- **Presentation title** The BEACHES Study: Health Effects and Exposures from Non-point Source Microbial Contaminants in Subtropical Recreational Marine Waters
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- **Topic area:** Epidemiology of Microbial Pollution of Non Point Source Subtropical Recreational Marine Waters
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- **Willingness to present a poster if not selected for an oral presentation**: yes but prefer oral presentation for this particular submission since important new epidemiologic study

Abstract

Fleisher JM, Fleming LE, Solo Gabriele HM, Kish JK, Sinigalliano CD, Plano LW, Elmir SM, Wang JD, Withum KF, Shibata T, Gidley ML, Abdelzaher A, He G, Ortega C, Zhu X, Wright MD, Hollenbeck JA, Backer LC

Objectives Microbial water quality indicators, found in high concentrations in sewage, are used to determine whether water is safe for recreational purposes. Recently, concerns have been raised about the appropriate use of indicators to regulate recreational water bodies, particularly non-point source sub/tropical recreational marine waters.

Methods: 1303 adult regular bathers were randomly assigned to bather and non-bather groups, with subsequent follow-up for reported illness, in conjunction with an ongoing extensive environmental sampling of indicator organisms (enterococcus) and pathogens.

Results After controlling for non-water related risk factors/ possible confounders, bathers were 1.75 times (95% Confidence interval=0.94–3.26; p=0.078) more likely to report gastrointestinal illness relative to non bathers; bathers were 4.46 times (0.99–20.97; p=0.051) more likely to report acute febrile respiratory illness; and bathers were 5.51 times (2.68–11.36; p=0.<0.0001) more likely to report skin illness relative to non bathers after 7 days of follow up from beach exposure.

There was an apparent dose-response relationship between bather exposure to increasing levels of enterococcus and risks of reported skin and gastrointestinal illness, and some evidence of increased risk of respiratory illness among bathers relative to non-bathers. There was a possible threshold effect for gastrointestinal illness at approximately 40 CFU/100 mL of enterococcus, however no threshold effect was observed for skin illness.

Conclusions: Human exposures to and health risks from microbial pollution may occur even in a non point source recreational marine environment.

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