his faeces until November 2010. Five months of excretion was after clinical recovery and discharge from hospital. C. botulinum isolates recovered from the household dust in the patient's home were genetically identical to those found in the infant's stool samples. Long-term faecal excretion of C. botulinum may pose a possible health risk for the parents and others in close contact with the infant.

### **Investigation of food and water microbiological conditions and foodborne disease outbreaks in the Federal District, Brazil**

21.may.13

Food Control, Volume 34, Issue 1, November 2013, Pages 235–240

Márcia Menezes Nunes, Ana Lourdes Arrais de Alencar Mota, Eloisa Dutra Caldas

<http://www.sciencedirect.com/science/article/pii/S0956713513002181>

#### **Abstract**

This is a retrospective study describing data on the microbiological conditions of food and water obtained from analysis reports issued by the Central Laboratory of the Federal District (LACEN-DF), and information on foodborne disease outbreaks investigated by the Office of Water and Food Borne Diseases of the Federal District (NATHA), Brazil, between 2000 and 2010. A total of 4576 analysis reports were evaluated, from which 92.9% of monitoring samples and 7.1% of samples suspected to be involved in outbreaks. Of the total number of samples, 630 did not comply with Brazilian legislation (rejected). Ready-to-eat food, milk/dairy products, water, spices/seasonings, and ice cream/sorbets had the highest rejection rates among the monitoring samples (18.9–11%), with the first two groups having the highest rates among the outbreak samples (23.5 and 21.7%). Minas cheese showed to be the food with the highest rejection rate among the samples analyzed by the LACEN-DF. About 9% of the food samples were rejected due to thermotolerant coliforms and/or coagulase-positive staphylococci, and 10.5% of the water samples were rejected due to Pseudomonas aeruginosa. Ready-to-eat food were the main foods involved in the foodborne disease outbreaks investigated by NATHA (51.3% of the 117 outbreaks with the food identified) and Bacillus cereus the most identified etiologic agent (41.2% of the 80 outbreaks with the agent identified). This study indicated that microbiological surveillance programs should focus on ready-to-eat food to prevent the occurrence of foodborne disease outbreaks in the region.

## 25 sick, up from 13; Salmonella linked to homemade unpasteurized fresh cheese in Minn

20.may.13

barfblog

Doug Powell

<http://barfblog.com/2013/05/25-sick-up-from-13-salmonella-linked-to-homemade-unpasteurized-fresh-cheese-in-minn/>

At least 25 Minnesotans have been sickened with salmonellosis linked to eating a raw Mexican-style cheese, queso fresco, state health officials said. The outbreak illustrates the dangers of consuming unpasteurized dairy products.

The Minnesota Department of Health (MDH), the Minnesota Department of Agriculture (MDA) and the City of Minneapolis have been investigating the outbreak and the source of the raw milk used to make the cheese since the first cases were detected in late April.

MDH confirmed 18 cases of infection with the same strain of Salmonella. An additional seven cases of illness occurred among family members or other contacts of confirmed cases, but no laboratory specimens were available. The individuals became ill between March 28 and April 24. Of the 25 cases, 15 were hospitalized. All have recovered. Many cases reported eating unpasteurized queso fresco purchased or received from an individual who made the product in a private home.

Investigators have determined that the individual made home deliveries and also may have sold the product on a street corner near the East Lake Street area of Minneapolis.

Anyone who may have purchased or received this product recently should not eat it but should throw it away.

Samples of unpasteurized queso fresco collected from the cheese maker were found to contain the same strain of Salmonella as the illnesses. Investigators determined that the milk used to make the cheese was purchased by the cheese maker from a Dakota County farm. Unpasteurized milk samples collected at the farm were also found to match the outbreak strain.

Dr. Heidi Kassenborg, director of MDA's Dairy and Food Inspection Division, said the outbreak underscores the dangers of consuming unpasteurized dairy products. "It only takes a few bacteria to cause illness. Milking a cow is not a sterile process and even the cleanest dairy farms can have milk that is contaminated. That's why pasteurization - or the heat treatment of milk to kill the harmful pathogens - is so important," said Kassenborg.

Minnesota law allows consumers to purchase raw milk directly from the farm for their own consumption, but it may not be further distributed or sold. Additionally, cheese production facilities need to follow proper food safety laws and regulations, including licensure.

Dr. Carlota Medus said the outbreak may be over, as there are no suspect cases pending. However, it may still be possible to see additional cases that have not been reported yet from people who consumed cheese prior to health officials' interventions, which occurred April 23-26.

While this particular outbreak may be over, MDA and MDH officials are concerned that this may not be an isolated incident: that there may be other instances of people buying foods like unpasteurized queso fresco prepared by neighbors, friends or family. "It's important for people to be aware of the inherent risk of consuming any raw dairy product from any source," Medus said. "We encourage people to think carefully about those risks and know that the risks are especially high for young children, pregnant women, the elderly and those with weakened immune systems."

<http://www.health.state.mn.us/news/pressrel/2013/salmonella052013.html>

<http://barfblog.com/2013/04/13-sick-salmonella-from-raw-milk-cheese-outbreak-in-minn/>

### **NORTH DAKOTA: Salmonella outbreak linked to baby chicks**

20.may.13

KSB

Stacy Eberl

<http://www.ksjbam.com/index.php?article=../news/1369072580>

BISMARCK, N.D. -- The North Dakota Department of Health has linked four cases of salmonellosis to exposure to baby chicks, according to Alicia Lepp, epidemiologist with the Department of Health's Division of Disease Control.

The cases, all children younger than 10, are associated with a multi-state outbreak of salmonellosis being investigated by the Centers for Disease Control and Prevention (CDC). As of May 10, 2013, a total of 146 people from 26 states have been linked to this outbreak. Investigation findings have connected this outbreak to exposure to baby chicks, ducklings and other live baby poultry purchased from multiple feed stores and sourced from multiple mail order hatcheries.

"Contact with live poultry can be a source of human Salmonella infections," Lepp said. "Even if chicks and ducklings appear healthy, they may be shedding salmonella. A bird that looks clean can still have germs on its feathers and feet that make a person sick."

### **Alberta's cattle industry sort of recovers a decade after mad cow outbreak**

18.may.13

barfblog

Doug Powell

<http://barfblog.com/2013/05/albertas-cattle-industry-sort-of-recovers-a-decade-after-mad-cow-outbreak/>

On March 20, 1996, British Health Secretary Stephen Dorrell rose in the House to inform colleagues that scientists had discovered a new variant of Creutzfeldt-Jacob disease (CJD) in 10 victims, and that they could not rule out a link with consumption of beef from cattle with bovine spongiform encephalopathy (BSE), also known as mad cow disease.

Overnight, the British beef market collapsed and politicians quickly learned how to enunciate BSE and CJD. Within days, the European Union banned exports of British beef; consumption of beef fell throughout Europe, especially in France and Germany, and in Japan, where suspicion of foreign food runs high. The triumvirate of uncertain science, risk and politics was played out in media headlines.

To refer to the events of 1996 as the BSE crisis is a misnomer, just as scientists are quick to point out that mad cow disease should more appropriately be called sad cow disease or unco-ordinated cow disease. Rather, the announcement of March 20, 1996 was the culmination of 15 years of mismanagement, political bravado and a gross underestimation of the public's capacity to deal with risk. More important than any of the several lessons to be drawn from the BSE fiasco is this: the risk of no-risk messages. For 10 years the British government and leading scientific advisors insisted there was no risk — or that the risk was so infinitesimally small that it could be said there was no risk — of BSE leading to a similar malady in humans, CJD, even in the face of contradictory evidence. The no-risk message contributed to the devastating economic and social effects on Britons, a nation of beefeaters, the slaughter of over 1 million British cattle, and a decrease in global consumption of beef, especially in Japan, at a cost of billions of dollars.

The Canadian Minister of Agriculture was quite adamant there was no risk of BSE developing in Canada.

In July 1996, Dr Norman Willis, Director General, Animal and Plant Health, Agriculture and Agrifood Canada, told the Canadian Veterinary Medical Association's annual convention that "Actions were taken out of sheer paranoia, with people significantly hyped by the media. We took actions that went way beyond ones that were scientifically justified. ... We wouldn't have political interference. We wouldn't have non-science factors influence the actions we took. BSE blew that all away. ... Canada and other trading countries couldn't hold with science-based decisions. There was just too much at stake by way of trade."

Canada's initial dragging to the grown-up's table of BSE risk management, and apparent lax enforcement of feed regulations for years afterwards led to the inevitable: On May 20, 2003, Canada announced its first home-grown case of BSE. The eight-year old cow from Alberta had been condemned at slaughter, was sent for rendering and did not enter the food chain.

The first few chapters of the story about the discovery of BSE in Canada were positive.

BSE was bound to show up eventually and the surveillance system set up in 1992 sorta worked. The inspector who pulled a sickly looking eight-year-old cow from the slaughter line prevented it from entering the food chain.

The line in Canada was, this is not the UK, and I was on TV at 5 a.m. the next morning, saying the U.K., had some 186,000 cattle test positive and millions preemptively slaughtered. The significant question was, will Canadian numbers of BSE-positives remain in the dozens or the tens-of-thousands (or something like that). And yes, producers, processors and government should have been fully aware of the risk rather than act stunned when it happened.

Ten years on, with the perspective that time often offers, my statements seem accurate but naïve.

Canada has since reported 18 cases of BSE, and, just like other aspects of food safety, those in charge talk a good line, but do they know what really happens on farms (or anywhere) day-in, day-out.

And are they interested? Because being interested costs money.

Ian Gray of the Edmonton Journal wrote a 10-year-retrospective piece on the first homegrown BSE case today, beginning with:

In January 2003, Marwyn Peaster's cow fell down.

The six-year-old Black Angus was one of a small herd Peaster had bought the year before for his grain farm and feedlot near Wanham, in Alberta's Peace Country. Believing the cow had pneumonia, Peaster made the fateful decision to send it to a local abattoir instead of calling for a veterinarian or disposing of it on his own property. The vet at the slaughterhouse went by the book and condemned the "downer" cow, so there'd be no chance it could be used for human consumption.

The carcass then went to a rendering plant, but the head was sent to a provincial laboratory in Edmonton for testing. As there was no perceived urgency, there it sat, until May 16, 2003.

Three and a half months after it was shipped, the head was finally tested at the provincial lab and, to the disbelief and horror of everyone involved, registered positive for BSE. The results were confirmed by federal and international laboratories and were announced to the public on May 20.

As of May 1, 2013, vCJD had killed 237 people worldwide.

The attack on Peaster reached its peak that September with the now infamous remark by then-premier Ralph Klein that "any self-respecting rancher would have shot, shovelled and shut up, but he (Peaster) didn't do that."

Peaster has since moved back to the U.S. and is living in the farming community of Ontario, Oregon, where he has a small trucking company. True to form, he has no desire to comment on the 10th anniversary of the discovery of BSE in Canada, in

which he was a key, if unwilling, player.

Mad cow no longer dominates the food safety headlines, and that's good. The potential is always there, and requires good risk management, but a lot more people get sick from lots of other things associated with beef (although vCJD is a terrible way to die).

As the elementary school year wound down in June, 2003, in Ontario, Canada, the school three of my four daughters attended had a barbeque for students, staff and parents. The earlier discovery of Canada's first domestic case of bovine spongiform encephalopathy which received extensive media coverage, was of concern to some parents and school officials, so a note was sent home to parents, assuring them that the hamburgers and hot dogs to be consumed came from a supplier of so-called natural, beef and was therefore safe from BSE.

At this particular BBQ, several of the well-meaning volunteer cooks were observed to handle the raw, natural hamburger patties with tongs that were then used to place re-heated wieners into hot dog buns, possibly cross-contaminating the wieners with any number of pathogenic microorganisms such as E. coli O157:H7, salmonella or listeria, and subsequently served to parents and children.

About the same time, a bunch of industry folks hosted a BBQ on Parliament Hill in Ottawa, to demonstrate the safety of Canadian beef to politicians.

I watched the servers cook burgers, not use thermometers, and cross-contaminate everything in sight.

I asked, where is the hamburger from?

Don't worry, it's not from Alberta, no mad cow here.

Are these pre-cooked?

Nah, they've been sitting in the (non-refrigerated) truck for a few hours.

I always wondered if anyone got sick after that feast.

<http://www.edmontonjournal.com/Alberta+cattle+industry+recovers+decade+after+costly+outbreak/8403439/story.html>

<http://barfblog.com/2010/05/mad-cows-and-canada-happy-anniversary/>

### **Joint EFSA and ECDC report: resistant bacteria remain an important issue that can affect humans through animals and food.**

16.may.13

efsa

[http://www.efsa.europa.eu/en/press/news/130516.htm?utm\\_source=feed&utm\\_medium=rss&utm\\_campaign=prwns](http://www.efsa.europa.eu/en/press/news/130516.htm?utm_source=feed&utm_medium=rss&utm_campaign=prwns)

The third joint EFSA and ECDC report on antimicrobial resistance in zoonotic bacteria affecting humans, animals and foods shows the continued presence of resistance to a range of antimicrobials in Salmonella and Campylobacter, the main bacteria causing food-borne infections in the European Union (EU). Nevertheless, co-resistance (combined resistance) to two critically important antimicrobials, remains low. The report is based on data collected by EU Member States for 2011.

A high proportion of Campylobacter bacteria, the primary cause of foodborne diseases in the EU, found in humans, food-producing animals and food was resistant to the critically important antimicrobial ciprofloxacin whereas low resistance was recorded for erythromycin, a second critically important antimicrobial. Overall in the EU, co-resistance to critically important antimicrobials was low, which indicates that treatment options remain available so far for severe infections with these bacteria. In addition, high resistance was recorded for commonly used antimicrobials.

In Salmonella multidrug resistance, or resistance to at least three different antimicrobial classes, was high overall in the EU. In humans, a high proportion of Salmonella was found to be resistant to commonly used antimicrobials and this was

also the case for animals, especially pigs and turkeys. High resistance to ciprofloxacin in isolates from poultry was also observed. Nonetheless, there were low levels of co-resistance to critically important antimicrobials among *Salmonella* from humans, food-producing animals and food.

"If we do not want to lose a number of antimicrobials which today provide an effective treatment against bacterial infections in humans, then joint efforts in the EU, including the Member States, healthcare professionals, industry, farmers and many others are needed", said Bernhard Url, EFSA's Director of Risk Assessment and Scientific Assistance.

ECDC Director Dr. Marc Sprenger added: "With harmonised surveillance of antimicrobial resistance in isolates from humans and animals, we can inform effective actions to prevent further spread of antimicrobial resistance in humans. To facilitate comparability of data across the EU, ECDC will continue encouraging EU Member States to use the methods and guidelines issued by the European Committee on Antimicrobial Susceptibility Testing (EUCAST). In addition, ECDC will keep coordinating the European Antibiotic Awareness Day, a European health initiative that provides a platform and support for national campaigns on the prudent use of antibiotics in humans."

Multidrug resistance, co-resistance and resistance to commonly used antimicrobials needs to be carefully monitored. Antimicrobial resistance is a serious threat to public health as it leads to increasing health costs, extra length of stay in the hospital, treatment failures and sometimes death.

The European Union Summary Report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2011

Notes to editors:

Antimicrobials, including antibiotics, are substances used to treat a wide variety of infectious diseases in humans and animals. They kill, or inhibit the growth of, microorganisms, such as bacteria, which cause infections. Antimicrobial resistance occurs when a microorganism becomes resistant to an antimicrobial to which it was previously sensitive. Antimicrobial resistance poses a threat to public health, as it may render treatments with antimicrobials ineffective.

Some antimicrobials are defined by the World Health Organization as critically important for the treatment of serious human infections: these include ciprofloxacin and cefotaxime for salmonellosis (*Salmonella* infection), and ciprofloxacin and erythromycin for campylobacteriosis (*Campylobacter* infection). Antimicrobials used to treat various infectious diseases in food-producing animals may be the same or be similar to those used in humans. Thereby bacteria carrying resistance to critically important antimicrobials may be transferred to humans from animals.

The joint EFSA/ECDC 2011 report is the first to analyse multidrug resistance and co-resistance to antimicrobials, in both humans and animals. Bacteria are defined as being multidrug-resistant if they are resistant to at least three different antimicrobial classes. In this report, co-resistance refers to combined resistance to two specific critically important antimicrobials.

EFSA and ECDC have analysed the information submitted by 26 EU Member States and three EFTA countries on antimicrobial resistance in 2011. EFSA has been analysing resistance to antimicrobials in zoonotic bacteria found in animals and food since 2004. Direct comparison between antimicrobial resistance findings in humans and in food/animals presented in the report cannot be made as partly different definitions for resistance were used.

In its 2011 action plan against the rising threats from antimicrobial resistance, the European Commission identified key priority areas, including improved monitoring of antimicrobial resistance, to which this report makes an important contribution.

## **The European Union Summary Report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2011**

16.may.13

EFSA Journal 2013;11(5):3196 [359 pp.]

[http://www.efsa.europa.eu/en/efsajournal/pub/3196.htm?utm\\_source=feed&utm\\_medium=rss&utm\\_campaign=ej](http://www.efsa.europa.eu/en/efsajournal/pub/3196.htm?utm_source=feed&utm_medium=rss&utm_campaign=ej)

### Abstract

The antimicrobial resistance data among zoonotic and indicator bacteria in 2011, submitted by 26 European Union Member States, were jointly analysed by the European Food Safety Authority and the European Centre for Disease Prevention and Control. Data covered resistance in zoonotic *Salmonella* and *Campylobacter* isolates from humans, food and animals, and in indicator *Escherichia coli* and enterococci isolates from animals and food. Data on methicillin-resistant *Staphylococcus aureus* in animals and food were also presented. Resistance in isolates from humans were mainly interpreted using clinical breakpoints, while animal and food isolate resistance was interpreted using epidemiological cut-off values. Resistance was commonly found in isolates from humans, animals and food, although disparities in resistance were frequently observed between Member States. High resistance levels were recorded to ampicillin, tetracyclines and sulfonamides in *Salmonella* isolates from humans, while resistance to third-generation cephalosporins and fluoroquinolones remained low. In *Salmonella* and indicator *Escherichia coli* isolates from fowl, pigs, cattle and meat thereof, resistance to ampicillin, tetracyclines and sulfonamides was also commonly detected, while resistance to third-generation cephalosporins was low. Moderate to high resistance to (fluoro)quinolones was observed in *Salmonella* isolates from turkeys, fowl and broiler meat. In *Campylobacter* isolates from human cases, resistance to ampicillin, ciprofloxacin, nalidixic acid and tetracyclines was high, while resistance to erythromycin was low to moderate. High resistance to ciprofloxacin, nalidixic acid and tetracyclines was observed in *Campylobacter* isolates from fowl, broiler meat, pigs and cattle, whereas much lower levels were observed for erythromycin and gentamicin. Among the indicator enterococci isolates from animals and food, resistance to tetracyclines and erythromycin was commonly detected. The report also presents for the first time results on multi-resistance and co-resistance to critically important antimicrobials in both human and animal isolates. Very few isolates from animals were co-resistant to critically important antimicrobials.

### Summary

Zoonoses are infections and diseases that are transmissible between animals and humans. Infection can be acquired directly from animals, or through the ingestion of contaminated foodstuffs. The severity of these diseases in humans can vary from mild symptoms to life-threatening conditions. The zoonotic bacteria that are resistant to antimicrobials are of special concern since they might compromise the effective treatment of infections in humans. In order to follow the occurrence of antimicrobial resistance in zoonotic bacteria isolated from animals and food in the European Union, information is collected and analysed from the European Union Member States. In 2011, 26 Member States submitted information on the occurrence of antimicrobial resistance in zoonotic bacteria to the European Commission and the European Food Safety Authority, and 21 Member States submitted information to the European Centre for Disease Prevention and Control. In addition, three other European countries provided information. Assisted by its contractors, the Animal Health and

Veterinary Laboratories Agency in the United Kingdom and the University of Hasselt in Belgium, the European Food Safety Authority and the European Centre for Disease Prevention and Control analysed the data, the results of which are published in this European Union Summary Report on antimicrobial resistance. Information on resistance was reported regarding *Salmonella* and *Campylobacter* isolates from human cases, food and animals, whereas data on indicator *Escherichia coli* and indicator enterococci isolates related only to animals and food. Information was reported by some Member States on the occurrence of methicillin-resistant *Staphylococcus aureus* in animals and food; the antimicrobial susceptibility of methicillin-resistant *Staphylococcus aureus* isolates was additionally reported by two countries. Data on antimicrobial resistance in isolates from human cases were mainly interpreted by using clinical breakpoints, while the quantitative data on antimicrobial resistance in isolates from food and animals were interpreted using harmonised epidemiological cut-off values that detect microbiological resistance.

The reporting of antimicrobial resistance data at isolate-based level by an important number of Member States has allowed the first analysis at the European Union level of multi-resistance and co-resistance patterns to critically important antimicrobials in both human and animal isolates, which is a new feature of the present report. Also, for certain bacterial species, antimicrobial resistance data could be analysed at the production-type level, such as broilers and laying hens of *Gallus gallus*, which allows the analysis of the data to be fine-tuned.

Antimicrobial resistance was commonly detected in isolates of *Salmonella* and *Campylobacter* from human cases as well as from food-producing animals and food in the European Union. This was also the case for indicator (commensal) *Escherichia coli* and enterococci isolated from animals and food. For many of the antimicrobials, the levels of resistance varied greatly between different Member States.

In the European Union, the occurrence of resistance in *Salmonella* isolates from cases of salmonellosis in humans was high for ampicillin, tetracyclines and sulfonamides and moderate for nalidixic acid and streptomycin, with high levels of multi-drug resistance observed in some countries. However, resistance to the critically important antimicrobials for human medicine, cefotaxime (a third-generation cephalosporin) and ciprofloxacin (a fluoroquinolone), was relatively low, although for ciprofloxacin reported resistance levels were higher in countries where epidemiological cut-off values were used as the interpretive criteria. Co-resistance to ciprofloxacin and cefotaxime among *Salmonella* isolates was low. The resistance levels also differed substantially between serovars, with higher resistance to ciprofloxacin and nalidixic acid observed in *Salmonella* Enteritidis than in *Salmonella* Typhimurium and the opposite for the other antimicrobials. There was a high level of resistance to ampicillin, ciprofloxacin, nalidixic acid and tetracyclines among *Campylobacter* isolates from human cases, with high and very high levels of multi-drug resistance observed in some countries. However, relatively low resistance was recorded to erythromycin, which is the clinically most important antimicrobial for treatment of *Campylobacteriosis* in humans. In addition, co-resistance to ciprofloxacin and erythromycin was low among *Campylobacter jejuni* isolates.

The high proportions of *Salmonella*, *Campylobacter* and indicator *Escherichia coli* isolates exhibiting resistance to fluoroquinolones (ciprofloxacin) remain of concern. In *Salmonella* spp. isolates of food and animal origin, the highest occurrence of resistance to ciprofloxacin was noted in turkeys, fowl (*Gallus gallus*) and broiler meat, where the proportion of resistant isolates varied between 29 % and 50 % in the reporting Member State group. Ciprofloxacin resistance was recorded more often in broilers than in laying hens. Three Member States demonstrated a significant increasing trend for ciprofloxacin and nalidixic acid resistance and one a decreasing

trend for both antimicrobials in *Salmonella* species from *Gallus gallus* over the period 2005 to 2011. Considering the indicator *Escherichia coli* isolates, the levels of ciprofloxacin resistance observed in isolates from broilers and pigs were 53.1 % and 8.3 %, respectively. Furthermore, high to extremely high resistance to fluoroquinolones was commonly observed in *Campylobacter* isolates from *Gallus gallus* and broiler meat, as well as from pigs and cattle, at levels ranging from 36 % to 78 %.

Resistance to the third-generation cephalosporin cefotaxime was observed in *Salmonella* isolates from *Gallus gallus*, turkeys, pigs, cattle and meat derived from broilers, at very low or low levels varying between 0 % and 3 %, as well as in indicator *Escherichia coli* isolates from *Gallus gallus*, pigs and cattle at levels ranging from <1 % to 6.4 %. Resistance to erythromycin was detected in *Campylobacter* isolates from *Gallus gallus*, poultry meat and pigs at levels of 2 % to 25 %.

Among *Salmonella* isolates from meat and animals, resistance to tetracyclines, ampicillin and sulfonamides was reported at levels of 7 % to 61 % and it was higher in isolates from pigs and turkeys than in those from broilers, laying hens and cattle. Resistance to ciprofloxacin and nalidixic acid was higher in *Salmonella* isolates from broilers and turkeys (33–50 %) than it was in isolates from laying hens, pigs or cattle (1–13 %). In isolates of *Campylobacter* from meat and animals, resistance was commonly detected to tetracyclines at levels up to 75 %, whereas much lower resistance was reported to gentamicin (levels lower than 7 %).

Among indicator *Escherichia coli* from broilers and pigs, resistance to tetracyclines, ampicillin and sulfonamides was commonly reported at levels of 37 % to 57 %, resistance levels being lower in laying hens (14 % to 18 %). In the case of cattle, levels of resistance to these antimicrobials fell within the range 20 % to 74 % in younger age groups, mainly fattening veal calves, but values were much lower in older cattle, mainly adult cows. In general, resistance levels were lower among isolates from cattle and layers than in isolates from broilers and pigs.

Among indicator enterococci, resistance to tetracyclines and erythromycin was common in isolates from *Gallus gallus*, pigs and cattle at levels of 23 % to 79 %, the resistance being the lowest for isolates from cattle. Resistance to vancomycin continued to be detected, albeit at very low levels (maximum 0.7 %), in enterococcal isolates from animals.

Multi-resistance (reduced susceptibility to at least three antimicrobial classes according to epidemiological cut-off values) was high in *Salmonella* isolates from broilers, turkeys and pigs and in indicator *Escherichia coli* isolates from broilers and pigs in those countries reporting isolate-based data. However, co-resistance to the clinically important antimicrobials ciprofloxacin and cefotaxime was detected in very few isolates of *Salmonella* species and indicator *Escherichia coli*. Multi-resistance was generally low in *Campylobacter jejuni* isolates from broilers, and co-resistance to ciprofloxacin and erythromycin was either not detected or recorded at low levels. Several statistically significant national trends in resistance levels in isolates from animals and food were observed. Among *Salmonella* isolates more decreasing than increasing trends were found, whereas, in the case of *Campylobacter*, the statistically significant national trends were mostly increasing.

### **Salmonella and Escherichia coli O157:H7 prevalence in cattle and on carcasses in a vertically integrated feedlot and harvest plant in Mexico**

06.may.13

Journal of Food Protection®, Number 5, May 2013, pp. 744-918 , pp. 786-795(10)  
Narvaez-Bravo, C.; Miller, M.F.; Jackson, T.; Jackson, S.; Rodas-Gonzalez, A.; Pond, K.; Echeverry, A.; Brashears, M.M.

<http://www.ingentaconnect.com/content/iafp/jfp/2013/00000076/00000005/art0000>

**Abstract:**

To determine the prevalence of *Salmonella* and *Escherichia coli* O157:H7 in cattle feedlots and the impact of subsequent contamination on carcasses in a Mexican Federal Inspection Type Standards harvest facility, 250 animals were tagged and sampled in each step of the slaughter process. Samples were taken from hides and fecal grabs, and composite samples were taken from three anatomical carcass sites (hindshank, foreshank, and inside round) during the slaughter process, at preevisceration (PE), prior to entering the hot box (PHB), and after 24 h of dry chilling (DC). Additionally, 250 fecal samples were collected from the feedlot (FL), holding pens (HP), and intestinal feces (IF), and water samples were taken from the HP area. *E. coli* O157:H7 and *Salmonella* detection were carried out with the BAX System, immunomagnetic separation, and conventional methods. Overall *Salmonella* prevalence was 52.5%. The highest prevalence (92.4%) was found on hides, followed by feces from the HP (91.0%), FL (55.56%), PE (49.0%), IF (46.8%), and PHB (24.8%), for all sampling periods combined. The lowest prevalence of 6.0% was found after DC. The overall prevalence of *E. coli* O157:H7 was as follows: 11.7% for hides, 5.2% for IF, 2.7% for FL, 2.0% for HP, 0.8% for PE, 0.4% for PHB, and 0.4% for the cooler. High prevalence of *Salmonella* in IF and on hides present a significant risk factor for contamination by *Salmonella* at the different processing steps. These results serve as a warning as to the risks of contamination in meats for these pathogens and the importance of following good manufacturing practices during beef production processes.

**WHO: the global view of Campylobacteriosis**

06.may.13

barfblog

Doug Powell

<http://barfblog.com/2013/05/who-the-global-view-of-campylobacteriosis/>

From July 9-11, 2012, the World Health Organization (WHO), in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and the World Organisation for Animal Health (OIE), convened an Expert Consultation on The Global View of Campylobacteriosis, in Utrecht, Netherlands.

Below are the general conclusions:

Considerable new evidence, data, and analytical tools have emerged in the ten years since the previous WHO consultations on Campylobacter.

In terms of public health actions, there is already a sufficient evidence base to address the burden of disease from *C. jejuni* and *C. coli*. The importance of other species in terms of burden of disease is still unclear, but is considered unlikely to eclipse these two species.

Public health surveillance can provide important basic information to policy-makers about the frequency of infection, who is affected, and the success of specific prevention strategies. Surveillance is the starting point for studies of burden of disease and source attribution.

There is a need for standardization and validation of laboratory methods.

Burden of disease studies provide the evidence base that drives the need for control measures across all outcomes of Campylobacteriosis while taking into consideration its underestimation.

There is considerable potential for the identification of new sequelae from acute infection. However, decision criteria are needed on the level of evidence required to add outcomes to burden estimates. This applies to all sequelae, and may increase burden estimates considerably.

In order to reduce exposure countries should be encouraged to adopt the recently

developed Codex Guidelines for the Control of Campylobacter and Salmonella in chicken meat which promote a risk based approach to the management of Campylobacter in chicken meat traded internationally. Consideration should be given to the development of additional guidance and recommendations for the management of Campylobacter in other potential food vehicles that are traded internationally.

Source attribution studies should adopt a holistic attitude, considering multiple sources and pathways of exposure. Where possible attribution estimates should combine both molecular typing and epidemiological data and include measures of uncertainty.

Although poultry is the dominant source of infection in many countries, controlling Campylobacter in poultry meat will not completely eliminate the disease in humans. Options are available to control other pathways which are based on general hygiene, generic control measures including biosecurity and sanitation.

Reducing the load of Campylobacter in poultry to a level with a low probability of causing illness is unlikely to be achieved by any single pre-harvest or post-harvest intervention. Success will most likely occur through use of multiple stepwise interventions to lower the load of Campylobacter on or in each bird on the farm and in the processing facility.

The epidemiology of Campylobacteriosis is likely to be different in high-income countries versus LMIC. This will affect control options.

GFN, as an international training and capacity development network, will play a key role in promoting better and more consistent methodologies and quality assurance for work with Campylobacter. Where possible, GFN should link with other international networks, such as FERG, which is promoting capacity development in estimation of burden of foodborne disease.

The complete report is available at

[https://extranet.who.int/iris/restricted/bitstream/10665/80751/1/9789241564601\\_eng.pdf](https://extranet.who.int/iris/restricted/bitstream/10665/80751/1/9789241564601_eng.pdf).

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### **31 sick, 4 develop reactive arthritis; Campylobacter from raw milk, Alaska, Jan–Feb 2013**

06.may.13

barfblog

Doug Powell

<http://barfblog.com/2013/05/31-sick-4-develop-reactive-arthritis-campylobacter-from-raw-milk-alaska-jan-feb-2013/>

As noted in that World Health Organization report, the major sequelae of Campylobacteriosis are Guillain-Barré syndrome (GBS), reactive arthritis (ReA) and irritable bowel syndrome (IBS).

GBS is a severe disease, requiring intensive care in some 20% of cases; case-fatality rates in high-income countries are between 3 and 10%. Globally, approximately one-third of GBS cases have been attributed to Campylobacter infection.

While it is difficult to determine the true extent of ReA, because of a lack of clear diagnostic and classification criteria, studies suggest that it occurs in 1–5% of those infected with Campylobacter. It has been estimated that 25% of ReA cases may go on to chronic spondyloarthropathy.

That's exactly what happened in the Campylobacter-from-raw-milk outbreak in Alaska earlier this year.

On February 13, 2013, Alaska State Public Health Laboratory (ASPHL) notified the Alaska Section of Epidemiology (SOE) of a cluster of four *C. coli* isolates with an indistinguishable pulsed-field gel electrophoresis (PFGE) pattern that was new to Alaska. All four isolates were grown from stool specimens collected in late January from ill Kenai Peninsula residents.

Patient interviews and other investigative work indicated that all four of the ill persons with PFGE-matching *C. coli* strains reported consuming raw (unpasteurized) milk within a few days of their illness onset. These initial interviews also led to additional case finding, primarily by way of ill persons reporting others they knew who were also ill with similar symptoms. While some of the persons who were initially identified during this investigation were reluctant to say where their raw milk came from, four individuals reported that it came from Farm A, a cow-share farm on the Kenai Peninsula.

A confirmed case was defined as a laboratory-confirmed, PFGE-matched, *C. coli* infection diagnosed from January 1, 2013 onward. A clinical case was defined as an acute GI illness with self-reported diarrhea lasting  $\geq 2$  days in a person with exposure to Farm A raw milk within 10 days of illness onset. A secondary case was defined as an acute GI illness lasting  $\geq 2$  days in a person with close contact to a confirmed or clinical case within 10 days of illness onset.

On February 14, SOE notified the Office of the State Veterinarian (OSV) of the outbreak, and a joint press release and health advisory were issued on February 15.<sup>2</sup> OSV immediately notified Farm A of the outbreak and requested a list of all active shareholders. Despite notification of the outbreak, Farm A continued to distribute raw milk to shareholders living in the Kenai Peninsula and in Anchorage. During the week of February 18, two additional confirmed cases were reported—one of which was in a school-aged child who was hospitalized for 4 days with fevers, abdominal pain, rash, and acute reactive arthritis involving the wrists, ankles, knees, and hips. On February 22, an updated health advisory describing new developments in the outbreak was issued.<sup>3</sup> On February 22, Farm A provided SOE with an incomplete shareholder list, which lacked contact information for the majority of shareholders. Calls were made to notify persons on the list about the outbreak and to identify additional cases.

In total, 31 cases were identified during the investigation. Ill persons ranged in age from 7 months to 72 years (median: 10 years). Three children and one adult developed reactive arthritis lasting a minimum of 6 weeks. Two persons were hospitalized. All ill persons were Kenai Peninsula residents who either personally consumed Farm A raw milk within 10 days of illness onset ( $n=29$ ) or met the secondary case definition ( $n=2$ ).

#### Environmental Investigation

On February 22, OSV and SOE toured Farm A and collected cow feces, milk, and other environmental samples. Steps where the milk could be contaminated (from collection to bottling) were reviewed with the farmer, and the inherent risk of bacterial contamination of unpasteurized milk was discussed. The outbreak strain of *C. coli* was not isolated from the samples collected at the farm that day; however, three different strains of *C. jejuni* were isolated from cow manure, and *Listeria monocytogenes* grew from a raw milk sample.

This large outbreak of *C. coli* infection on the Kenai Peninsula was caused by consumption of Farm A raw milk. While this outbreak appears to be over, additional campylobacteriosis cases could still be identified at any time as *Campylobacter* species were identified from Farm A manure during the environmental investigation. Furthermore, this is the second outbreak of campylobacteriosis associated with consumption of raw milk distributed by an Alaskan cow-share operation in the past 2 years.<sup>4</sup> These outbreaks are an unfortunate reminder of the inherent risks

associated with raw milk consumption, and underscore the importance of pasteurization.

It is not surprising that the *C. coli* outbreak strain was not isolated from the environmental samples, as *Campylobacter* bacteria are difficult to isolate from the environment, they are shed intermittently in cow manure, and the farm visit occurred weeks after the outbreak peaked. Incidentally, *L. monocytogenes*—a bacteria that can cause life-threatening meningitis—was isolated from Farm A milk; no listeriosis cases were reported during the outbreak.

Finally, four (13%) ill persons developed reactive arthritis, a painful form of inflammatory arthritis that sometimes occurs in reaction to a bacterial infection and can persist for up to 12 months. These cases underscore the fact that *Campylobacter* infection can lead to prolonged adverse health consequences.

<http://barfblog.com/2013/05/who-the-global-view-of-campylobacteriosis/>

[https://extranet.who.int/iris/restricted/bitstream/10665/80751/1/9789241564601\\_eng.pdf](https://extranet.who.int/iris/restricted/bitstream/10665/80751/1/9789241564601_eng.pdf)

<http://barfblog.com/2013/03/21-now-sick-campylobacter-outbreak-traced-to-alaskan-raw-milk/>

[http://www.epi.alaska.gov/bulletins/docs/b2013\\_12.pdf](http://www.epi.alaska.gov/bulletins/docs/b2013_12.pdf)

<http://barfblog.com/2013/05/raw-milk-sickened-scores-despite-inspections>

### **Tick-borne encephalitis associated with consumption of raw goat milk, Slovenia, 2012**

01.may.13

Emerging Infectious Diseases, Volume 19, Number 5

Neda Hudopisk, Miša Korva, Evgen Janet, Marjana Simetinger, Marta Grgič-Vitek, Jakob Gubenšek, Vladimir Natek, Alenka Kraigher, Franc Strle, and Tatjana Avšič-Županc

[http://wwwnc.cdc.gov/eid/article/19/5/12-1442\\_article.htm](http://wwwnc.cdc.gov/eid/article/19/5/12-1442_article.htm)

Abstract

Tick-borne encephalitis (TBE) developed in 3 persons in Slovenia who drank raw milk; a fourth person, who had been vaccinated against TBE, remained healthy. TBE virus RNA was detected in serum and milk of the source goat. Persons in TBE-endemic areas should be encouraged to drink only boiled/pasteurized milk and to be vaccinated.

In Europe, tick-borne encephalitis (TBE) is one of the most common flavivirus infections of the central nervous system and is endemic to several countries.

Slovenia is among European countries with the highest reported TBE incidence rates (8.1–18.6 cases/100,000 population in the past decade) (1). TBE virus (TBEV) is mainly transmitted by tick bites but occasionally is transmitted by ingestion of unpasteurized milk/milk products from infected livestock (2).

Previously, large TBE outbreaks linked to a common source had been associated with consumption of dairy products (mostly goat milk); in recent years, smaller, dairy product-associated outbreaks have been reported from several TBEV-endemic countries (3–6). Despite high TBE incidence rates and low uptake of TBE vaccine among the Slovenian population (7), alimentary transmission of TBEV had not been reported in the country. We report a small outbreak of TBE that occurred in 2012 among persons in Slovenia who consumed raw goat milk.

The Study

On May 8, 2012, acute symptomatic TBEV infection was diagnosed in a kidney transplant patient in Slovenia (Table, Patient 1). A possible link between the infection and consumption of raw goat milk was revealed, triggering a detailed investigation of possible sources of infection and of 3 other persons who, together with patient 1, had consumed  $\approx 2$  L of raw milk (colostrum) from the same goat on April 18 (Table).

Two days after the milk was consumed, fever, fatigue, and malaise developed in 3 of the 4 person, including Patient 1, who also had headache and myalgia. Patient 3 did not seek medical care. Patients 1 and 2 were examined in the emergency department of the local general hospital on April 20. Laboratory test results were in the reference range, with the exception of mild leukopenia in both patients and mildly elevated liver enzyme levels for Patient 1. TBE was not suspected at that time. All 3 patients recovered in <1 week. Patient 3 remained well, but a second phase of disease developed in Patients 1 and 2 approximately 14 days after the milk was consumed. The second phase was characterized by high fever, headache, nausea (and vomiting in Patient 1), tremor, and mild disturbances of concentration and consciousness. Results of cerebrospinal fluid laboratory tests for Patient 2 revealed abnormalities consistent with aseptic meningitis (reference values are in parentheses): leukocytes  $29 \times 10^6/L$  ( $<5 \times 10^6/L$ ), neutrophilic granulocytes  $9 \times 10^6/L$  ( $<5 \times 10^6/L$ ), lymphocytes  $20 \times 10^6/L$  ( $<5 \times 10^6/L$ ), protein concentration 0.39 g/L (0.15–0.45 g/L), glucose concentration 3.27 mmol/L (2.5–3.9 mmol/L). Patient 1, who refused lumbar puncture diagnostic testing and hospitalization, was treated as an outpatient. The course of disease in Patients 1 and 2 was moderately severe, and the outcome was favorable. A detailed epidemiologic history revealed that none of the 3 patients recalled a recent tick bite and that Patients 2 and 3 consumed raw goat milk rather often, believing it was healthful. For all 3 patients, TBEV infection was confirmed by 1) ELISA (Enzygnost Anti-TBE/FSME Virus [IgG, IgM]; Siemens, Marburg, Germany) demonstrating specific IgM and IgG against TBEV in serum and by 2) the presence of neutralizing antibodies against TBEV. Real-time reverse transcription PCR of serum samples did not detect TBEV RNA (Table) (8).

The fourth person, who remained healthy, was previously vaccinated against TBE. He received his basic vaccination (3 doses) during 1995–1996, the first booster dose in 2000, the second in 2005, and the third in 2010. Serologic test results showed the absence of specific IgM and high levels of specific IgG. An antibody concentration of 912 U/mL in the first serum sample, obtained 27 days after he consumed raw goat milk, and of 672 U/mL in the second serum sample, obtained 3 weeks later, together with a high relative avidity index (85%), suggested a recent booster response. Patient 3, the owner of a small farm with 9 sheep and 9 goats, including the goat whose milk was consumed, consented to a virologic investigation of serum, blood, and milk samples from his farm animals. By using an indirect immunofluorescent assay, we detected TBEV-specific antibodies in 5 of 9 goat serum samples (titer range 20–1,280) and in 1 of 4 goat milk samples. All samples from sheep were seronegative for TBEV. Quantitative real-time reverse transcription PCR for TBEV was performed on all serum and blood samples and on 4 goat milk samples (9). TBEV RNA was detected in serum ( $1.50 \times 10^3$  RNA copies/mL) and milk ( $1.88 \times 10^5$  RNA copies/mL) of the goat whose milk was consumed, confirming the source of infection. TBEV RNA was not detected in samples from the other farm animals.

#### Conclusions

Our investigation of illness among 3 of 4 persons who consumed TBEV-infected raw goat milk revealed that all 4 persons were infected with the virus. Febrile illness developed in 3 of the 4 persons 2–3 days after the milk was consumed; the fourth person, who had been vaccinated against TBE, remained healthy. The course of the illness was biphasic in 2 of the 3 symptomatic persons: leukopenia (a characteristic finding for the initial phase of TBE) was present during the initial phase, and the second phase was clinically indicative of meningoencephalitis. Even though 1 of these 2 patients received immunosuppressive therapy because of renal transplantation, the course of the disease was only moderately severe, and the outcome was favorable. A prospective clinical study of patients in the initial phase of

TBE who were monitored for the appearance of the second, encephalitic phase of the disease, showed that an abortive form of TBE (i.e., an isolated initial phase not followed by the meningoencephalitic phase), as seen in the third patient in our study, is a rare event (10).

After a tick bite, the incubation period for TBE is a median of 8 days (range 4–28 days) (2). The incubation period can be shorter for exposure by the alimentary route (5) and was found to be only 2 days in the patients in our study. These findings might suggest that drinking TBEV-infected raw milk (colostrum) may result in TBE within a shorter incubation period than when TBE is associated with consumption of infected milk products (e.g., cheese). Therefore, short incubation should not be an exclusion criterion for the diagnosis of TBE, but in proven cases of TBEV infection, a short incubation period is likely a clue for alimentary transmission of TBEV.

Previously reported TBE outbreaks caused by alimentary transmission of TBEV lack definitive evidence of the virus having been present in milk or dairy products.

However, in our study of 4 TBEV-infected persons, the source of infection was proven by direct demonstration of TBEV RNA and a corresponding virus load (concentration) in serum and milk samples from the goat whose milk was consumed. The outbreak described herein could have been avoided if the milk had been pasteurized or boiled before consumption or if the persons who became ill had been protected by vaccination, as was the fourth person who drank the TBEV-infected raw milk but did not become ill.

The increasingly fashionable natural lifestyle encourages the consumption of raw milk and products made of unpasteurized milk. Even though alimentary transmission of TBEV is rare, the risk of such exposures could be reduced through education campaigns that encourage persons to consume only milk that has been boiled or pasteurized and only dairy products made from pasteurized milk. In addition, TBE vaccination, which effectively protects against tick bite-associated and dairy product-associated TBEV transmission, should be encouraged in areas where TBEV is highly endemic.

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### **Mad cow infected blood could 'kill 1000' in UK**

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The New Zealand Herald

Rowena Mason

[http://www.nzherald.co.nz/health/news/article.cfm?c\\_id=204&objectid=10880536&ref=rss](http://www.nzherald.co.nz/health/news/article.cfm?c_id=204&objectid=10880536&ref=rss)

Up to 1000 people could die of the human form of "mad cow" disease through infected blood given to them in British hospitals, ministers have been told.

Government experts believe there is still a risk of people contracting variant Creutzfeldt-Jakob Disease (vCJD) through blood transfusions, as about 30,000 Britons are likely to be carrying the brain-wasting illness in a dormant form - double the previous estimate.

They warn that the current total death toll of 176 from vCJD could rise more than fivefold as the infection has not been wiped out of the blood supply as it has been in the food chain.

Frank Dobson, a former Health Secretary, urged ministers to develop a nationwide screening programme for blood donors to stop future infections of vCJD, which had the potential to cause "horrendous deaths".

People are no longer in danger of getting vCJD from eating British beef, after ministers ordered the slaughter of millions of cows when the mad cow disease scandal broke in 1989.

Fears that hundreds of thousands of people could contract the human form of bovine spongiform encephalopathy (BSE) proved unfounded.

However, the Government acknowledges that one in 2000 Britons - or approximately 30,000 people - are already "silent" carriers of infectious proteins that lead some people to develop vCJD.

### **73 sick; Multistate outbreak of Salmonella Saintpaul infections linked to Mexican cucumbers**

25.apr.13

barfblog

Doug Powell

<http://barfblog.com/2013/04/73-sick-multistate-outbreak-of-salmonella-saintpaul-infections-linked-to-mexican-cucumbers/>

It was about 1999.

I'd been working with the Ontario Greenhouse Vegetable Growers for 12 months on an on-farm food safety plan and it was time to roll things out.

A meeting was arranged with the 20 largest growers in the Leamington area (that's In Ontario, Canada) where I talked about handwashing, dump tank water sanitation and other issues to be considered.

There was this one grower.

The more I talked, the madder he got. A silent mad. The kind where his jugular vein started popping out until he finally lost it.

"You propeller head. Have you ever been in a greenhouse? It gets hot. And we open the lids. And I've got birds crapping all over my cucs, and you're telling me it's important people wash their hands? Where you from, boy?"

I said birds carry Salmonella and Campylobacter, and since English cucs were not

washed but just picked and wrapped, there was a risk. And then I shut up. The general manager of the association stepped in and said, "Look, this is a voluntary program. Now, we're going to have a list of those growers out of 220 who choose not to participate, and we will make that list available to any buyer, but it's a voluntary program. Six months later, McDonald's introduced the McWrap and started testing all the extra greenhouse cucs they were buying; the E. coli indicator counts were through the (opened) roof. So it's not surprising to learn that at least 73 persons have been infected with the outbreak strain of Salmonella Saintpaul across 18 states from Mexican greenhouse cucumbers. 27% of ill persons have been hospitalized, and no deaths have been reported. State public health officials are interviewing ill persons to obtain information regarding foods they might have eaten and other exposures in the week before illness. Preliminary information indicates that consumption of imported cucumbers is the likely source of infection for the ill persons. On April 24, 2013, the U.S. Food and Drug Administration placed Daniel Cardenas Izabal and Miracle Greenhouse of Culiacán, Mexico on Import Alert . Cucumbers from these two firms will be denied admission into the United States unless the suppliers show that they are not contaminated with Salmonella. Currently, there is no evidence that contaminated cucumbers supplied by Daniel Cardenas Izabal and Miracle Greenhouse are still on the market. Due to the time it takes between when a person becomes ill and when the illness is reported, additional ill persons may be identified. Among persons for whom information was available, illness onset dates range from January 12, 2013 to April 6, 2013. Ill persons range in age from less than 1 year to 80 years, with a median age of 23 years. Sixty percent of ill persons are female. Among 51 persons with available information, 14 (27%) ill persons have been hospitalized. No deaths have been reported.  
<http://barfblog.com/2008/06/if-i-was-a-tomato-grower-this-is-what-i-would-say-but-only-if-it-were-true/>  
<http://www.ncbi.nlm.nih.gov/pubmed?Db=PubMed&Cmd=ShowDetailView&TermToSearch=12092723>  
<http://www.cdc.gov/salmonella/saintpaul-04-13/index.html>  
<http://www.usatoday.com/story/news/nation/2013/04/25/mexican-cucumbers-salmonella-sicken-73/2113503/>

### Identifying the seasonal origins of human campylobacteriosis

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Epidemiology & Infection

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<http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=8901603>

#### SUMMARY

Human campylobacteriosis exhibits a distinctive seasonality in temperate regions. This paper aims to identify the origins of this seasonality. Clinical isolates [typed by multi-locus sequence typing (MLST)] and epidemiological data were collected from Scotland. Young rural children were found to have an increased burden of disease in the late spring due to strains of non-chicken origin (e.g. ruminant and wild bird strains from environmental sources). In contrast the adult population had an

extended summer peak associated with chicken strains. Travel abroad and UK mainland travel were associated with up to 17% and 18% of cases, respectively. International strains were associated with chicken, had a higher diversity than indigenous strains and a different spectrum of MLST types representative of these countries. Integrating empirical epidemiology and molecular subtyping can successfully elucidate the seasonal components of human campylobacteriosis. The findings will enable public health officials to focus strategies to reduce the disease burden.