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Commentary

Effect of *Clostridium difficile* in Dairy Farm

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DESCRIPTION

Anaerobic toxigenic bacteria *Clostridium difficile* produces severe infectious colitis that has a large global morbidity and fatality rate. Enhanced bacterial toxins and a weakened immune response from the host are both factors in symptomatic illness. While *C. difficile* has a long history of existence in North America and Europe, it is recently becoming more prevalent in Asia. The condition and make-up of the gut microbiota are closely correlated with diarrheal illness, a leading cause of morbidity and death in dairy calves. When the host has gut dysbiosis, the opportunistic pathogen *Clostridioides difficile* multiplies and has the ability to create enterotoxins. But in a variety of species, including people, pigs, and dogs, even asymptomatic colonisation with *C. difficile* can be linked to varying degrees of microbiota alteration.

The relationship between *C. difficile* and the gut microbiota in dairy calves is poorly understood. The most often discovered healthcare-associated illness in the United States is *Clostridioides difficile* (formerly *Clostridium difficile*). The incidence of community-associated infections has led to significant growth of C *difficile's* emergence as a cause of diarrhoea in the general population. From moderate diarrhoea to fulminant colitis and mortality, clinical disease can range in severity. Understanding the different diagnostic tests, treatment alternatives, and pertinent actions for infection prevention is necessary for proper infection management. For hospitalized patients, *Clostridium Difficile* Infection (CDI) is a significant cause of morbidity and death. Even though the majority of patients respond clinically to current antimicrobial therapy, up to 30% of patients experience recurrent illness. With an effectiveness rate of about 90% in the context of repeated recurrent CDI, gut microbiome transplant offers a unique solution to this difficult issue. In the 1950s, diarrhoea brought on by antibiotics was first identified. By 1978, it had been shown that *Clostridioides difficile* (formerly *Clostridium difficile*) was the most typical cause of this kind of diarrhoea, accounting for 15% to 25% of cases. This strain generates a binary toxin that was previously unusual in C *difficile*, has high levels of fluoroquinolone resistance, and makes significantly (15-20 times) more toxin A and B than other strains.

Additionally, it has been related to community-associated illness in people without known risk factors, such as peripartum women and young children. There have been indications of the appearance of the particularly virulent ribotype 078 strain, which is mostly seen in pigs and calves. Additionally, this strain may infect humans, and pig farms have been linked to human infections. Alteration in the gut flora leads to susceptibility to colonization with C *difficile*. The fecal-oral pathway is how person-to-person transmission happens. Acquisition can occur through direct human contact, exposure to contaminated surfaces and tools, or coming into touch with the hands of healthcare workers who are temporarily infected. The incidence of *Clostridium Difficile* Infection (CDI) in the population has been strongly linked to farm animals.

The use of antibiotics is linked to a considerable risk factor for the development of *Clostridium Difficile* Infection (CDI) in both people and animals. It has frequently been proposed that farm animals might be the cause of *Clostridium Difficile* infections in humans (CD). Family-run dairy farms are the most common type of farming in the European Union, and they are more integrated into their local communities than large-scale industrial dairy or beef farms. Investigating CD's antimicrobial susceptibility patterns in such a setting is crucial.

Seventeen antibiotics were chosen (amoxicillin, ceftriaxone, clindamycin, daptomycin, erythromycin, fusidic acid, imipenem, levofloxacin, linezolid, metronidazole, moxifloxacin, oxacillin, rifampicin, tetracycline, tigecycline, trimethoprim/sulfamethoxazole, which are commenly utililized in the treatment of CDI in human and veterinary medicine.

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