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RMAA CONFERENCE

DATE: MAY 2009

Talking?

- **About bacteria/germs/pathogens ….**
  …….Bla bla bla

- **Not the most "FUN" presentation but hey**
  Somebody has to do it

  – **ME!!!

How safe are we?

Swine flu suspected in SA – report

April 29 2009 at 02:51PM

Two suspected cases of swine flu have been reported in South Africa, the National Institute for Communicable Diseases said on Wednesday.

Deputy director Lucille Blumberg said the first, which became known on Monday, was a woman from the Western Cape who travelled extensively in Mexico earlier this month.

She was in contact with the people there while using trains and buses.

The woman was ill with flu-like symptoms on her return to South Africa on April 24, Blumberg said.
A general practitioner who treated the woman last Saturday did consider swine flu as a possible diagnosis.She was given anti-viral treatment and sent home.

The woman was fine now.

Business report: www.iol.co.za

- BIRD FLU
- FOOD POISONING
- RECALLS
- ETC
- ETC
- ETC

  - NEW PATHOGENS?
  - OR ARE THE CONTROLS NOT IN PLACE?

Most common pathogens in meat

- Listeria Monocytogenes
- Campylobacter Jejuni
- Tickborne Encephalitis Virus (TBEV)
- Shigella-like toxin producing E. coli

LISTERIA MONOCYTOGENES

- ***Listeria monocytogenes*** **is the causative agent of Listeriosis.**
- **Listeriosis is the leading cause of death among foodborne bacterial pathogens with fatality rates exceeding even Salmonella and Clostridium botulinum.**
- **Clinical diseases due to *L. monocytogenes* are more frequently recognized by veterinarians in cattle/sheep**
- Listeriosis **is an infectious but not contagious disease caused by the bacterium *Listeria monocytogenes*, far more common in domestics animals (domestic mammals and poultry), than in human beings. It can also occur in feral animals—among others, game animals—as well as in poultry and other birds.**
- **The causative bacterium lives in the soil and in poorly made silage and is acquired by ingestion. It is not contagious**
- **The disease is usually sporadic, but can occur as farm outbreaks.**

Three main forms are usually recognized throughout the affected species:

- encephalitis, the most common form in ruminants
  - (Encephalitis is an acute inflammation of the brain.
- late abortion
- gastro-intestinal septicemia with liver damage,

- Listeriosis is also known by the name of ‘circling disease’. Not all animals infected walk in circles, but the circular walking can be linked with loss of balance in cattle
- The most obvious signs for the veterinarians are neurological, especially lateral deviation of the neck and head.
- The disease spreads through the blood-stream and can lead to the failure of some organs in the body.

Most infections are caused by ingestion of the bacteria, although inhalation or direct contact with the bacteria can also cause infection

Common Symptoms

- **Signs of restlessness**
- **Loss of appetite**
- **High body temperature**
- **Uncoordinated movements/Loss of balanc**
- **Walking in circles**
- **Gradual paralysis**
- **Leaning against objects**
- **Nervous system disorders**

How it Affects Cattle

- Cattle affected with Listeriosis can die within 3 days of infection. In most cases, the cattle will live from 4 to 14 days.
- The nature of the disease makes Listeriosis very harmful. Many animals excrete the causative organism in their faeces and milk. This is a common source of spreading the infection from animal to animal. If the organism is present in pastures, the animals with the weakest immune systems with usually be affected first. The younger animals typically have a weaker immune system, so they may show the first symptoms of an outbreak.

Regional Impacts

- The bacteria which are responsible for Listeriosis can persist up to two years in manure and straw. The bacteria thrive in locations which are cold. Most of the reported cases of abortion in cows due to the disease appear during the winter months.

Risks & Dangers

- Although cattle can be infected with Listeriosis, in most cases the risks are evenly divided between man and animal. People are also at risk for Listeriosis. All farm products from animal sources should be thoroughly cooked. Eating or drinking unpasteurized milk products from affected farms should be avoided.

Treatments

- Listeriosis is treated with antibiotics. The dosage and type of antibiotic depends on the form of the disease. Treatment usually takes up to six weeks or more. The cure rate can vary depending on the severity of the infection and whether or not the bacterium has spread throughout the animal. The mortality rate in cattle is as high as 50%. Diseased cattle should always be separated from the healthy ones and treated by a veterinarian.

L. monocytogenes **has been associated with such foods**

- **Milk**
- **Cheeses**
- **Ice cream**
- **Raw and cooked poultry**
- **Raw meat and fish**
- **Smoked fish.**
- **Its ability to grow at temperatures as low as 0°C permits multiplication in refrigerated foods. In refrigeration temperature such as 4°C the amount of ferric iron promotes the growth of *L. monocytogenes***

Potential Reservoirs of *L. monocytogenes*

- **Floors and drains, Standing water (e.g. condensation drip pans) Ceilings and overhead pipes ,Refrigeration condensation units, Wet insulation (exposed to processing area), Cleaning tools (sponges, brushes, squeegees), Overhead rails and trolleys Maintenance tools (wrenches, screwdrivers) , Wooden pallets Fork lifts/pallet jacks**

- **In general, once proper cooking has occurred, the burden for producing a safe product depends on proper sanitation, limited handling, elimination of cross-contamination and minimizing adverse time/temperature effects in all phases of handling and transportation.**

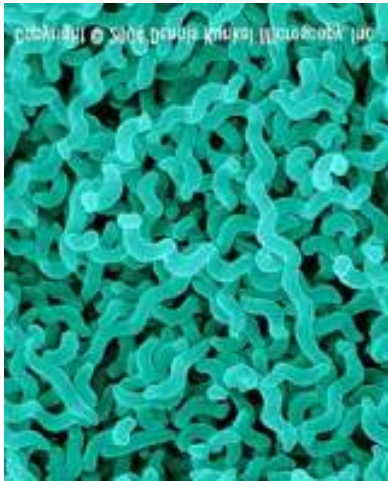
Other Areas Where *L. monocytogenes* May be Hidden

- **Any recess or hollow material: rollers, switch boxes, box cutters, motor housings**
- **Rusted materials: equipment frames, pipes, shelving Cracked or pitted rubber hoses, door seals Walls that are cracked, pitted, or covered with inadequately sealed surface panels Vacuum/air pressure pumps, lines, and hoses Ice makers Air filters**
- **Open bearings**

CAMPYLOBACTER JEJUNI

- *Campylobacter jejuni* **is a bateria commonly found in animal feces It is one of the most common causes of human gastroenteritis in the world.**
- **Food poisoning caused by *Campylobacter* species can be severely debilitating but is rarely life-threatening. It has been linked with subsequent development of Guillain-Barré syndrome (GBS), (ascending paralysis noted by weakness in the legs that spreads to the upper limbs and the face along**
- ***C. jejuni* is commonly associated with poultry(also cattle and swine)**
- **Contaminated drinking water and unpasteurized milk provide an efficient means for distribution. Contaminated food is a major source of isolated infections, with incorrectly prepared meat and poultry normally the source of the bacteria.**

- Campylobacteriosis **is an infection by the campylobacter bacterium most commonly C. jejuni. It is among the most common bacterial infections of humans, often a foodborne illness. It produces an inflammatory, sometimes bloody, diarrhea, mostly including cramps, fever and pain.Infection with a *Campylobacter* species is one of the most common causes of human bacterial gastroenteritis.**



Swine flu

- ***The outbreak of swine flu has raised fears of a global flu pandemic. Here are some questions and answers.***
- What is it?
- **Swine influenza is a common and sometimes fatal respiratory disease among pigs, first identified in 1930, that is caused by a Type A influenza virus. Normally the disease is specific only to pigs.**
- **But sometimes pigs can harbour more than one flu virus at one time, which enables the pathogens to mix genes. As a result, a new viral strain emerges that can cross the species barrier to humans, starting with people in contact with infected pigs. The latest threat is a strain of the H1N1 type of flu virus.**
- Why the alarm?
- **The World Health Organisation (WHO) says the virus can be contagious among humans in close contact and the outbreak has "pandemic potential," meaning there is risk of a spread across regions or continents.**
- **Worries about a new pandemic have focused in recent years on the H5N1 strain of bird flu, which has killed around 250 people since 2003, mainly in Southeast Asia. But H5N1 is hard to transmit among humans, and its threat has been contained by culling infected poultry.**
- What about the unknowns?
- **Experts insist there is no certainty that a pandemic will happen or if so that it will be a mass killer. There are many unknowns about the new strain, especially how easily it spreads between people, how virulent it is or could become. Figuring this out will be the work of gene scientists and epidemiologists.**

Which countries are most affected?

- **Mexico is the epicentre of the outbreak, with 103 confirmed and suspected deaths as of Monday and about 400 people hospitalised. In 10 other countries, there have been 57 confirmed or suspected cases, none of them fatal, among people returning from Mexico. The United States has had 20 confirmed cases, Canada six confirmed cases and Spain one case. Several countries from Colombia to New Zealand are investigating suspected cases.**
  - **Now IN SA ALSO**

How does the virus spread?

- **Swine flu is thought to spread like typical flu, ie in viral particles expelled in coughs and sneezes that are then breathed in by someone nearby, or deposited on surfaces that are then touched by the hand and transmitted to the mouth, nose or eyes. People with the virus may be able to infect others beginning a day before symptoms develop, and up to seven days or more after becoming sick. Young children may be contagious for somewhat longer.**

What are the symptoms?

- **Sudden fever above 38ºC, cough, headache, aching joints, nasal congestion, general fatigue and lack of appetite. Some people who have contracted the virus report runny nose, sore throat, nausea, vomiting and diarrhoea. In past cases, swine flu has caused pneumonia and respiratory failure and worsened chronic medical conditions.**

How to prevent Contamination - bacteria

Slaughter process control

Clean carcasses

Many bacteria are unable to grow at low temperatures but can survive storage in the cold – temperature control

Other bacteria, including *Listeria, Yersinia*, some strains of *Clostridium botulinum* and *Bacillus cereus*, and some spoilage organisms, can grow at refrigeration temperatures.

However, growth during chilled storage is usually slow

Rapid chilling of animal carcasses after slaughter is important for retarding the growth of both pathogenic and spoilage bacteria.

The most important pathogenic psychrotrophs for the meat industry are *L. monocytogenes* .

All of these factors should be considered in evaluating the safety of chilling processes.

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THE ABOVE MUST BE TAKEN INTO ACCOUNT WHEN DOING THE HACCP STUDY AND WHEN IMPLEMENTING THE HMP'S

- **Research has shown that the implementation of hazard control schemes such as HACCP (Hazard Analysis and Critical Control Point) programmes throughout meat production and processing can minimise the risk of pathogens on raw meat.**

- **Although industry has begun to implement such schemes, food-borne illness caused agents such as *E. coli* O157 and *Campylobacter* continues to increase and red meat is often implicated as a primary source of infection.**

- **Farms, livestock markets, transport and the abattoir environment are likely place where contamination with *E. coli* O157, *Salmonella* or *Campylobacter* could happen.**

- **The purpose of this presentation was to highlight the importance of Micro Analysis and the most Common Pathogens to look out for**

- ***so that appropriate control measures could be implemented.***

HAZARDS-What are all potential hazards and their significance? Do we have control measures for significant ones?

1. BIOLOGICAL- MICROBES, ANIMAL AND PLANT DISEASES

Campylobacter jejuni/coli , Clostridium perfringens, Indicator bacteria e.g. Generic E.coli; TVC; Coliforms, E. coli(EHEC), *Listeria monocytogenes, Salmonella, Staphylococcus aureus,Yersinia enterocolitica, Bacillus cereus, Toxoplasma gondii, Bacillus anthracis*

BSE ,Tuberculosis,Gross abnormalities,Beef measles,Sheep measles, Hydatids,Sarcocystis,

Plant associated toxins

Corynetoxins, Pyrrolizidinealkaloids, Mycotoxins

2. PHYSICAL HAZARDS

Metal, glass, foreign objects

Broken Needles, Lead Shot

3. CHEMICAL HAZARDS

Hormones, HGP's,

Organochlorines,Organophosphates,Macrolyticlactones

Synthetic pyrethroids,Benzoyl ureas,Antimicrobial residues,Cadmium

Anthelmintics,Lead,Mercury,Dioxins,Processing Chemicals,

ALLERGENS

CONTROL/MONITOR

- Slaughter process
- Water test
- Carcass swabs
- Temp control
- Personel hygiene

IMPLEMENT HMS

IMPLEMENT HACCP

USE HAS

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WHY?

MLS-LAB SERVICES

- TO SUMMARIZE
- MICROBIAL ANALYSIS IS OF VITAL IMPORTANCE
- WHEN DOING HACCP STUDY AND DETERMINING CCP’S KEEP THIS IN MIND

KNOW YOUR ENEMY!

BE PRE-PARED

TEST TEST TEST….

Partnering for Quality and Food Safety

The winning! Approach

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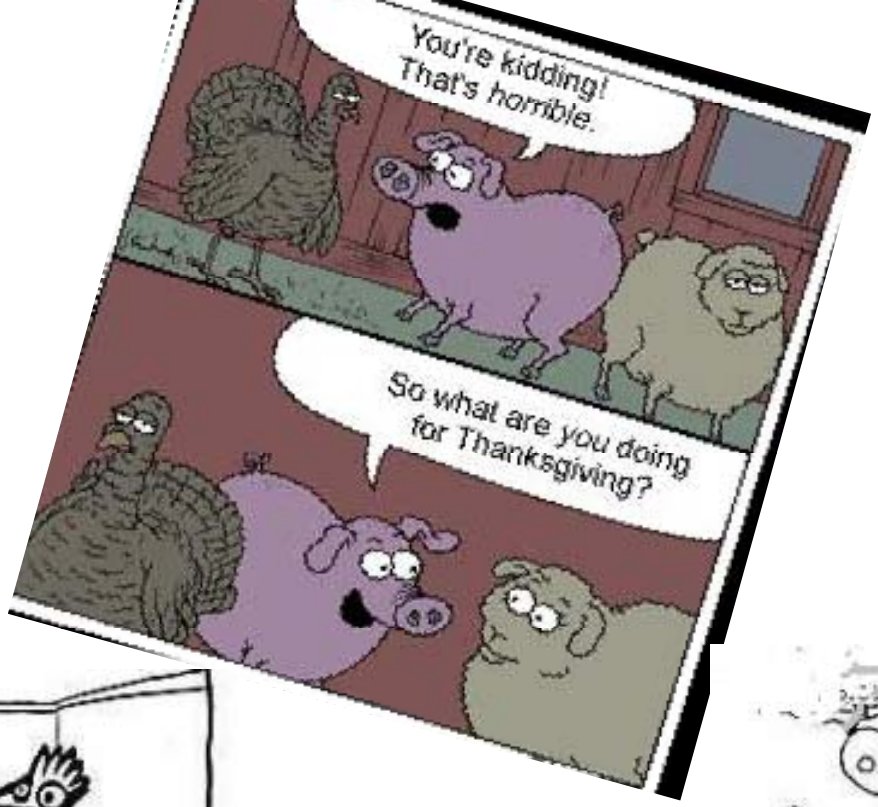
To monitor the supply chain and the products continuously for compliance is the keys to completely

understanding your products & ensuring safe, high quality food for the consumer – your customer!!

Thank you!



"I've known you a long time and it's time I told you the truth, I'm not really a person, I'm just a suit full of chickens.."

"I don't want to burst any bubbles, but I'm guessing it's a typo."

THANK YOU

- **THEA LAUFS**
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