Infection with the Gram-positive bacterium *Clostridioides* (*Clostridium*) *difficile* is potentially life threatening, especially in elderly people and in patients who have dysbiosis of the gut microbiota following antimicrobial drug exposure. *C. difficile* is the leading cause of health-care-associated infective diarrhea. The life cycle of *C. difficile* is influenced by antimicrobial agents, the host immune system, and the host microbiota and its associated metabolites. The primary mediators of inflammation in *C. difficile* infection (CDI) are large clostridial toxins, toxin A (TcdA) and toxin B (TcdB), and, in some bacterial strains, the binary toxin CDT. The toxins trigger a complex cascade of host cellular responses to cause diarrhea, inflammation and tissue necrosis — the major symptoms of CDI. The factors responsible for the epidemic of some *C. difficile* strains are poorly understood. Recurrent infections are common and can be debilitating. Little is known about epidemiology of CDI in long-term care facilities (LCTF), especially in Poland.

The role of asymptomatic *C. difficile* colonization in the development of CDI is still a controversial matter of debate. Mechanisms that enable the progression from asymptomatic *C. difficile* colonization to CDI are closely associated with host-mediated as well as pathogen-related factors and a knowledge of it might be of outstanding interest in the pathogenesis and also prevention of CDI.

The presence of circulating antitoxin antibodies correlates with natural protection against severe or recurrent CDI. Following symptomatic infection, many individuals develop antitoxin antibodies, including toxin neutralizing IgA and this response appears to be associated with protection from subsequent infection.

This project aims to bring new data into not fully understood matter of the epidemiology of CDI in LCTFs, where several factors other than those in acute care institutions are involved. These factors are related both to institution-related environmental differences, arising from prolonged period of the residency, but also from limited staffing and limited resources, and moreover from factors related to age and thus lesser efficiency of the immune response of patients. It is expected that the project may help to elucidate a role of the already known factors but also indicate already not analyzed epidemiological relationships. Since the project will be based on rather a wide approach involving functional characterization of the isolated *C.difficile* strains and their epidemiological typing together with determination of the hosts' immune status, it is also expected that the project results will contribute to obtaining new data on biology of *C.difficile* and on host factors determining course of the disease.