

## **Coliphages and gastrointestinal illness in recreational waters: pooled analysis of six coastal beach cohorts.**

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### **ABSTRACT**

**Background:** Coliphages have been proposed as indicators of fecal contamination in recreational waters because they better mimic the persistence of pathogenic viruses in the environment and wastewater treatment than fecal indicator bacteria. We estimated the association between coliphages and gastrointestinal illness and compared it to the association with culturable enterococci.

**Methods:** We pooled data from six prospective cohort studies that enrolled coastal beachgoers in California, Alabama, and Rhode Island. Water samples were collected and gastrointestinal illness within 10 days of the beach visit was recorded. Samples were tested for enterococci and male-specific and somatic coliphages. We estimated cumulative incidence ratios (CIR) for the association between swimming in water with detectable coliphage and gastrointestinal illness when human fecal pollution was likely present, not likely present, and under all conditions combined. The reference group was unexposed swimmers. We defined continuous and threshold-based exposures (coliphage present/absent, enterococci >35 vs. ≤35 CFU/100 ml).

**Results:** Under all conditions combined, there was no association between gastrointestinal illness and swimming in water with detectable coliphage or enterococci. When human fecal pollution was likely present, coliphage and enterococci were associated with increased gastrointestinal illness, and there was an association between male-specific coliphage level and illness that was somewhat stronger than the association between enterococci and illness. There were no substantial differences between male-specific and somatic coliphage.

**Conclusion:** Somatic coliphage and enterococci had similar associations with gastrointestinal illness; there was some evidence that male-specific coliphage had a stronger association with illness than enterococci in marine waters with human fecal contamination.

### **Full Text**

[ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/JournalArticles/987\\_ColiphagesAndGastroIntestinalIllnessInRecreationalWaters.pdf](ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/JournalArticles/987_ColiphagesAndGastroIntestinalIllnessInRecreationalWaters.pdf)