

Food-borne *Campylobacter*: Zoonotic and Public Health Concerns of Global Importance

ELISABET TANGKONDA, DVM, M.Sc., Ph.D

Presented at International Conference on Animal and Human Medical Science
Kupang, October 22th, 2022

Today's Talk

- *Campylobacter species*
- Campylobacteriosis
- Public health-concern
- The consequences

Campylobacter Spp

- The leading causes of food-borne and waterborne bacterial infections
- *Campylobacter jejuni* and *Campylobacter coli* are the causes of campylobacteriosis worldwide.
- *Campylobacter* sp is a flagellated gram-negative bacteria, curve-rod shape that grows well in microaerophilic conditions.
- Colonized in the intestine of domesticated animal in **high prevalence in the range of 10^3 - 10^9 cfu/g**

Campylobacter infection

- *Campylobacter* infection is a significant zoonotic cause of bacterial food infections.
- cause problems and economic burden on the human population, accounting for approximately 8.4% of global diarrhoea cases
- *Campoylobacter* infection is predominantly common in certain age groups (children below 4 and aged over 75).
- *Campylobacter* infection risk is high in both high and low income groups.

Outbreaks of *Campylobacter* infections worldwide

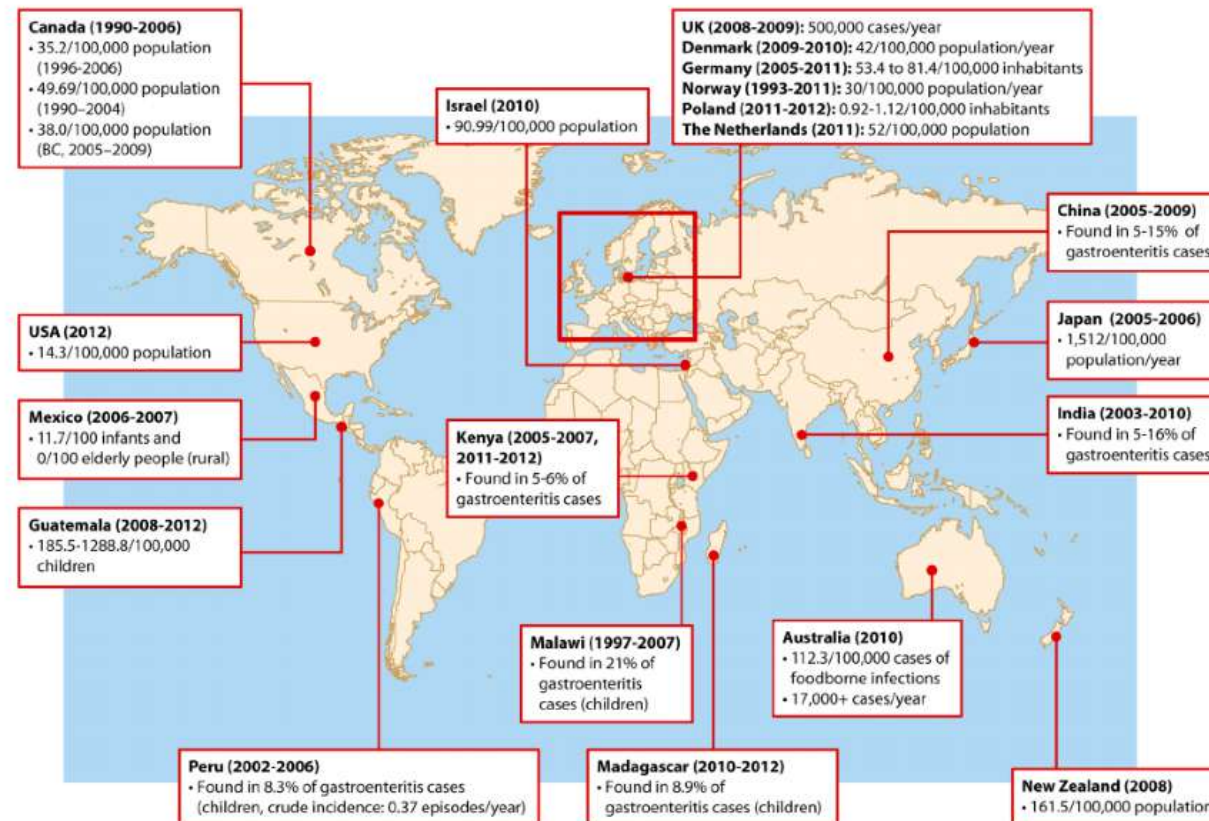
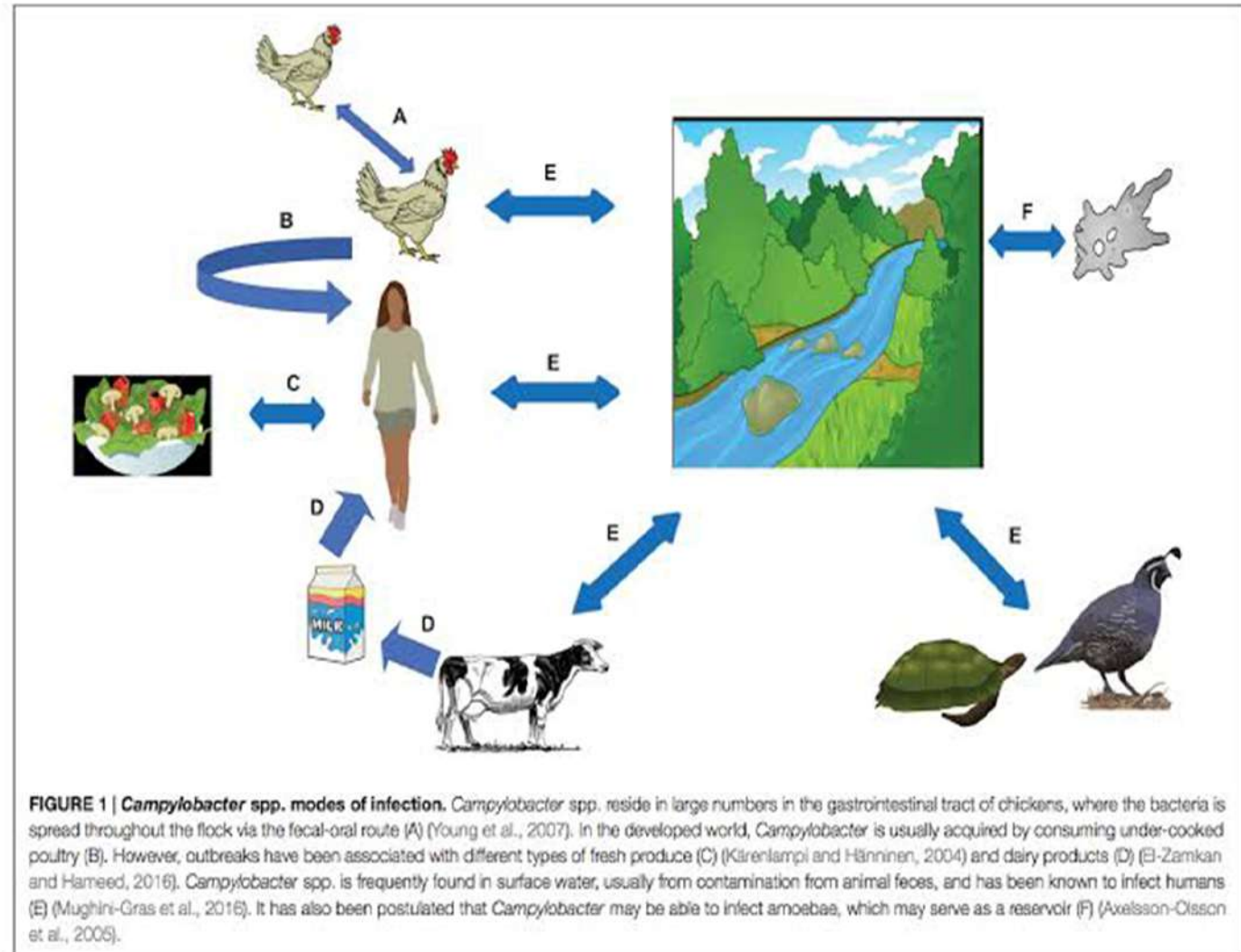


FIG 2 Incidence and prevalence of campylobacteriosis (*C. jejuni*/*C. coli*). The latest information on the global epidemiology of campylobacteriosis from the literature is shown, including data from the United Kingdom (47), Denmark (11), Germany (49), Norway (424), Poland (25, 50, 425), the Netherlands (51), Israel (67), China (60, 61), Japan (26), India (63-65), Australia (69), New Zealand (78), Madagascar (78), Malawi (77), Kenya (79, 426), Guatemala (41), Peru (427), Mexico (428), the United States (10 sites within The Food-Borne Diseases Active Surveillance Network) (34), and Canada (37-39). B.C., British Columbia. (Map adapted from an image from Wikimedia Commons [http://commons.wikimedia.org/wiki/File:A_large_blank_world_map_with_oceans_marked_in_blue.PNG].)

The Source and mode of transmission

- Infected animals
- Animal products (meat, milk)
- Environments (water)
- Wild animals



Infections in human

- Food contaminated
- Unpasteurised milk
- Water contamination
- Cross contamination
- Occupational risk (**farmers , veterinarians , meat processing workers, slaughter house workers, butchers, and social workers**)
- In 5-7 days, an acute gastrointestinal infection progresses from mild to severe.
- Self-healing

Public health concern

- Campylobacteriosis is the leading cause of gastrointestinal infection, followed by *Salmonella* and *Listeria* worldwide.
- Emerging *Campylobacter* species are involved in both human infections and *Campylobacter* foodborne outbreaks.
- A *Campylobacter* outbreak is defined as a *Campylobacter* infection that involves more than two people as a result of consuming Campylobacter-contaminated food.

Consequences in human

- *Campylobacter species are the most common cause of acute diarrhoea.*
- Various human systemic infections are implicated, including blood stream infection, acute colitis,
- Post-infection consequences after *Campylobacter* infection include Gillian-Barré syndrome (GBS) sequelae and Miller-Fisher syndrome (MFS)
- Brain abscesses, meningitis, lung infections, bacteremia, and reactive arthritis are all rare.

Consequences in animals

- Animals as the major reservoir of *Campylobacter* species
- Farm animals are also the major cause of both **food poisoning** and *Campylobacter* **foodborne gastrointestinal** infection.
- White spot disease in a layer (*C. hepatica*).
- **Economic Consequence**

How to prevent?

- Hygiene and sanitation
- Processing management in the slaughter house
- Avoid raw meat.
- Reduce cross-contamination.
- One health approach needed?



Let's Discuss