**Midtveisevaluering – Sunniva Todnem Sakkestad**

**Abstract**

Infection with enterotoxigenic *Escherichia coli* (ETEC) is a major cause of diarrheal disease in low- and middle-income countries. ETEC strains producing the heat-stable toxin (ST), with or without the heat-labile toxin (LT), have been shown to be among the most important bacterial causes of diarrhea in children under 5 years of age and is associated with an increased risk of death among infants with diarrhea. As there is yet no effective licenced vaccine against ETEC, development of ST-based vaccine candidates represents a promising strategy to confer broad protection against ETEC diarrhea.

The present PhD project has two main areas of focus: 1) Develop an ST-only human challenge model for testing forthcoming vaccines against ETEC, and 2) Characterize immune responses following ETEC infection for discovery of potential correlates of protection.

So far, 21 healthy adult vounteers have been experimentally infected with wild-type ST-only ETEC strains TW11681 (n = 9) or TW10722 (n = 12). Experimental infection with the latter strain yielded a diarrhea attack risk of 78% among the volunteers receiving the highest inoculum dose (1×1010 colony-forming units), while other non-diarrhea symptoms reported were mostly mild or moderate, and there were no adverse events. In addition, significant increases in antigen-specific CD4+ T cells were found in peripheral blood 10 days, 28 days and 6 months after experimental infection. These results indicate that by using relatively large doses, TW10722 would be safe and efficient for testing ST-based vaccine candidates.