

Implementation of Strategies Needed to Reduce *Vibrio vulnificus* Related Illness: A Focus on Core States

Interim Report – Year III

January 2009

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II. Abstract

The Gulf & South Atlantic Fisheries Foundation (Foundation) initiated a public health/social marketing campaign to assist the Gulf of Mexico oyster industry in reducing the number and rate of *Vibrio vulnificus* related illnesses. It was the purpose of this project to create and implement a strategic plan as a road map for future efforts by organizations and individuals dedicated to *Vibrio vulnificus* disease reduction and then to implement the goals of the plan.

The Foundation has received funding from NOAA (Grant #NA03NMF4270393) for a total of \$1,473,751 with a total award period of September 1, 2003 to December 31, 2008, as amended. The awards are under three separate Congressional appropriations with separate budgets for each award period. Although the scope of each appropriation is directly related to *Vibrio vulnificus* education, individual proposals were drafted and approved by NOAA for each funding cycle. Each proposal had related but distinct objectives:

1. "At-risk *Vibrio vulnificus* Educational Program Targeting the Medical Professional Community" (GASAFFI#89);
2. "Evaluation of Past and Development of New *Vibrio vulnificus* Consumer Education Programs designed to Improve Effectiveness in Reaching and Changing the Attitudes of At-Risk Consumers", revised to "*Vibrio vulnificus* Education and Social Marketing: Implementing Strategies Needed to reduce Illnesses Related to the Consumption of Raw Oysters" (GASAFFI#93); and
3. "Implementation of Strategies Needed to Reduce *Vibrio vulnificus* Related Illnesses: A Focus on Core States" (GSAFFI#96).

This final report summarizes the activities performed under "Implementation of Strategies Needed to Reduce *Vibrio vulnificus* Related Illnesses: A Focus on Core States" (GSAFFI#96).

III. Executive Summary

The Advisory Group, formed under the direction of the Foundation with the assistance of the Education Coordinator, Beuerman Miller Fitzgerald (BMF), guided the development of the project through the implementation of the Strategic Plan and subsequent education activities designed and executed to reduce the number of *Vibrio vulnificus* related illnesses. This Year III effort consisted of 12 related activities to comply with the project objectives entitled, "Implementation of Strategies Needed to Reduce *Vibrio vulnificus* Related Illnesses: A Focus on Core States" (GSAFFI#96).

The firm of BMF was contracted to serve as Education Coordinator and, as such, was involved in many of the projects. They provided guidance to other participants and assisted the Foundation in review of draft products. Semi annual teleconferences were held with the Advisory Group and adjustments were made to project plans. BMF also made extensive efforts to mail out BeOysterAware brochures to health organizations in Texas, Louisiana and Florida.

The Foundation continually monitored and coordinated the performance of contractors to ensure compliance with deadlines and contract requirements. BMF was contracted as Education Coordinator. Dr. Fred Lopez of Louisiana State University Health Sciences Center served as medical spokesperson for the project and provided a concise and coherent message on several occasions: local television in New Orleans, Times Picayune newspaper articles, radio interviews and a Webinar conducted with the Louisiana Restaurant Association. Dr. Sally Soileau of Louisiana State University conducted numerous meetings in which she presented the facts about *Vibrio vulnificus*. Dr. Soileau, Tori Stivers of University of Georgia Marine Extension and Dr. Roberta Hammond of Florida Department of Health manned information booths at numerous meetings of the medical community (state and national).

The Foundation supported the facilitation efforts of the ISSC. Each Gulf state developed a *Vibrio vulnificus* education plan tailored to their specific needs. These plans were reviewed and guided by the ISSC *Vibrio vulnificus* Education Subcommittee whose members included a Foundation representative. The Foundation also provided support to the ISSC in 2008 to reproduce *Vibrio vulnificus* educational materials, including: 50,000 copies of “The Risk of Eating Raw Oysters,” 10,000 copies of half cards describing the Online *Vibrio vulnificus* Education Course for Nurses CME; and 5,000 copies each of information sheets for *Vibrio vulnificus* and Liver Disease, *Vibrio vulnificus* and Diabetes and *Vibrio vulnificus* for the Immunocompromised.

A *Vibrio vulnificus* logo was developed by the Florida Department of Agriculture Bureau of Seafood and Aquaculture Marketing and subsequently used to identify all of the education activities conducted by the Foundation. Ms. Maria Marcello of Marcello Designs LLC created the BeOysterAware website, first published in 2006 and expanded to include *Vibrio vulnificus* information for the public-at-large, general oyster consumer and the “at-risk” consumer. She ran a web banner campaign to advertise the website.

The Foundation, with the assistance of the Advisory Group and BMF created radio and television advertisements with four radio spots and one thirty-second television spot and placed them in eight different markets in the core states of Texas, Louisiana and Florida. The ads were in English and Spanish. Five of the radio spots directed listeners to the BeOysterAware website for additional information.

Partnerships were used to inform “at-risk” oyster consumers about the potential risk of contracting *Vibrio vulnificus* through the consumption of raw oysters. ISSC has formed partnerships with health/support organizations and, through these associations, has been able to disseminate information that targets the “at-risk” population. Organizations have published articles in their newsletters and distributed fact sheets and brochures. Both ISSC and the Foundation have attempted to form partnerships with pharmacies with limited success. Kroger Pharmacies worked with the Foundation to distribute pharmacy bags with BeOysterAware logos and the web address clearly displayed.

The Education Coordinator developed a database of approximately 100 organizations in the health and restaurant fields in Texas, Florida and Louisiana. An invitational letter was sent to each organization directing them to the <http://www.beoysteraware.com> website. As a result, approximately 15,000 brochures were distributed and two "blast emails" were sent to members of doctor and nurse organizations in Texas and Florida.

IV. Background

Isolated by the Centers for Disease Control in 1964 and formally documented (taxonomically speciated) in 1979 (Farmer 1979), *Vibrio vulnificus* is a gram-negative bacterium that occurs naturally in warm, unpolluted seawater. *Vibrio vulnificus* abundance is positively correlated with seawater temperature and warmer water temperatures are linked to an increase in *Vibrio vulnificus* related illnesses (Tilton and Ryan 1987; Hlady and Klontz 1996). Disease transmission occurs through two methods: (1) the direct consumption of raw seafood (finfish, crustaceans, and mollusks) and (2) exposure of wounds to seawater. In the case of wound infections, replication of the bacteria within tissues is rapid (Gulig *et al.* 2005). For a small number of individuals considered “at-risk”, ingestion of *Vibrio vulnificus* can cause severe illnesses (e.g., primary septicemia and septic shock) and could result in a >50% mortality rate (Shapiro *et al.* 1998; FDA 2004).

Individuals with increased levels of available iron in their blood are among those considered most “at-risk” for *Vibrio vulnificus* infection as are individuals with impaired immune systems. Medical conditions which result in a potential “at-risk” consumer include liver disease, liver cirrhosis, hemochromatosis, alcoholism, chronic renal disease, cancer, immunodeficiency syndromes (HIV and AIDS), hemolytic anemia, and individuals taking immunosuppressive drugs (Kumamoto and Vukich 1998). Although *Vibrio vulnificus* related infections are treatable with a regimen of antibiotics and supportive care, the health of infected patients can deteriorate rapidly without prompt medical attention. Primary source literature has repeatedly stressed the need for increased and continued educational programs targeting medical/health professionals and the “at-risk” patient/consumer (Hlady and Klontz 1996; Kumamoto and Vukich 1998; Shapiro *et al.* 1998).

One vector for *Vibrio vulnificus* to enter a host is through the consumption of raw oysters or undercooked oysters. Although *Vibrio vulnificus* has been found along the Atlantic, Gulf of Mexico and Pacific coasts of the United States and internationally, most of the cases have been linked to oyster products originating from the Gulf of Mexico (Shapiro *et al.* 1998). However, these data are historic (1988-1996) and it is not known whether reports indicate an increase in the number of *Vibrio vulnificus* related illnesses or an increase in the accuracy and/or precision of reports (i.e., improved analytical laboratory and reporting techniques) (Shapiro *et al.* 1998). The link between *Vibrio vulnificus* and oysters is reported by media outlets due to the severity of the related illnesses and any deaths that may result (examples include high-profile cases from the state of Florida during 2004 and Georgia in 2007). Given the \$103,000,000 value of Gulf oysters harvested during 2003 (NMFS 2004), the losses in oyster sales as a result of *Vibrio vulnificus* related illnesses can add up to substantial economic burdens to oyster dependent fishing communities.

The Interstate Shellfish Sanitation Conference (ISSC) is a cooperative organization of state and federal control agencies, the shellfish industry and the academic community. The ISSC adopts uniform procedures and guidelines, contained in the National Shellfish Sanitation Program (NSSP), that regulate the harvesting, processing and shipping of shellfish (ISSC 2003). In order to reduce the number of *Vibrio vulnificus* related illnesses and deaths, the ISSC adopted a *Vibrio vulnificus* Management Plan which mandates a reduction in the rate of *Vibrio vulnificus* illnesses reported from the consumption of commercially harvested raw or undercooked oysters. The required reduction is 40 percent, for years 2005 and 2006 (average), and 60 percent for years 2007 and 2008 (average) (ISSC 2003). Illness reduction rates for the respective time periods will be compared against the average illness rate for the years 1995-1999 reported from the core reporting states of California, Florida, Louisiana, and Texas (e.g. 0.306 illnesses/million is considered the baseline illness rate)(ISSC 2003). If these illness reduction goals are not accomplished by the periods specified, a series of control measures may be implemented (ISSC 2003), drastically affecting the harvest and sale of Gulf of Mexico oysters. These measures could include:

“(a) Labeling all oysters, “For shucking by a certified dealer”, when the Average Monthly Maximum Water Temperature exceeds 75°F;

(b) Subjecting all oysters intended for the raw, half-shell market to an Authority-approved post harvest processing that reduces the *Vibrio vulnificus* levels to 3MPN/g or less, when the Average Monthly Maximum Water Temperature exceeds 75°F;

(c) Closing shellfish growing areas for the purpose of harvest of oysters intended for the raw, half-shell market when the Average Monthly Maximum Water Temperature exceeds 75°F;

(d) Labeling all oysters, “For shucking by a certified dealer”, during the months of May through September, inclusive;

(e) Subjecting all oysters intended for the raw, half-shell market to a post harvest process that is both approved by the Authority and reduces the *Vibrio vulnificus* levels to 3MPN/g or less during the months of May through September, inclusive; and

(f) Closing shellfish growing areas for the purpose of harvesting oysters intended for the raw, half-shell market during the months of May through September inclusive” (ISSC 2003).

Data from the Core Reporting States of California, Florida, Louisiana, and Texas suggested that illness rate reductions were being achieved (Figure 1), but not to the magnitude needed to reach the 40% (by December 31, 2006) and 60% (by December 31, 2008) illness reduction rates.

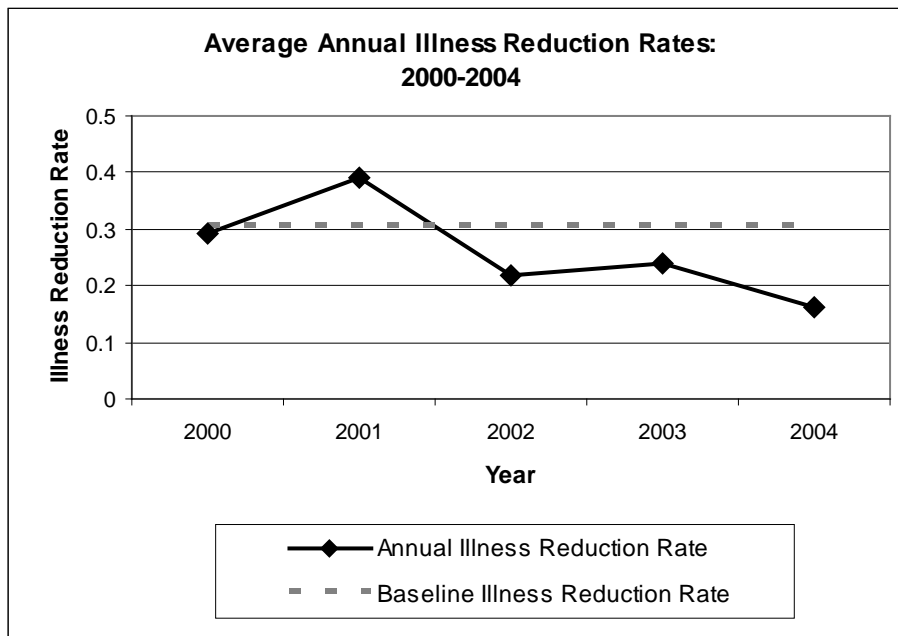


Figure 1: Average *Vibrio vulnificus* illness rates reported from the Core Reporting States of California, Florida, Louisiana, and Texas for the years 2000-2004. Illness rates are reported as the number of cases per million people (Data supplied by Dr. Al Rainosek, University of South Alabama, at the March 2007 ISSC meeting, convened in Albuquerque, NM). The baseline illness rate is 0.306 illnesses/million people.

V. The Role of the Gulf & South Atlantic Fisheries Foundation

In early 2005, the Foundation received funding through a Congressional appropriation to further the development of programs to educate medical professionals and “at-risk” consumers of raw oysters. In order to provide guidance,

the Foundation convened an Advisory Group consisting of knowledgeable experts from the Gulf oyster industry, state health organizations, universities, and non-profits (Appendix A). The Advisory Group convened on February 23, 2005 and outlined strategies that would assist in the reduction of *Vibrio vulnificus* related illnesses. The Foundation then developed a proposal to implement the recommendations forwarded by the Advisory Group which were directed toward altering the “risky” behavior of the “at-risk” oyster consumer through a series of objectives including, but not restricted to, the following efforts: (1) contract influential spokespersons from the Gulf region to assist in the training and education of medical/health professionals; (2) design, create, and place a series of radio, television, internet, and print advertisements aimed at educating the “at-risk” consumer and medical/health professional; (3) participate at medical conferences to educate medical/health professionals; (4) partner with pharmaceutical companies and regional/national health organizations to assist in educating the “at-risk” oyster consumer; (5) host and sponsor a series of video- and tele-conferences aimed at educating medical/health professionals; (6) develop new educational materials as appropriate; (7) design an identifier logo for use by parties dedicated to *Vibrio vulnificus* illness reduction; and (8) continue and expand the marketing, promotion, and information dissemination activities within Core States.

The overall purpose of this project was to implement the recommendations of the Strategic Plan focusing on a subset of strategies proposed by the Advisory Group. All illness reduction efforts for this project focused on the Core Reporting States of Florida, Louisiana, and Texas. Foundation staff held conference calls with the Education Coordinator and Advisory Group members throughout the project to review progress and provide guidance regarding outreach activities. All materials developed during the performance of this project are available to any state or organization.

Participation of Other Individuals, Agencies or Organizations:

The Foundation worked closely with the following individuals/organizations in a direct collaborative effort or in an advisory capacity:

1. Florida Department of Health (Mr. Mike Freidman, Dr. Roberta Hammond);
2. Florida Department of Agriculture Division of Aquaculture (Dr. David Heil);
3. Florida Department of Agriculture Bureau of Seafood and Aquaculture Marketing (Ms. Joanne McNeely, Mr. Martin May, Mr. Paul Balthrop) ;

4. Gulf Oyster Industry Representatives (Mr. Mike Voisin, Mr. Chris Nelson, Mr. Al Sunseri, Mr. Grady Leavins, Mr. Clifford Hillman, Ms. Lisa Halili, Mr. Teddy Busick);
5. ISSC (Mr. Ken Moore, Ms. Dot Leonard, Ms. Michelle Bashin);
6. Louisiana Department of Health and Hospitals (Dr. Susanne Bourgeois, Mr. David Guilbeau);
7. Louisiana Seafood Promotion and Marketing Board (Mr. Ewell Smith, Ms. Liz Ferguson);
8. Mississippi Department of Marine Resources (Mr. Corky Perret, Ms. Ruth Posadas);
9. Texas Department of State Health Services (Mr. Kirk Wiles);
10. Texas Department of Agriculture;
11. Education Coordinator (Mr. Greg Beuerman, Ms. Laura Lee Killian, Ms. Maria Bazan);
12. Spokespersons (Dr. Fred Lopez, Dr. Sally Soileau/LSU, Dr. Roberta Hammond, Ms. Tori Stivers/UG); and
13. Other interested parties including nonprofit health support groups.

Project Management Personnel and Responsibilities

Principal Investigators

Ms. Judy L. Jamison Executive Director, overall administrative supervision

Dr. Michael Jepson Program Director, programmatic and technical supervision

Foundation Staff

Ms. Gwen Hughes Program Specialist, contract administration

Ms. Charlotte Irsch Grants/Contracts Specialist, contract administration

Ms. Judy Jamison, Executive Director, and Dr. Michael Jepson, Program Director, of the Gulf & South Atlantic Fisheries Foundation, Inc. (Foundation) assured overall project administration and coordination through the office in Tampa, Florida.

The Foundation's Executive Director, Ms. Judy Jamison, had ultimate responsibility for all Foundation administrative and programmatic activities, with oversight by the Foundation's Board of Trustees. She ensured timely progress of activities to meet project objectives and confirmed compliance of all activities with NOAA/NMFS.

The Foundation's Program Director, Dr. Michael Jepson, had overall responsibility for all technical aspects of Foundation projects and coordinated activities of all project personnel, including contractors. He confirmed and evaluated the effectiveness of projects and subcontracts and ascertained timeframe and funding limitations for the project. Additionally, he coordinated all analytical efforts, prepared all progress and final reports concerning project performance and drafted the Foundation's quarterly newsletter.

The Grant/Contracts Specialist, Ms. Charlotte Irsch, is responsible for maintaining general financial accounting of all Foundation funds including all Cooperative Agreements and contracts, as well as communicating with NOAA Grants Management personnel, and assisting auditors in their reviews. She conducts/documents internal and program (single and desk) audits, prepares backup documentation for fiscal audits, and drafts award extension requests (if applicable). Ms. Irsch provides the Executive and Program Directors with projected budgets concerning program performance and ensures that these budgets adhere to the proposed project budget. She prepares the annual administrative budget, NOAA Financial Reports, and confirms compliance of all activities with NOAA/NMFS and OMB guidelines.

The Program Specialist, Ms. Gwen Hughes, is responsible for tracking programmatic activities, monitoring funding and distribution of funds. Ms. Hughes maintains constant communication with sub-contractors and project personnel throughout the course of the project. She is also responsible for generating supporting documentation to assist in any and all programmatic audits. Ms. Hughes is responsible for the coordination of all program related workshops and auditing and paying program related invoices. She processes requests for reimbursement to conform to federal guidelines and prepares and maintains all contracts, subcontracts, agreements and amendments.

VI. Approach

The Gulf & South Atlantic Fisheries Foundation, Inc. (Foundation) convened an Advisory Group of influential people (Appendix A) to review and critique the current state of *Vibrio vulnificus* education programs and to develop new and innovative methods to further reduce the number and magnitude of *Vibrio vulnificus* related illnesses. The purpose of this project was to implement a subset of those strategies proposed by the Advisory Group through the creation of a Strategic Planning document (Appendix B). The interrelated objectives and

techniques described here may have previously been underutilized when considering *Vibrio vulnificus* education campaigns.

Due to the illness reduction benchmarks established by the ISSC and FDA and reported in the NSSP, all illness reduction efforts focused on the Core Reporting States of Florida, Louisiana, and Texas. Regrettably, the state of California had closed its borders to the interstate commerce of traditional raw oyster products harvested from the Gulf of Mexico from April 1 through October 31 annually. This measure, in effect, reduced the number of *Vibrio vulnificus* related illnesses reported from this state to zero. Therefore, no educational activities were targeted in the state of California.

VII. Findings

1. Contracted Personnel and Suppliers

The Foundation continually monitored and coordinated the performance of the contractors in order to ensure timely progress towards meeting established objectives and assure compliance with award requirements.

Education Coordinator

The communications firm of Beuerman, Miller and Fitzgerald (Appendix C) was contracted to serve as Education Coordinator and, as such, worked in close consultation with Foundation staff and project collaborators. BMF is a marketing, advertising and public relations firm with diverse experience in corporate, non-profit, and public sector communications. They provided assistance with the implementation of many of the project activities.

Spokesperson

The Foundation contracted with Dr. Fred Lopez to serve as a spokesperson. Dr. Lopez is an infectious disease specialist and Associate Professor and Vice Chair in the Department of Medicine at the Louisiana State University Health Sciences Center in New Orleans. The role of the spokesperson was to speak with both media and organizations during the duration of this project, provide interviews on local radio and television stations and speak with print media about the dangers associated with *Vibrio vulnificus*.

Web Designer

Ms. Maria Marcello-Clay was engaged to maintain and update the www.BeOysterAware.com website. She was asked to provide links to downloadable versions of the BeOysterAware brochure, radio and television ads and print advertisement and conduct a web banner campaign.

State Facilitator

The ISSC provided a state facilitator to assist the states of Florida, Alabama, Mississippi, Louisiana, Texas and Georgia to develop *Vibrio vulnificus* education plans and to implement selected state programs. A summary of the Final Report is in Appendix D.

2. Semi-annual teleconferences and email updates

Complementing the Foundation and the contractors were the individuals of the Gulf oyster industry and collaborating state agencies. In order for the collaborators to derive maximum benefits and experience from this project, their direct participation in various research and/or planning activities and organization was sought throughout the entirety of this project. Collaborating agency staff, oyster industry groups, and the contracted Education Coordinator were asked to lead, participate, and/or assist in the various aspects of the project activities. This enabled the different collaborators to closely evaluate, learn from, and integrate the results of various objectives into their respective agency/company programs. Dissemination of educational materials to the “at-risk” oyster consumer was conducted effectively due to the broad reach of each collaborating agency or organization. Industry and small businesses participated as program reviewers, product suppliers and/or hosts to promote objectives of this project.

3. Spokesperson/Medical Expert

Spokespersons are individuals with a strong community voice that engage the public (at-large) and target audiences through a variety of different media (i.e., radio, television, print, public presentation, internet, etc.) to publicize a message. The function of the message is variable, but is intended to cause a behavioral change in a target audience. In the case of *Vibrio vulnificus* education, the message focused on the inherent risks associated with the consumption of raw or undercooked oysters, and defined the population of oyster consumers who might be at risk. It was decided that a physician with a role in and knowledge of *Vibrio vulnificus* would be the most credible spokesperson. Initially it was suggested that there should be two spokespersons from each state but it quickly became apparent that finding experts that were able to take on the role of spokesperson would be difficult. Although several attempts were made to locate individuals willing to be a spokesperson utilizing the Advisory Group and other networks, only one individual was contracted to act as spokesperson, Dr. Fred Lopez, infectious disease specialist who is currently Associate Professor and Vice Chair in the Department of Medicine at the Louisiana State University Health Sciences Center in New Orleans. Dr. Lopez scheduled appearances with both media and organizations during the duration of this project where he provided a concise and coherent educational message about the risks associated with eating raw oysters. He was interviewed on local television stations in New Orleans and was also interviewed by Times Picayune reporters and other state and local papers and conducted radio interviews several times over the duration of this project. Dr.

Lopez was also part of a Webinar that was conducted with the Louisiana Restaurant Association in which he provided an overview of the dangers associated with *Vibrio vulnificus*.

4. *Vibrio vulnificus* Identifier Logo

Central to any campaign is the broad recognition of an intended message. Given the number of cooperating organizations devoted to *Vibrio vulnificus* education, a physician, “at-risk” consumer, or the general public could become overwhelmed by the multitude and diversity of *Vibrio vulnificus* educational materials currently being published and distributed. To strengthen and unify the intended message of *Vibrio vulnificus* educational campaigns, a central connection or bond was established by the creation and use of an identifier logo.

Identifier logos are a simple, but effective method to instantly convey a message, purpose, and/or feeling. The BeOysterAware logo can identify individuals, organizations, and institutions actively committed to a reduction in *Vibrio vulnificus* related illnesses. The Florida Department of Agriculture Bureau of Seafood and Aquaculture Marketing, with oversight by the Foundation and Advisory Group created the logo (Figure 2). The logo was used in publications, web pages, research projects, presentations, formal documents, letters, advertisements and mailings related to *Vibrio vulnificus* education and Gulf of Mexico oysters.



Figure 2. BeOysterAware Identifier Logo.

5. Initiate/Augment Direct Mailings

An effective and relatively inexpensive method for educating the “at-risk” consumer is through the use of direct mailings targeting medical/health professionals. The purpose of these direct mailings is to educate and warn physicians of *Vibrio vulnificus* symptoms and treatments, the risk of raw oyster consumption and to characterize the “at-risk” consumer. Through previous efforts, the ISSC has discovered that direct mailings from institutions other than State and Federal agencies are ineffective at reaching medical/health professionals because of the number of individuals who handle, sort, and distribute mail before it reaches the addressee. The majority of mail received by medical/health professionals is sales related. As such, mail from perceived ‘non-credible’ sources (i.e., ISSC, Foundation, oyster industry) is often discarded.

Given the specialties and sub-specialties within the medical/health community, any number of medical/health professionals could come in contact with an “at-risk” patient, either in the capacity as a first responder to a *Vibrio vulnificus*

related illness or through treatment of a pre-existing condition that places the patient in the “at-risk” category. Therefore, the direct mail campaign targeted gastroenterologists, emergency room doctors, pharmacists, family practitioners, endocrinologists, epidemiologists, internists, state health departments, and hospital staff.

BMF made extensive efforts relative to potential health organization partnerships in Louisiana, Texas and Florida during the course of this campaign. Several mail-outs utilizing the BeOysterAware brochures were made to those groups with an interest in speaking opportunities for Dr. Lopez and interest in *Vibrio vulnificus* information. Brochures were mailed or shipped to: Aids Resources of Rural Texas, El Paso County Medical Society, South Texas Chapter of the American Liver Association, Texas Liver Coalition, Baton Rouge Aids Society, Council on Alcohol and Drug Abuse for Greater New Orleans, Louisiana Aids Drug Assistance Program, Louisiana Cancer Foundation, New Orleans Aids Task Force, Big Bend Cares, Florida Department of Health Hepatitis Program and the NE Florida Aids Network.

6. Participation at Professional Conferences by Knowledgeable Spokespersons

Medical/health professionals are required to obtain Continuing Education Credits throughout their careers to remain certified to practice medicine. These credits can be acquired through attendance at national and regional conferences where experts present and discuss literature and experiences within their respective medical fields. These symposia also feature booth exhibitions highlighting the latest medical advancements. Booth participation is also an effective method for disseminating and educating the medical community about the inherent risks associated with the consumption of raw oysters, and defining those individuals considered “at-risk”.

Health representatives from the core states focused efforts on booth participation at a limited number of state, regional and national conferences. This participation has included the use of collapsible display booths, distribution of *Vibrio vulnificus* literature, and face-to-face contact with medical/health professionals. The Foundation made funds available to directly assist knowledgeable professionals from state health organizations, universities and extension services to attend national and regional medical conferences and participate in exhibition booths to educate medical/health professionals about *Vibrio vulnificus* and the threat of raw oyster consumption. Assistance was provided for meeting registration fees, booth participation, necessary supplies, travel and salaries of booth participants.

An outstanding contribution was made by Dr. Sally Soileau of Louisiana State University, specialist in the field of *Vibrio vulnificus* who regularly attended medical conferences to educate nurses, medical doctors, pharmacists, and dieticians. Due to her current and past experiences educating the “at-risk” consumer and medical/health professionals, a portion of the available funds was

sole sourced to directly assist Dr Soileau. Her extension work also included regular participation at festivals and events aimed at educating the general oyster consumer (Appendix E). The Foundation supplied partial funding to Dr. Soileau during the performance of this award to attend numerous events to educate on *Vibrio vulnificus*. Some of those events included:

- Louisiana Dietetic Association
- Council on Aging
- Grandparents Raising Grandchildren State Conference,
- American Association of Diabetes Educators
- Emergency Nurses Conference
- The Liver Meeting
- American Dietetic Association Food & Nutrition Conference Expo

Dr. Sally Soileau, Louisiana State University, Tori Stivers, University of Georgia Marine Extension, and Dr. Roberta Hammond, Florida Department of Health were active as spokespersons with their activities undertaken as part of the outreach toward medical personnel. Their participation as spokespersons was a strategy adopted by the Advisory Group as they encouraged allocating funds for their activities as a means of expanding the number of spokespersons for the project.



Figure 3: Dr. Soileau and Ms. Stivers at the Liver Meeting in Boston, MA 2007.

Ms. Stivers attended several important meetings held in 2007 and in 2008 where she spoke with medical personnel and educators and distributed *Vibrio vulnificus* educational materials:

- American Association of Diabetes Educators
- National Emergency Nurses Association
- Liver Meeting
- Southern Nurses Research Association
- Society of Gastroenterology Nurses Associates, Inc.
- American Diabetes Association
- Meeting of the American College of Gastroenterology

Dr. Hammond and staff attended several meetings where a booth was provided to deliver an outreach message outlining the dangers of *Vibrio vulnificus* through the distribution of educational materials. The meetings included:

- Florida Academy of Physician Assistants 2008 Summer Symposium
- Florida Medical Association Annual Meeting
- Florida Environmental Health Association 60th Annual Education Meeting & Trade Show
- Florida Dietetic Association 2008 Exhibition
- Florida College of Emergency Physicians Symposium by the Sea 2008

7. Creation of Radio and Television Advertisements

Multimedia advertising campaigns are effective instruments for relaying messages and/or influencing behavioral changes in a target audience. An increase in the number and type of media used during an advertising campaign can increase exposure of the message to the target audience, especially television and radio (i.e., millions of viewers and listeners). Previous efforts to educate the “at-risk” population of oyster consumers about the risks of *Vibrio vulnificus* have revolved around the creation and dissemination of print material to “at-risk” consumer groups. This is an effective method for transferring information only if the “at-risk” consumer is knowledgeable about their “at-risk” status and they acknowledge the message. Given the varied medical conditions affecting “at-risk” oyster consumers, the Advisory Group suggested that radio and television advertisements would allow for the coverage necessary to transfer *Vibrio vulnificus* information to “at-risk” consumers.

Due to the complex message contained within the advertisements, the Foundation’s Program Director, Education Coordinator and Advisory Group closely monitored all stages of the production process. This ensured that the intended message of the advertisement was effectively presented and that the target audience received accurate information regarding *Vibrio vulnificus* and the risks of consuming raw oysters. Efforts were taken to diversify the message across demographics based on age, race, gender, and income.

Once the advertisements were finalized (Appendix F), the Foundation purchased time on local television and radio stations within areas of increased *Vibrio vulnificus* illness reports. Placements were made based upon time slot availability and potential reach (the number of individuals receiving the intended message). All advertisements included the domain name of a dedicated *Vibrio vulnificus* education website to direct the interest of people reached through radio and television advertisements to this internet site.

BMF created radio and television advertisements with four radio spots (two thirty-second and two fifteen-second radio spots in both English and Spanish) and one thirty-second television spot. The television and radio advertisements were reviewed by the Advisory Group during August, 2006.

Four radio spots (two thirty-second and two fifteen-second in English and Spanish) were placed in eight different markets in the core states of Texas, Louisiana and Florida. Cities in which the radio ads were placed included: Dallas, Houston, New Orleans, Panama City, Pensacola, Tampa, Ft. Myers and Miami. The ads appeared on both Spanish and English radio stations and ran at various times throughout the day, often during the peak commuting hours. In addition, five of the radio stations provided web links to the BeOysterAware website with brief introductory educational stories about *Vibrio vulnificus*.

Because the original budget for TV ads was insufficient to saturate the markets in the three core states, the Advisory Group had decided to devote much of the original budget allocation to placing banner advertisements. With the remaining funds, the Group decided to target the core state of Texas with the TV ad because that state had seen a spike in the number of illnesses during late 2006. The thirty-second television spot was placed in a cable market in the Dallas/Ft. Worth area where it was aired on several different channels, including Home Network, Weather Channel, and MSNBC, during time slots throughout the day.

8. Dedicated Website

Dependence upon the internet for self-education and research has increased sharply within the last decade. This is especially true for people trying to acquire information regarding medical conditions, symptoms, and treatments. Unfortunately, information regarding the risks of *Vibrio vulnificus* is rarely included on corporate (for-profit) health-based websites, and only a small number of websites contain information pertaining to *Vibrio vulnificus* and the “at-risk” population. Although the intent of these websites is to increase the information available for interested parties while keeping development and maintenance expenses at a minimum, the simple and nondescript design of the websites could constrict website usage because the message is perceived as non-professional. By producing a more professional, eye-appealing, and interactive website dedicated

to *Vibrio vulnificus* education, the use and acceptance of the message contained within the website are likely to increase.

Ms. Maria Marcello of Marcello Designs, LLC created the BeOysterAware website, <http://www.beoysteraware.com> (Appendix G) which was published in April 2006. The BeOysterAware website focuses on educating the public-at-large, the general oyster consumer, and the “at-risk” oyster consumer. Website visitors are provided with: (1) an overview of *Vibrio vulnificus* and its association with Gulf of Mexico oysters; (2) pathogenesis; (3) symptoms of *Vibrio vulnificus* illness; (4) available treatments; (5) definition of an “at-risk” consumer and medical conditions affecting “at-risk” consumers; (6) description of post-harvest processes and oyster value-added products; (7) oyster recipes; (8) contact information for state health departments, spokespeople, the Foundation, ISSC, etc.; (9) a list of *Vibrio vulnificus* identifier logo users to define individuals and organizations devoted to *Vibrio vulnificus* education; and (10) outreach materials in various media forms, including radio, TV advertisements, brochures and journal ads.

Website promotion was accomplished through a variety of media including the insertion of the domain name in all radio and television advertisements, a limited number of internet advertisements, and promotion at medical conferences and regional events. A tracking program was linked to the webpage and recorded the number of page views and the source advertisement directing the viewer to the site (internet advertisements only). This allowed the principal investigators to assess the effectiveness of the internet advertising campaign and the project objective.

To advertise the website to the “at-risk” consumer, The Foundation initiated a web banner campaign (Appendix H) that was reviewed and approved by the Advisory Group. The campaign was initiated in May 2006 and focused on placing web banners on regional news websites (specifically the medical/health sections) in the core states of Florida, Louisiana, and Texas. WebMD was targeted during the campaign. The campaign ended in August 2006.

During the period of the web advertising campaign, there was a notable increase in website traffic to www.BeOysterAware.com, suggesting that internet advertising is an efficient and effective method for promoting the website and educating the “at-risk” consumers about *Vibrio vulnificus*.

Ms. Marcello conducted another web banner campaign in 2007 that placed the BeOysterAware logo and link on many high traffic sites. This effort increased traffic to the BeOysterAware website from an average of 600-700 visits per month to over 5,700 in the months of November and December during the campaign. Specific sites were selected to target the Texas coast due to the recent spike in illnesses there and a Gulf-wide strategy was included to target websites with content related to the Gulf Coast in general.

9. Partnerships with Pharmaceutical Companies

Although several attempts were made to partner with pharmacies, the lack of response or follow-up after contact was discouraging and ended with only one major outreach project. Throughout the duration of this project, the Education Coordinator and other state agencies attempted to initiate outreach campaigns with several state regional and national companies but with little success. Two companies, Food Lion and Target, were contacted during 2007; both declined opportunities to participate. Several others including CVS, Walgreens, Eckerd, Walmart and K-Mart were contacted but failed to return calls.

The one successful outreach campaign came in 2008 through Kroger Pharmacies. Advertisements consisting of the BeOysterAware logo with a special web address linked to BeOysterAware were placed on pharmacy bags (Appendix I) which were then distributed through Kroger Pharmacies in the Houston, Texas area. These were distributed to eight different Kroger Pharmacies with 24,000 bags to each pharmacy. Again, Texas was targeted because of the spike in illnesses and deaths in that state during 2007.

10. Partnerships with Non-Profit Health/Support Organizations

Considering the difficulty of reaching our target audience, efforts were aimed primarily at the “at-risk” consumer and the medical/health professionals and finally, the general public. Because of the diversity of the groups and organizations that provide support for these individuals, it became a major effort to form partnerships to disseminate *Vibrio vulnificus* education information.

Through previous efforts, the ISSC has formed partnerships with health/support organizations such as the American Liver Association (National Chapter and San Diego, Los Angeles, and Florida Chapters), the National Hepatitis Foundation, Iron Overload Foundation, and the National Hemochromatosis Society and found these partnerships to be extremely effective at educating the “at-risk” consumer.

BMF developed a database of approximately 100 organizations in the health and restaurant fields in Texas, Florida and Louisiana. An invitational letter was sent to each organization directing them to the <http://www.beoysteraware.com> website. As a result approximately 15,000 brochures were distributed and two "email blasts" were sent to members of doctors and nurses organizations in Texas and Florida.

11. Email Blast

The Education Coordinator executed a campaign preparing and distributing two “email blasts” (Appendix J) to members of doctor and nurse organizations in Texas and Florida to help raise awareness of the need to better educate their “at-risk” patients. In June 2008, emails were sent to 41,608 nurses, 10,645 doctors, and 451 pharmacies in the states of Texas and Florida. In August 2008, a second email blast reached over 40,000 medical professionals.

12. DVD

Finally, a comprehensive DVD of all educational materials and advertisements designed or used during the "Be Oyster Aware" campaign was created and produced. In December 2008, these DVDs were distributed to approximately 70 current or prospective partner organizations in Texas and Louisiana to be used by local TV and radio stations to run as public service ads.

VIII. Evaluation

The ultimate goal of this project was to reduce the number of oyster related *Vibrio vulnificus* illnesses within the Core States of Florida, Louisiana, and Texas. If 40% and 60% illness reduction benchmarks are not met by the 2006 and 2008 dates, the control measures imposed on the Gulf of Mexico oyster industry could be severe and result in millions of dollars of lost revenue from closed markets or the purchase and conversion to costly post-harvest processing equipment. The effects of these control measures could have a ‘trickle-down effect’ on coastal communities dependent upon the strong harvest and sale of commercial oysters.

The strategies developed under this project have affected millions of individuals throughout the Gulf of Mexico region and the United States. If these strategies have resulted in a positive change in “at-risk” oyster consumer behavior, then some of the decline in the number of oyster-related *Vibrio vulnificus* illnesses are a result of these efforts. Although the number of illnesses and deaths have been reduced over the duration of this project, (see Figure 4), the benchmark of a 60% reduction from the baseline will likely not be met by 2008.

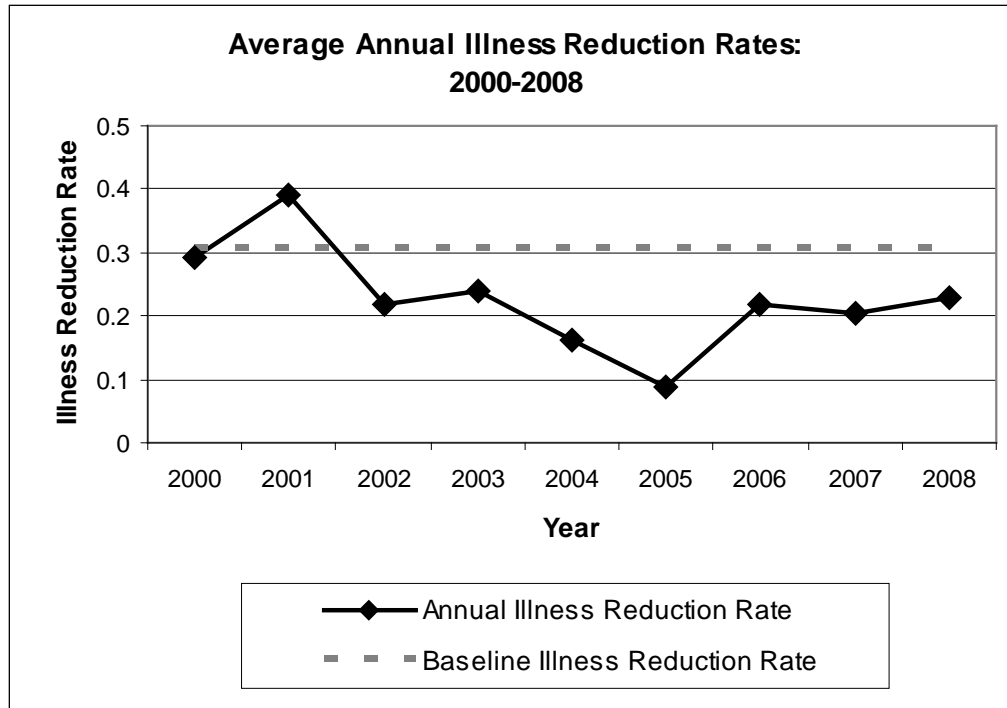


Figure 4: Average *Vibrio Vulnificus* Illness Reduction Rates for 2000-2008.

With a focused and consistent message throughout the duration of this program the objectives of this outreach campaign were successful as measured through the metric of increased traffic to the Foundation’s BeOysterAware Website (see Figure 5). Although we cannot provide a metric for other forms of outreach, such as spokesperson activity, trade show and festival participation, TV and radio ads, and other partnerships, we believe they are likely to have similar impacts in terms of reaching the public and affecting changes in behavior of the “at-risk” consumer. In addition to other education activities, a coordinated message promoting PHP products as an alternative to the traditional raw oyster product has given the consumer an informed choice to continue the consumption of oysters and still reduce the risks of *Vibrio vulnificus* illness.

The information generated by this research and development project has enabled the Gulf’s oyster industry and responsible government agencies to more effectively communicate the positive and beneficial side of the oyster industry to general consumer markets. It has also helped reduce the adverse effects of raw oyster consumption on the “at-risk” consumer segment of the population while at the same time, providing them with safer and equally attractive oyster product options. Effective dissemination of information may have resulted in the stabilization of oyster consumption despite heavy media exposure of informed consumers to negative headline news featuring *Vibrio vulnificus* related oyster illnesses or fatalities.

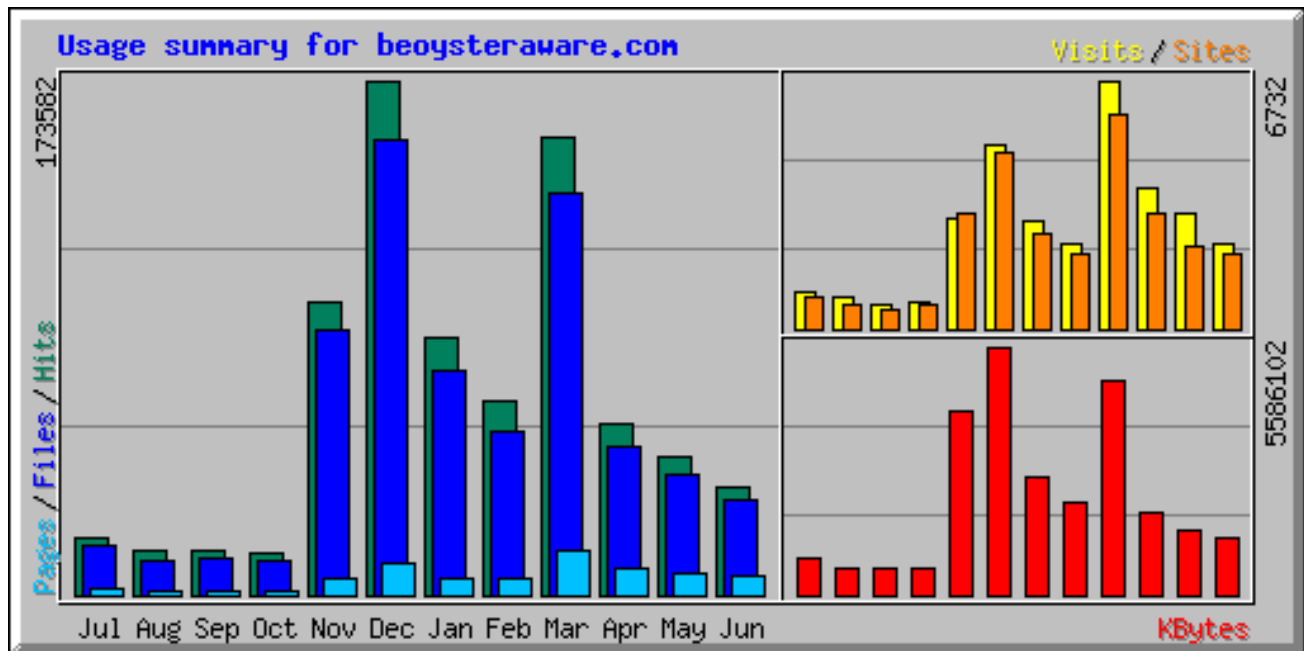


Figure 5: BeOysterAware Webstats for 2006-2007 Reflecting Increase Traffic from Banner Ad Campaign.

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Appendices

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Appendix B

Vibrio vulnificus Illness Reduction Strategies and Implementation Program for the At-Risk Oyster Consumer

A STRATEGIC PLANNING DOCUMENT



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**At-Risk *Vibrio vulnificus* Educational Program
Targeting the Medical/Professional Community**

STRATEGIC PLANNING DOCUMENT

Vibrio vulnificus Illness Reduction Strategies and Implementation Program for the At-Risk Oyster Consumer

MISSION STATEMENT

The Gulf and South Atlantic Fisheries Foundation, Inc. (Foundation) aims to deliver a strategic education and communications plan for reducing the health hazards for certain “at-risk” consumers resulting from the consumption of raw oysters that contain the naturally-occurring bacterium, *Vibrio vulnificus*.

PRIMARY GOAL

- With the help of an Advisory Group (Appendix 1), implement a strategic education and communications plan for the at-risk oyster consumer to reduce the number of *Vibrio vulnificus* (*Vibrio vulnificus*) related illnesses in the states of Florida, Louisiana, and Texas.

SUB-GOALS

- Compile, analyze, integrate, evaluate and publish current information on *Vibrio vulnificus* consumer educational materials and advice for the at-risk consumers;
- Identify and partner with key individuals and organizations (especially medical and health professionals) that are essential to the successful implementation of the *Vibrio vulnificus* Illness Reduction Program;
- Develop *Vibrio vulnificus* education materials targeted at medical and health professionals and at-risk consumers; and
- Contract with an Education Consultant to coordinate the implementation of all strategies included in the Strategic Plan.

BACKGROUND

Each year millions of Americans enjoy eating raw oysters, which provide an excellent source of protein and essential minerals, while contributing less calories and fat than most animal protein foods. Assuring that consumers can continue to safely enjoy raw oyster consumption is the goal of the National Shellfish Sanitation Program (NSSP),¹ which establishes sanitary controls over all phases of the growing, harvesting, shucking, packing and distribution of fresh and frozen shellfish (i.e. clams, mussels, oysters and scallops with roe or viscera attached).

The NSSP is implemented by state shellfish control agencies via the Interstate Shellfish Sanitation Conference (ISSC).² Implementation of the NSSP program by state shellfish control agencies assures that commercial oysters and other molluscan shellfish are produced in areas shown to be safe and free of direct fecal bacterial contamination, and marine biotoxins.

Oysters are typically found in estuaries, sounds and bays. They are filter-feeders, drawing water in over their gills where plankton and other particles are trapped and eaten. This unique method of food consumption means oysters can also accumulate bacteria found in the water around them.

Oysters are sometimes found in areas where a marine bacterium called *Vibrio vulnificus* (*Vibrio vulnificus*) occurs. *Vibrio vulnificus* is naturally occurring in coastal areas, and is found in higher concentrations in the summer months as water becomes warmer. *Vibrio vulnificus* is not associated with fecal contamination or other pollution, therefore, the NSSP water quality standards and the monitoring of those standards by the state agencies cannot assure the absence of this bacteria in oysters from certain areas.

PROBLEM IDENTIFICATION

The Strategic Planning Document addresses two overarching problems:

1. raw and undercooked oysters harvested from approved waters are associated with a small number of serious illnesses due to the presence of *Vibrio vulnificus* and continued consumption of raw oysters by at-risk consumers (i.e. those with underlying health conditions); and
2. the shellfish community, including oyster producers and state regulators, must meet near term illness reduction goals set under an ISSC approved *Vibrio vulnificus* risk management plan.

Consumption of oysters containing *Vibrio vulnificus* by healthy consumers poses little risk of illness but consumption by certain at-risk consumers can lead to serious illness or death within 2 days.³ In a review of *Vibrio vulnificus* infections in the United States by Shapiro et al.⁴ 96% of patients with primary septicemia consumed raw oysters within 7 days before symptom onset. While *Vibrio vulnificus* infection may also occur as a result of wounds exposed to the bacteria from seawater, epidemiological data suggest that raw oyster consumption is a major vehicle of transmission.

¹ FDA, 2003. National Shellfish Sanitation Program, Guide for the Control of Molluscan Shellfish <http://www.cfsan.fda.gov/~ear/nss2-toc.html>

² ISSC, Formed in 1982 to foster and promote shellfish sanitation through the cooperation of state and federal shellfish control agencies, the shellfish industry, and the academic community. www.issc.org.

³ ISSC, 2006. ISSC Brochure, "The Risk of Eating Raw Molluscan Shellfish"

⁴ Shapiro RL, Altekruze S, Hutwagner L. 1998. The role of Gulf Coast oysters harvested in warmer months in *Vibrio vulnificus* infections in the United States, 1988-1996. *J Infect Dis.* 1998; 178:752-759.

Infection with *Vibrio vulnificus*, though fairly rare, can have serious consequences. According to CDC,⁵ about 50% of the septic blood infections associated with *Vibrio vulnificus* result in death. From 1995 to 2005, the number of *Vibrio vulnificus* illnesses associated with the consumption of commercially-harvested oysters has ranged from 12 to 42 per year with 6 to 23 resulting in death (Table 1).⁶ During that period, *Vibrio vulnificus* related illnesses due to oyster consumption accounted for 90% or more of the total *Vibrio vulnificus* illnesses reported annually.

TABLE 1. SUMMARY OF SHELLFISH CONSUMPTION RELATED *VIBRIO VULNIFICUS* CASES 1995 – 2005

YEAR	TOTAL CASES/DEATHS	CLAM CASES/DEATHS	SELF HARVEST CASES/DEATHS	ADJUSTED CASES/DEATHS ⁷
1995	32/14	4/3	0/0	28/11
1996	35/24	1/0	1/1	33/23
1997	23/11	1/0	0/0	22/11
1998	42/19	0/0	0/0	42/19
1999	37/21	0/0	1/0	36/21
2000	30/18	0/0	0/0	30/18
2001	41/20	0/0	1/1	40/19
2002	35/17	0/0	0/0	35/17
2003	34/16	0/0	1/1	33/15
2004	37/20	0/0	2/1	34/18*
2005	14/8	2/2	0/0	12/6

The FDA lists the health conditions that may place people at-risk of serious infection from *Vibrio vulnificus*⁸ as follows:

- Liver disease (from hepatitis, cirrhosis, alcoholism, or cancer)
- Iron overload disease (hemochromatosis)
- Diabetes
- Cancer (including lymphomas, leukemia, Hodgkin's disease)
- Stomach disorders
- Or, any illness or medical treatment that weakens the body's immune system.

A recent CDC study⁹ showed that people with these pre-existing medical conditions were 80 times more likely to develop *Vibrio vulnificus* bloodstream infections than were healthy people. From 1989 to 1999, 257 *Vibrio vulnificus* infections, including 131 deaths, were reported to FDA, and most cases had multiple pre-existing health conditions with 81% having liver disease and 25% having diabetes.¹⁰

⁵ CDC, 2006. *Vibrio vulnificus*, http://www.cdc.gov/ncidod/dbmd/diseaseinfo/vibriovulnificus_g.htm

⁶ Glatzer, 2006. Unpublished data

⁷ *The "Adjusted Cases/Deaths" totals represent only oyster consumption cases associated with commercial harvest.

⁸ FDA, 2003. Fact Sheet: *Vibrio vulnificus* Health Education Kit, http://www.cfsan.fda.gov/~dms/Vibrio_vulnificus_fact.html

⁹ CDC, 2006, Ibid

¹⁰ Glatzer and Bashin, 2003. *Vibrio vulnificus*, Digesting the Data 1989-1999, http://www.issc.org/Vibrio_vulnificus_Education/1/1%20B%20a%20Digesting%20the%20Data.ppt.

In 2001, the ISSC adopted a *Vibrio vulnificus* risk management plan¹¹ to reduce the number of *Vibrio vulnificus* illnesses associated with the consumption of raw oysters. The Plan requires states having two or more confirmed shellfish-borne *Vibrio vulnificus* illnesses since 1995 traced to the consumption of commercially harvested raw or undercooked oysters that originated from that state (Source State) to develop and implement a *Vibrio vulnificus* management plan. Moreover, it sets an illness reduction goal based on the reported illnesses in four states California, Florida, Louisiana and Texas of 40 percent, for years 2005 and 2006 (average) and by 60 percent for years 2007 and 2008 (average).

The intent of the *Vibrio vulnificus* risk management plan is to combine aggressive educational programs targeted to at-risk consumers with expanded use of post harvest technologies designed to reduce or eliminate *Vibrio vulnificus* in oysters to reduce illnesses. Consequences of failure are substantial. States would have to mandate one or more of the following measures to remain in compliance:

1. Subject oysters intended for the raw, half-shell market to an approved post harvest process that reduces the *Vibrio vulnificus* levels to 3MPN/g or less, during certain months of the year when water temperatures are high;
2. Require oysters be labeled, “For shucking by a certified dealer,” during certain months of the year when water temperatures are high; or
3. Close shellfish growing areas for the purpose of harvesting oysters intended for the raw, half-shell market during certain months of the year when water temperatures are high.

The Foundation developed this strategic plan to facilitate effective communication with, and education of, at-risk consumers and physicians and others in the health and medical community concerning the risk posed by raw oyster consumption. Education of health professionals is intended to foster changes in consumption behavior for those in the at-risk population consistent with the intent of the ISSC *Vibrio vulnificus* risk management plan to reduce illnesses.

STRATEGIES AND TACTICS FOR ACHIEVING GOALS

In pursuit of the primary goal of developing a plan for reducing the incidence of *Vibrio vulnificus* illnesses and deaths among the at-risk groups, a series of strategies and tactics were identified. The Foundation utilized an Advisory Group consisting of representatives from the oyster industry, state health and education organizations, and Non- governmental organizations (NGOs) to assist in the development of these strategies and tactics. The Advisory Group decided the operational focus of this plan would center on three of the four core states used for determining illness reduction in the ISSC *Vibrio vulnificus* risk management plan (i.e. Florida, Louisiana and Texas) The fourth core state California was not included due to resource limitations and because shellfish control authorities banned the sale of Gulf oysters during summer months when *Vibrio vulnificus* are highest. The plan will rely on the following strategies and tactics for successfully accomplishing the primary goal:

Strategy 1: Educate and empower the medical and health community and at-risk support groups by delivering educational materials and messages about the risks associated with consumption of raw oysters.

¹¹ FDA, 2003. Ibid

Tactics

1. Contract with and train one or more qualified educational specialists to make presentations at meetings targeting physician groups, pharmacists, and at-risk support groups.
2. Attend, make presentations and exhibit at professional conferences.
3. Conduct/fund a direct mail campaign aimed at gastroenterologists, emergency room physicians, pharmacists, family practitioners, endocrinologists, epidemiologists, internists, state health departments, hospitals and at-risk support groups/members.
4. Place advertisements, editorials and articles in selective medical/health trade journals as well as magazines that reach members of the at-risk consumer groups.

Strategy 2: Expand and improve direct communication with, and education of, at-risk consumers.

Tactics

1. Develop a *Vibrio vulnificus* education identifier or logo.
2. Create a dedicated, appealing *Vibrio vulnificus* website to assist the education of at-risk consumers.
3. Develop and disseminate new educational materials as well as reproduce and expand the distribution of existing educational materials.
4. Utilize radio and television commercials to broadcast and advertise messages to dissuade targeted, at-risk consumers from eating raw oysters.

Strategy 3: Develop strategic partnerships to broaden message delivery to at-risk consumers.

Tactics

1. Develop partnerships with major pharmaceutical companies that produce and distribute medications used by members of the at-risk consumer groups.
2. Develop and/or expand alliances with such groups as the National/State Liver Foundation, National/State Diabetes Association, state medical associations, medical staffing offices at hospitals, organ transplant centers, AIDS/HIV treatment centers, the Interstate Shellfish

Sanitation Conference, state seafood marketing and promotion agencies, and the National Fisheries Institute.

WORKPLAN AND ANTICIPATED OUTCOMES

Strategy 1. Educate and empower the medical and health community and at-risk support groups by delivering educational materials and messages about the risks associated with consumption of raw oysters.

Tactic 1. Contract with and train one or more qualified educational specialists to make presentations at meetings with targeted physician groups, pharmacists, and at-risk support groups.

Educational Specialists are individuals with a strong community voice that engage the public and target audiences through a variety of different media (i.e., radio, television, print, public presentation, internet) to publicize a message. In the case of *Vibrio vulnificus* education, the message focuses on the inherent risks associated with the consumption of raw oysters, and defining the at-risk population of oyster consumers. The intent is to enlighten and catalyze medical and health professionals and support groups to more aggressively and confidently intervene with at-risk consumers to facilitate a behavioral change.

Due to the specific personality attributes of these individuals needed to effectively engage target audiences and present information, a series of interviews will be conducted with professionals from the medical and academic communities. The optimal candidate for the position will possess an M.D. or M.D./Ph.D and have professional knowledge of *Vibrio vulnificus* . Supplemental education will be afforded through train-the-trainer and internet based resources.

It is anticipated that at least two individuals per state will be needed to reach target groups. This coverage, on a per state basis, will maximize educational effort. The message relayed through the specialist will be specific, clear, and compelling, thereby deepening the knowledge base among the target audience and invoking behavioral change.

Implementation of this program will broaden the knowledge base among health professionals about the risk for certain groups associated with raw oyster consumption. Preliminary results from the ISSC-Flying Fish on-line *Vibrio vulnificus* education course show that a majority of physicians (76%) “strongly agree” they were more confident in identifying and treating *Vibrio vulnificus* infection after completing the course.¹² Although most medical professionals are likely aware of *Vibrio vulnificus* threats, these results suggest that an increase in education is needed for this target audience. To assist in this regard, specialists will coordinate with pharmaceutical companies, medical/health professional associations, and hospital medical staff to schedule small group presentations about the prevention, diagnosis and treatment protocols for illnesses resulting from the consumption of raw oysters. The specialist will attend and seek opportunities to present on *Vibrio vulnificus* risks at national and/or regional professional medical conferences.

Although there is a definite need to enhance *Vibrio vulnificus* education of the medical/health community, efforts need ultimately to focus on the at-risk consumer population. To maximize the reach, a

¹² Bashin, M. 2005. Personal Communication

public relations campaign targeting state and local media events will be conducted. Opportunities for specialists to participate in talk shows (radio and television) to discuss *Vibrio vulnificus* and raw oyster consumption will also be pursued.

Tactic 2. Attend, make presentations and place a booth exhibit at professional conferences.

National, regional and state medical associations have been identified for conference attendance/participation/exhibition. Either the specialist will attend and make presentations at the association meetings or the Foundation will co-sponsor these efforts with the ISSC's state education officers, university staff, and/or state health agencies. The association meetings that are to be considered are listed in Appendix 2. The list is not inclusive, but it represents the types of national, regional and state medical associations of interest.

Tactic 3. Conduct/fund a direct mail campaign aimed at gastroenterologists, emergency room physicians, pharmacists, family practitioners, endocrinologists, epidemiologists, internists, state health departments, hospitals and at-risk support groups/members.

An efficient, cost effective method for contacting the at-risk consumer is through the use of direct mailings targeting medical/health professionals. In this case we propose the use of direct mail to physicians and others in the medical community to educate and to inform these individuals about *Vibrio vulnificus* symptoms and treatments, the risk of raw oyster consumption, and to characterize the at-risk consumer.

The majority of mail received by medical/health professionals is sales related. As such, mail from perceived 'non-credible' sources (i.e., non-state or non-federal entities such as the ISSC, the Foundation, etc.) is often discarded. To increase the likelihood that the mail is actually received by the intended physician, the Foundation will collaborate with state health organizations in the three core states of Florida, Louisiana, and Texas. The States have indicated funds are available for direct mail campaigns targeting medical/health professionals. By using this tactic, the Foundation expects to (1) increase awareness within medical/health community, (2) provide financial support to expand the current direct mailing capabilities of the core states health organizations, (3) augment the direct mailings of the core states to include *Vibrio vulnificus* educational brochures, and (4) compose and forward a letter to the FDA for distribution to medical/health professionals across the United States.

Given the specialties and sub-specialties within the medical/health community, any number of medical/health professionals could come in contact with an at-risk patient, either in the capacity as a first responder to a *Vibrio vulnificus* related illness or through treatment of a pre-existing condition that places the patient in the at-risk category. Therefore, the direct mailing campaign will target gastroenterologists, emergency room doctors, pharmacists, family practitioners, endocrinologists, epidemiologists, internists, state health departments, and hospital staff. For the intended educational message to be effective, repetition is necessary. Considering the seasonal nature of *Vibrio vulnificus* illnesses (illness peaks during summer months) it is estimated that three mailings are required to effectively deliver the intended message to the target audience (one mailing before, during and after the summer season). All efforts will be coordinated with state cooperators and the ISSC.

Tactic 4. Place advertisements, editorials and articles in selective medical trade journals as well as magazines that reach members of the at-risk consumer groups.

As part of the multi-faceted approach to convey our messages to key medical specialists, and to members of the at-risk consumer groups, the Foundation will design and place a series of print advertisements in selective trade journals and newsletters. The primary call to action in these publications will encourage physicians to utilize the ISSC's online continuing education program. The program will offer physicians continuing education units while providing relevant information on *Vibrio vulnificus* diagnosis and treatment protocols. In some cases, the message in medical journals will include a more direct statement about the risks of raw oyster consumption by certain at-risk patients. Another approach will be to submit editorials and case management articles to medical journals/publications. The educational specialist and/or other medical research specialists contracted by the Foundation will draft these articles.

Another type of advertising message will be designed for placement in newsletters and other publications that are mailed to the membership of such organizations as the National and State Liver Foundations, National and State Diabetes Associations, state medical journals and associations, alcohol treatment centers, organ transplant centers, and AIDS/HIV treatment centers. Since these types of publications are mailed only to members who fit our profile of at-risk consumers, the message will be simple and direct: Only Eat Oysters That Have Been Thoroughly Cooked.

With all advertising campaigns, frequency is the key to gaining awareness and penetration. Therefore, journals and newsletters providing the most cost effective coverage and penetration will be selected. A partial listing of national medical publications that the Foundation will consider for placement of print advertisements and/or articles can be found in Appendix 3.

In conclusion, the placement of advertisements, editorials and articles in selective national and regional medical trade journals as well as placement in newsletters that target persons with certain pre-existing medical conditions will accelerate the process of information dissemination to selective physician specialists and at-risk consumer groups.

Strategy 2. Expand and improve direct communication with, and education of, at-risk consumers.

<p>Tactic 1. Development of a <i>Vibrio vulnificus</i> education identifier or logo.</p>

Central to any campaign is the broad recognition of an intended message. Given the number of cooperating organizations devoted to *Vibrio vulnificus* education, a physician, at-risk consumer, or the general public could become overwhelmed by the multitude and diversity of *Vibrio vulnificus* educational materials currently being published and distributed. To strengthen and unify the intended message of *Vibrio vulnificus* educational campaigns, a central connection or bond must be established, one such method is the creation and use of an identifier logo.

A logo is an illustration of a company's or organization's image, which is then communicated to your prospective audience in a graphic or symbolic way. The logo can be used for everything from stationery, banners, websites, advertising, T-shirts and signs. A professionally designed logo attracts attention, and leaves a lasting impression in people's minds. For example the Nike "swoosh" and the heart with a torch symbol of the American Heart Association.

The Florida Bureau of Seafood Marketing has agreed to lend the services of their graphic artists to design a logo. A series of logo samples will be drafted by the Bureau and distributed to the Advisory Group for review and evaluation. Once finalized, the Bureau will be responsible for creating and forwarding both electronic and print formats of the logo to the Foundation. The Foundation will assume all property rights of the logo and its use. Use of the logo will be utilized on publications, web pages, research projects, presentations, formal documents, letters, advertisements, mailings related to *Vibrio vulnificus* education and Gulf of Mexico oysters, and other related materials. Written permission from the Foundation's Executive Director or Board of Trustees will be required prior to the use of the logo by any interested party. This will ensure proper use of the logo and the commitment of the user to the reduction of *Vibrio vulnificus* illnesses.

A simple, well designed logo and identifier will amplify the organization's identity, goals, spark instant recognition, and resonate and reinforce the organization's core values. In the case of the *V. vulnificus*, the logo would identify individuals, organizations, and institutions actively committed to a reduction in *Vibrio vulnificus* related illnesses.

Tactic 2. Create a dedicated eye-appealing *Vibrio vulnificus* website to assist in the education of at-risk consumers.

Usage of, and dependence upon, the internet for self-education and research has increased precipitously within the last decade, particularly for people trying to acquire information regarding medical conditions, symptoms, and treatments. Information regarding the risks of *V. vulnificus* is rarely included on corporate (for-profit), health-based websites, and only a small number of websites are dedicated to *Vibrio vulnificus* education. Although the intent of these websites is to increase the knowledge base available for interested parties while keeping expenses at a minimum, the simple and nondescript design of the websites might limit website usage due to a perceived non-professional and, perhaps less credible message. By producing a more professional, eye-appealing, and interactive website dedicated to *Vibrio vulnificus* education, website usage and retention of information contained within the website are likely to increase.

The Foundation proposes to develop and host a website designed primarily to attract and educate members of the at-risk consumer group, with a secondary goal of educating the public-at-large, the general oyster consumer and the at-risk oyster consumer. Website visitors will be provided with: (1) an overview of *Vibrio vulnificus*, its association with Gulf of Mexico oysters, and pathogenesis; (2) a description of *Vibrio vulnificus* illness symptoms and treatments available; (3) a definition of an at-risk consumer and medical conditions affecting at-risk consumers; (4) descriptions of post-harvest processes and oyster value-added products; (5) oyster recipes; (6) contact information for state health departments, spokespeople, the Foundation, ISSC, etc.; and (7) a list of *Vibrio vulnificus* identifier logo users to define individuals and organizations devoted to *Vibrio vulnificus* education.

Website promotion will be accomplished through a variety of media including radio, television, and print advertisements; a limited number of internet advertisements will also be created. A tracking program will be linked to the webpage and will record the number of page views and, if applicable, the source internet advertisement directing the page view. This will allow the principal investigators to assess the effectiveness of their internet advertising campaign.

Tactic 3. Develop and disseminate new educational materials as well as reproduce and expand the distribution of existing educational materials.

Numerous organizations within the core states, as well as other organizations, have produced educational print material designed to inform at-risk consumers of the risk of consuming raw oysters. The Foundation is currently unaware of any project aimed at measuring the direct effectiveness of these publications, but limited information is available through a survey conducted by the ISSC.¹³ Because this survey was conducted prior to an increase in educational efforts by a number of organizations, information contained within a complementary follow-up survey will allow interested parties to review the effectiveness of past educational campaigns.

Upon publication of the final ISSC survey results, Foundation staff, contracted project personal, the Advisory Group, and collaborating agencies/organizations will review this document and formulate key recommendations to include in the design and creation of new educational brochures targeting the at-risk oyster consumer. These recommendations will be forwarded to a graphic artist for the design and creation of a new brochure(s). Recognizing that some individuals in the Gulf oyster industry are concerned that existing brochures may unintentionally cause targeted and untargeted consumers to avoid all oysters, efforts will be taken to include positive messages in the text of the document.

In some cases the dissemination of educational print material has been limited due to inadequate funding; revisions and improvements were also limited due to funding. The Foundation will assist in the review, coordination, revision and expanded distribution of currently published educational materials. This activity will include, but not be limited to brochures, flyers, and mat boards for use in doctor's offices, trade shows, professional conferences, editorials, and articles in medical and consumer journals.

Tactic 4. Utilize radio and television commercials to broadcast and advertise messages designed to steer targeted, at-risk consumers away from eating raw oysters.

Multi-media advertising campaigns are effective instruments for relaying messages and/or influencing behavioral changes in a target audience. An increase in the number and type of media utilized during an advertising campaign is likely to increase the affected audience, especially when considering television and radio (millions of viewers and listeners). The Foundation proposes the use of highly creative television and radio advertisements in the core states of Texas, Louisiana and Florida. Radio and television offer the fastest and most cost effective means to expand awareness among the general public.

Done properly and creatively, radio and television can deliver a targeted message about who should only eat oysters that have been thoroughly cooked. To date, most oyster industry educational and marketing efforts have revolved around the creation and dissemination of print material. Use of radio and television advertising represents a new tactic for the oyster industry to use in educating the public. This tactic is expected to create broad awareness, not just among at-risk consumers, but to create a spill over effect where the general public shares information with friends and relatives who might be at risk.

The message contained in the advertising will be worded to avoid needlessly scaring the general public from eating raw oysters. Like some anti-smoking messages aimed at teenagers (e.g. truth.com), our message will have a "call to action" that unequivocally addresses the need to educate at-risk consumers about raw oyster consumption risks and the importance of heeding the advice to only eat oysters that

¹³ Flattery and Bashin. 2002. A Baseline Survey of Raw Oyster Consumers, ISSC OnPoint.

have been thoroughly cooked.

Strategy 3. Develop strategic partnerships to broaden message delivery to at-risk consumers.

<p>Tactic 1. Develop partnerships with major pharmaceutical companies that produce and distribute medications used by members of the at-risk consumer groups.</p>
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Pharmaceutical firms routinely host educational forums and working dinner meetings to inform members of the medical community about the diagnosis and treatment of medical conditions. These events provide the companies an opportunity to review and compare their products against competing brands while directly promoting and educating their target audience.

Since these forums are an established practice and means for pharmaceutical companies to reach and educate members of the medical community, we will seek to partner with selective companies that manufacture and distribute medications for the treatment of diabetes, liver disease and other medical conditions (e.g. Eli Lilly and Glaxo Smith Kline) that affect at-risk consumers.

This tactic may take another form. Use of physician telephone and web conferencing is another tool used by pharmaceutical companies to reach and educate members of the medical community. These approaches require less commitment of time by participating physicians and both services offer the potential for continuing education credits. The telephone and web conferencing programs, as well as a series of hosted evening dinner meetings may be launched independently or in conjunction with major national pharmaceutical firms.

Tactic 2. Develop and/or expand alliances with such groups as the National/State Liver Foundation, National/State Diabetes Association, State Medical Associations, medical staffing offices at hospitals, organ transplant centers, AIDS/HIV treatment centers, the Interstate Shellfish Sanitation Conference, State seafood marketing and promotion agencies, and the National Fisheries Institute.

Considering the limited size of the target audience, efforts must be aimed at educating the at-risk consumer directly, and not just indirectly through medical/health professionals or the general public. When considering the diversity of medical conditions affecting at-risk patients and the groups and organizations that provide support for these individuals, it is only logical to form partnerships with these organizations to disseminate *Vibrio vulnificus* education information and extend/enhance the quality of life for their constituents.

Through previous efforts, the ISSC has formed partnerships with health/support organizations such as the American Liver Association (National Chapter and San Diego, Los Angeles, and Florida Chapters), the National Hepatitis Foundation, Iron Overload Foundation, and the National Hemochromatosis Society and found these partnerships to be extremely effective at educating the at-risk consumer. To compliment the efforts of the ISSC, the Foundation will provide funding support to local and regional health/support organizations within the states of Louisiana, Texas, and Florida.

Individual organizations typically publish a website, newsletter, and/or brochure aimed at educating and informing members of relevant topics. Funding will be provided to individual organizations to assist with the necessary supplies needed to create and disseminate these important publications. The Foundation will endeavor to augment publications with inserts and advertisements warning members of the risks associated with raw oyster consumption. Considering the access gained to at-risk consumers, the potential impacts and illness reductions achieved by partnering with health/support organizations is thought to be significant. Organizations will be contacted and informed of available funds through one-on-one contact, promotion on the Foundation's website, and inclusion of the program in our quarterly newsletter.

Conclusion

With the concerted effort of the Advisory Group along with state and regional agencies, the Foundation will implement this strategic education and communications plan for the at-risk oyster consumer. Through the implementation of the strategies and tactics identified here, the Foundation anticipates that the primary goal to reduce the incidence of *Vibrio vulnificus* illnesses and deaths among the at-risk groups in the states of Florida, Louisiana, and Texas will be accomplished. Thereby, offering safe and healthy options for all seafood consumers.

Appendix C: Summary of the Final Report of Beuerman Miller Fitzgerald

Greg Beuerman of Beuerman Miller Fitzgerald (BMF) served as Senior Education Coordinator under Contract #96-02-315246/0, funded through NOAA/NMFS Grant #NA03NMF4270393. All efforts were designed and assisted by an Advisory Group (Appendix A) and followed the objectives of the Strategic Plan (Appendix B). BMF participated in three Advisory Group conference calls, attended three meetings of the Advisory Group and two meetings of the ISSC, and maintained constant communication with Foundation staff.

BMF recruited Dr. Fred Lopez of the LSU Health Sciences Center in New Orleans, LA and provided him with media opportunities including radio and talk shows and interviews with the print media. BMF also developed content for radio and television advertisements (Appendix F) and simultaneously researched options for the most cost-effective placement of radio and television ads in Louisiana, Texas and Florida. Radio exposure was obtained in Dallas, Ft. Myers, Houston, Miami, New Orleans, Panama City, Pensacola and Tampa. Television broadcasts were obtained in Houston and Dallas.

Pharmacy bags (Appendix I) with educational ads were produced (8 runs of 24,000) and distributed by Kroger Pharmacy.

BMF developed a database of approximately 100 organizations in the health and restaurant fields in Texas, Florida and Louisiana. The list can be obtained from the Foundation. An invitational letter was sent to each organization directing them to the <http://www.beoysteraware.com> website (Appendix G). As a result, approximately 15,000 brochures were distributed and two "blast emails" (Appendix J) were sent to members of doctor and nurse organizations in Texas and Florida to raise awareness of the need to better educate their patients about risks associated with *Vibrio vulnificus*.

A comprehensive DVD of all educational materials and advertisements designed for use during the "Be Oyster Aware" campaign was compiled and distributed to interested groups. These materials are also available at www.beoysteraware.com (Appendix G).

The full report with appendices is available from the Foundation offices:
Lincoln Center, Suite 740
5401 West Kennedy Boulevard
Tampa, FL 33609
(813) 286-8390
www.gulfsouthfoundation.org

Appendix D: Summary of the Final Report of the Interstate Shellfish Sanitation Conference

The Interstate Shellfish Sanitation Conference (ISSC) was contracted by the Gulf & South Atlantic Fisheries Foundation, Inc. to allow funding assistance for the State *Vibrio vulnificus* (*Vibrio*) Facilitator to coordinate the efforts of the ISSC and member states to conduct a *Vibrio* disease reduction effort. The State Facilitator provided direct assistance to the states of Florida, Alabama, Mississippi, Louisiana, Texas and Georgia to develop state *Vibrio* management plans and/or *Vibrio* Education Programs in response to Issue 00-201 as approved by the 2001 ISSC Conference. The goal of this effort being to assist in meeting and maintaining the established *Vibrio* illness reduction rate through education.

To date, each of the required states has significantly expanded their *Vibrio* educational approach and effort. The State Public Health Facilitator has completed the requirements under Award # 96-03-45000/0 funded through NOAA/NMFS Grant #NA03NMF4270393. The Facilitator planned, conducted and summarized two meetings of the *Vibrio* Education Committee, guided each state coordinator in the preparation of their *Vibrio* Education Plan, and reviewed the results of the state plans and recommended improvements. Additionally, the Facilitator reviewed the online curriculum for physicians, nurses and dieticians, promoted both the access and completion of the curricula and the dissemination of *Vibrio* education tools available from the ISSC Executive Office or online at <http://www.issc.org>, and kept the committee members and state coordinators informed of developments on *Vibrio vulnificus*. Assistance was also provided at Gulf of Mexico industry meetings organized to discuss the Risk Calculator developed by FDA.

The full report with appendices is available from the Foundation offices:
Lincoln Center, Suite 740
5401 West Kennedy Boulevard
Tampa, FL 33609
(813) 286-8390
www.gulfsouthfoundation.org

Appendix E: Summary of the Final Report of the Louisiana State University

During this program, the Louisiana State University worked to increase public awareness of shellfish-borne illnesses through the Oyster *Vibrio vulnificus* (*Vibrio*) food safety education program. Through contract #96-01-45360/0 funded under NMFS/NOAA Grant #NA03NMF4270393, Dr. Sally Soileau assumed the primary responsibility to serve as the Oyster *Vibrio* Education Coordinator for the program and assist in the implementation of an education program targeting physicians, health care professionals, emergency care facilities and other health care personnel.

Dr. Soileau assumed responsibility for organization of all activities and presentations under this agreement. Through personal contacts and manned educational booths/displays at conventions and workshops, the target audience was presented with an array of *Vibrio* educational materials and verbal information concerning “at-risk” consumers and overall disease education. Through working closely with the team on the ISSC *Vibrio* Education Subcommittee, and regularly planning and reporting educational efforts, much was accomplished.

Education presentations were organized and carried out at numerous events to include, but not limited to:

- Louisiana Dietetic Association
- Council on Aging
- Grandparents raising Grandchildren State Conference
- American Association of Diabetes Educators
- Emergency Nurses Conference
- The Liver Meeting
- American Dietetic Association Food & Nutrition Conference Expo
- American Association of Diabetes Educators
- Southern Nurses Research Association
- Society of Gastroenterology Nurses Associates, Inc.
- American Diabetes Association
- Meeting of the American College of Gastroenterology

In addition, *Vibrio vulnificus* education information was made available to approximately 3,500 participants each year from 2005-2008 at the Louisiana Restaurant Association Food Expo in New Orleans, Louisiana. Seniors and other consumer groups were made aware of programs presented through library workshops, mass media, health fairs, personal contacts and mailed information.

The full report with appendices is available from the Foundation offices:

Lincoln Center, Suite 740
5401 West Kennedy Boulevard
Tampa, FL 33609
(813) 286-8390
www.gulfsouthfoundation.org

Appendix F: Radio and Television Advertisements

Be Oyster Aware Campaign - Radio Scripts

Client: GSAFFI

Product: Oyster Campaign

Title: "Be Oyster Aware"

SPOT #: OYS-06-01R

Length: :30

Date: June 30, 2006

Revision #3 10/24/06

ANNCR:

When it comes to eating raw oysters ...

Be Cautious: Most people can safely eat raw oysters, but some people at-risk cannot.

Be Informed: Find out if you have a specific medical condition, such as liver disease or diabetes that puts you at-risk.

Be Sure: If you are at-risk, make sure your oysters are always fully cooked.

Be Smart: See your physician and get al the facts at [www . . .](http://www.beoysteraware.com)

Be Oyster Aware.com

Client: GSAFFI

Product: Oyster Campaign

Title: "Be Oyster Aware"

SPOT #: OYS-6-02R

Length: :15

Date June 30, 2006

Revision April 24, 2007

ANNCR:

When it comes to eating raw oysters . . .

Be Informed.

Be Sure

Be Smart. Get all the facts on who can safely eat raw oysters and those few at-risk who cannot.
Go to [www](http://www.beoysteraware.com)

Be Oyster Aware.com

Be Oyster Aware Campaign - Television Scripts

Client: GSAFFI
Product: Oyster Campaign
Title: "Be Oyster Aware"

SPOT #: OYS-06-03T
Length: :30
Date: June 30, 2006
Revision #2: 10/23/06

OPEN ON WHITE SCREEN AND FADE
BOTTOM HALF OF SCREEN WITH
A PLATTER OF OYSTERS ON THE
HALF SHELL, SLOWLY TURNING.
TOP SUPER: **Be Cautious**

VO: When it comes to eating raw oysters,
Be Cautious: Most people can safely eat
raw oysters, but some people at-risk
Cannot.

FADE OUT "**Be Careful**" to
"**Be Informed**"
(OPTION: LIST TOP 3 OR 4 MEDICAL
CONDITIONS)
IN SYNC WITH "**Be Sure**" FADE OUT
RAW OYSTERS WITH PO-BOY
FADE OUT "**Be Informed**" to
"**Be Sure**"

Be Informed: Find out if you have a
specific medical condition, such as liver
disease or diabetes, that puts you at-risk.
Be Sure: If you are at-risk, make sure your
Oysters are always fully cooked.

FADE OUT "**Be Sure**" to
"**Be Smart**"
FADE OUT "**Be Smart**" to
"**BeOysterAware.com logo**"
SUPER NOAA LOGO

Be Smart: Get all the facts at [www . . .](http://www.BeOysterAware.com)
Be Oyster Aware.com

Appendix G: BeOysterAware Website

Home Contact News

Educational Specialist

Post-Harvest Processes

Educational Materials

BeOysterAware.com

Be Oyster Aware

When it comes to eating raw or undercooked oysters...

Be Informed.

Be Cautious.

Be Smart.

Be Sure.

BeOysterAware.com

DOWNLOAD BROCHURE

What is *Vibrio Vulnificus*

Vibrio Symptoms/Treatment

Are you an At-Risk Consumer

Oyster Recipes

Millions of people **LOVE** to eat oysters. Whether you eat them in moderation or by the dozen, these delightful mollusks provide a low calorie protein⁽¹⁾ that are an excellent source of zinc, vitamin B-12, and omega-3 fatty acids.⁽²⁾

While not a serious threat to healthy individuals, consumption of raw or undercooked oysters by *at-risk* individuals may cause serious illness or even death from *Vibrio vulnificus* bacteria. If you have liver disease, diabetes or a weak immune system, you should avoid raw oysters.

Without question, there is an overwhelming need to inform *at-risk* oyster consumers about the potential hazard associated with eating raw oysters⁽³⁾. As such, this website is dedicated to educating the oyster consuming public. It provides a thorough background on *Vibrio vulnificus* and the health conditions that place an individual in the *at-risk* category, as well as present tasty oyster products with reduced risk for all consumers to enjoy, including *at-risk* consumers. So, eat your savory oyster treats raw, steamed, fried, charbroiled, grilled....whatever your appetite desires, just **BE OYSTER AWARE!**

[Home](#) | [Contact](#) | [Disclaimer](#) | [Educational Specialist](#) | [Post-Harvest Processes](#)
[Educational Materials](#) | [Vibrio vulnificus](#) | [Symptoms](#) | [Recipes](#) | [News](#)
Designed by Marcello Design, LLC

Appendix H: Banner Ads



Be
Oyster
Aware

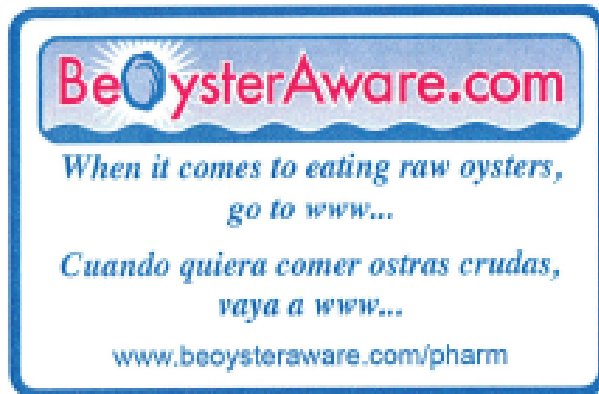
Learn more
about
*Vibrio
vulnificus*
and
raw oysters.



Be
Oyster
Aware

Learn more
about
*Vibrio
vulnificus*
and
raw oysters.

Appendix I: Pharmacy Bag



TX-42360 KROGER PHARM. 2877 S. RICHEY HOUSTON, TX
TX-44530 KROGER PHARM. 4747 RESEARCH FOREST DR. THE WOODLANDS, TX
TX-44540 KROGER PHARM. (3 LOC) 3333 LBJ BLVD, 3335 LBJ BLVD 100, 3335 WEST HARRIS L. FORTWORTH, TX
TX-44550 KROGER PHARM. (3 LOC) 19300 LAKE HOUSTON PKWY., 3820 ATASCOCITA RD., 19611 EASTEX FRWY. - HUMBLE, TX
TX-45260 KROGER PHARM. 13135 LOUETTA ROAD CYPRESS, TX
TX-45740 KROGER PHARM. 13133 VETERANS BLVD. HOUSTON, TX
TX-45750 KROGER PHARM. 5671 TREASCHING SPRING, TX
TX-45760 KROGER PHARM. 18518 HUYKENDAHL SPRING, TX

Appendix J: Email Blast



An important announcement for Healthcare Professionals in Texas, Louisiana and Florida

Re: *Vibrio Vulnificus* and Health Hazards to certain at-risk consumers

Dear Fellow Health Professional:

I am writing today on behalf of a coalition of public and private sector health agencies, medical professionals, universities, and industry partners regarding an on-going health education campaign called, [Be Oyster Aware](http://www.bepysieraware.com).

Be Oyster Aware was designed to increase health-risk awareness among medical professionals and their patients who may be in jeopardy of death or serious illness from ingesting raw shellfish containing the naturally occurring bacteria *Vibrio vulnificus*, most often found in raw oysters harvested in the warm water months in the Gulf of Mexico.

Certain health conditions when present can compromise the immune system thus allowing the *Vibrio vulnificus* bacteria to cause serious illness (primary septicemia) or death. Most commonly, these pre-existing conditions include: alcoholism, liver disease, diabetes, cancer, stomach disorders or iron overload disease.

In addition, our effort is focused on empowering health professionals with valuable knowledge that they can pass onto their patients and colleagues.

Under the auspices of the Gulf and South Atlantic Fisheries Foundation, with funding from NOAA/NMFS this campaign has been implemented in Florida, Louisiana, and Texas, which are three of the core states that report *Vibrio vulnificus*-related illnesses and deaths to the U.S. Food and Drug Administration.

We are asking you and other healthcare professionals to help your patients by doing the following during these warm water months (March through November):

- Direct all patients in the at-risk categories listed above and their family members to our website for more complete and important information www.bepysieraware.com.
- Personally intervene and actively consult any patients who may be at-risk to avoid raw shellfish or other forms of raw protein at all costs.
- Encourage family members of patients at-risk to intervene with their loved ones to help make sure they fully understand the risks to life and health.
- Contact us at lkilleen@ontargetwithbmf.com if you have questions or suggestions that might enable us to reach a larger number of patients and healthcare professionals about these risks.

Thank you for your interest in this important and timely health awareness issue and for helping to save the lives of people who may be at-risk. Again, please do not hesitate to contact us at lkilleen@ontargetwithbmf.com if you have questions or would like additional