

# Public Health and Beach Water Quality on the Blue Hill Peninsula

## Monitoring for Fecal Indicator Bacteria at Local Beaches

A Pilot Study co-sponsored by the Shaw Institute and Northern Light Blue Hill Hospital

### **FAQs:**

- **What is this study about?**

The Shaw Institute (SI) and the Northern Light Blue Hill Hospital (NLBH) are launching a rigorous new study exploring the links between fecal indicator bacteria water quality at local recreational beaches and rates of swimming-associated human illness.

- **Why is this study important?**

Enterococci bacteria, though not harmful themselves, indicate the presence of fecal contamination and other potentially harmful bacteria or viruses in the water; therefore it is called a fecal indicator bacteria (or FIB). In most cases, exposure to harmful bacteria results in only minor health issues. However, exposure at extremely high levels can lead to serious conditions, especially in young swimmers or swimmers with weakened immune systems. The U.S. Environmental Protection Agency (EPA) has established recommended water quality criteria based on FIB to minimize risk of illness in swimmers.

As in other coastal states, swimming-associated illness is a public health issue in Maine with its long coastline and many recreational beaches. The Maine Healthy Beaches program (MHB) was established to lead the effort to monitor FIB at sandy, moderate- to high-use beaches. On the Blue Hill peninsula, there are many smaller, locally-popular swimming beaches that do not qualify for participation in MHB. Therefore, the Shaw Institute has been monitoring beaches for FIB in this area for almost 10 years as part of its ongoing water monitoring program and as a public service to the community. The Institute posts weekly reports on its website and updates town managers and other interested parties through weekly emails. This study in partnership with NLBH will shed light on the connection between FIB and illness in this area, and inform decision makers about the importance of more extensive monitoring efforts and alert systems in the future.

- **Who is conducting and funding the study?**

The Shaw Institute (SI) is a non-profit environmental research organization located in Blue Hill, ME. The Institute has been engaged for more than 30 years in environmental impact studies including microplastics research, climate change impacts, toxicology projects, and monitoring of Blue Hill Bay for water quality, bacteria levels, harmful algal blooms, and sediment pH, among other indicators. The study is funded by SI with the support of a grant from the Maine Outdoor Heritage Fund. NLBH physicians and administration have been closely involved with project design and are donating staff and provider time as in-kind services.

- **What other organizations are involved?**

- Maine Healthy Beaches
- Maine Outdoor Heritage Fund
- Maine DEP (Environmental Protection)

- **How did this collaboration with the Shaw Institute come about?**

During the summer of 2018, SI and NLBH agreed to work together to explore links between swimming beach water quality and public health on a local scale. NLBH saw this as an opportunity to expand its interest in local public health research. As a first step, SI did a preliminary review of its historical bacteria data and NLBH historical hospital diagnosis records. This analysis revealed some intriguing correlations between swimming beach bacteria spikes and rates of gastrointestinal symptoms at the hospital. However, because these two data sets were collected independently without previous planning for relating them together, an in-depth analysis of links between beach water quality and local health was not possible with the historical data. It was consequently determined that a larger and more comprehensive follow-up joint study was called for.

- **How long will this study last?**

The study will begin in June 2019 and continue through the summer, with statistical analysis in the fall. If the results of this year's pilot study are interesting, we may seek funding to continue the project.

- **What beaches are being monitored and surveyed and how often? How were these selected? Is it possible to include other local beaches?**

SI will monitor bacteria 1-2 times per week at four popular local swimming beaches to obtain a detailed picture of seasonal patterns. The beaches are Blue Hill Town Park (Blue Hill), Peters Cove (Blue Hill), Curtis Cove (East Blue Hill), and Carrying Place (Surry). Shaw Institute staff will interview beachgoers at two beaches while bacteria sampling is occurring. These two beaches were selected as representative of historically higher FIB levels (Blue Hill Town Park) and historically lower FIB levels (Carrying Place). At this time, no other beaches will be included in the study.

- **What is expected of me and my time?**

The survey for beach visitors involves a 10 minute interview by SI staff. We will ask questions about beach use, swimming activities, and current health conditions for you and members of your household. This interview will be followed up by a brief phone interview 7-10 days following your visit to the beach. After successful completion of the beach survey, participants will receive a \$5 gift certificate redeemable at two local businesses, Bayview Bakery (Blue Hill) or Pugnuts (Surry) as a thank you gift. A shorter survey with no follow-up will be offered to patients at NLBH. All information will be private and confidential and used only for the purpose of this study.

- **Who will be asked to participate?**

Beachgoers 18 years and older who represent themselves or a household and are visiting either Blue Hill Town Park or Carrying Place Beach on bacteria sampling days will be asked if they would like to participate in a public health study. Patients visiting NLBH for acute reasons (a sprained ankle, or upset stomach for example) will also be asked to participate. Participation is voluntary and anyone younger than 18 will need permission from a legal guardian.

- **Can I still take the survey if I won't be available to speak by phone in the next few weeks?**

Unfortunately, study protocols require a follow-up phone call with participants within 7-10 days after the interview. If you or someone in your group will not be available for a follow-up call, the survey will be marked incomplete and the data will not be included in the study.

- **What are the study protocols?**

Beach visitors who participate in the interviews will also be asked to participate in a follow-up interview to assess any resulting illness. NLBH patients will be asked to fill out a short survey asking for information about their symptoms and recent visits to local beaches. The interview and survey results will be compared with our findings on the presence of FIB at public beaches so we can assess the health risks associated with these spikes in bacteria at our local beaches.

- **How will my privacy be protected?**

All survey responses are either anonymous (NLBH) or secure and confidential (beach surveys). We only ask for a first name and a phone number for a follow-up phone call 7-10 days after the initial interview. This personal information will be destroyed once the phone interview is complete. We will not ask for identifiable information such as a last name, address, etc. Furthermore, all data analysis will be done by a senior researcher at the Shaw Institute. The compiled data we collect may be retained for a continuation of this study should results indicate the potential for a long-term study.

- **Should we be worried about getting sick after swimming at the beach?**

Most of the time, our beaches do not have FIB at levels that pose a risk to swimmers. The Shaw Institute has been monitoring for a certain type of bacteria (enterococcus) at local swimming beaches for the past 10 years. We post weekly reports of our results on our website and at the Institute so that if there is a potential risk, the public is alerted. We also have an email list if you would like to receive our weekly reports via email.

- **How do I sign up for the weekly bacteria reports?**

You can sign up for the email list on the Shaw Institute website ([www.shawinstitute.org](http://www.shawinstitute.org)), send a request to [bacteria@shawinstitute.org](mailto:bacteria@shawinstitute.org), or give us a call at (207) 374-2135.

- **What are sources of bacterial contamination?**
  - Improperly disposed of diapers
  - Children not properly cleaned after using the bathroom
  - Swimmer with diarrhea
  - Vomiting or fecal accidents
  - Wild and domestic animal feces
  - Malfunctioning wastewater disposal or sanitary collection systems
  - Nearby boats discharging sewage
  - Contaminated storm-water runoff
  
- **What should I do if I believe I have a water-related illness?**

Seek treatment from your medical provider.
  
- **Are your bacteria sampling protocols standard?**

Yes, we follow the protocols established by Maine Healthy Beaches and the Environmental Protection Agency to monitor bacteria levels.
  
- **Who is Maine Healthy Beaches?**

Maine Healthy Beaches is a partnership between the Maine Department of Environmental Protection and local municipalities and state parks. MHB was established to lead the effort to monitor fecal indicator bacteria (FIB) at Maine's sandy, moderate to high-use beaches with adequate public access and facilities. For more info, go to their website ([www.mainehealthybeaches.org](http://www.mainehealthybeaches.org)).
  
- **Do any other organizations (state/federal) monitor the beaches that are included in this study?**

No. The Shaw Institute is the only organization that monitors beaches in the Blue Hill area, as a public service to the community, since our area is too small to be monitored by government agencies.