

Title: Food Safety Research And Response Network Web Site And Training Program – NPB #04-211

Investigator: Jay Levine

Institution: College Of Veterinary Medicine, North Carolina State University

Date Submitted: 2/23/2010

Industry Summary

The Food Safety Research and Response Network is a national consortium of food-safety researchers and food safety practitioners. Funding from the Pork Board was provided to support the development of a Web Site for the network and to provide funds for travel to support the development of study design and reporting guidelines for commodity-supporting research. The FSRRN Web site (www.fsrrn.net) established with these funds has served as the communication hub for the network since its inception. The site provides the public with access to the contact information and expertise of all participating FSRRN investigators. In addition, it provides summaries of project publications and results, news items relevant to commodity stakeholders, links to information focused on best farming management practices, information about systematic reviews for agriculture, and documents the support of the Pork Board and other sponsors. An internal site requiring investigators to login has provided administrative and other resources for participating investigators. The funding provided to support study design and reporting guidelines for agriculture studies has produced a major advancement in the standardization of guidelines for authors submitting articles to peer-reviewed journals. The effort, REFLECT, (Reporting Guidelines for Randomized Control Trials), was adapted from a similar effort, CONSORT (Consolidated Standards of Reporting Trials), guiding the implementation of intervention trials for human medicine. The REFLECT document is the product of a consensus meeting supported by these Pork-Board and FSRRN funds that brought together 24 biostatisticians, epidemiologists, food-safety researchers, livestock production specialists, and journal editors. The REFLECT statement provides guidelines for intervention trials in support of livestock agriculture and food safety and provides a 22-item checklist to be used by researchers when designing their studies and reviewers when evaluating studies for publication. The REFLECT effort proposed new more consistent terminology for common use in livestock production trials. The REFLECT statement was adapted to guide reporting at the upcoming International Symposium of Epidemiology of Foodborne Pathogens in Pork, and has been endorsed as the method to report random control trials by five research journals that have agreed to publish the document. The REFLECT statement was also incorporated in the 2nd edition of the text *Veterinary Epidemiological Research*. The use of the REFLECT statement, which is focused on livestock trials should improve the design and reporting of studies conducted in support of livestock production and food-safety. A similar set of guidelines previously developed for comparing tests used to diagnosis pathogens by physicians, Standards for the Reporting of Diagnostic Accuracy (STARD), is being adapted for food safety researchers. This effort that was partially supported by Pork Board funds is in

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

For more information contact:

National Pork Board • PO Box 9114 • Des Moines, IA 50306 USA • 800-456-7675 • Fax: 515-223-2646 • pork.org

progress and will introduce standardized guidelines for the evaluation of assays used to detect bacterial pathogens such as *Salmonella*, *Campylobacter*, and *Escherichia coli*, O157:H7 in animal, food, and environmental samples. The guidelines developed by these efforts will facilitate the effective comparison, and interpretation of research studies and assist researchers, pork and other industry workers and policy-makers in their efforts to make informed decisions in support of food safety. Contact: Jay Levine, Jay_Levine@ncsu.edu.

Scientific Abstract:

The Food Safety Research and Response Network is a national consortium of food-safety researchers and food safety practitioners. Funding from the Pork Board was provided to support the development of a Web Site for the network and to provide funds for travel to support the development of study design and reporting guidelines for commodity-supporting research. The FSRRN Web site (www.fsrrn.net) established with these funds has served as the communication hub for the food safety consortium since its inception. The site provides the public with access to the contact information and expertise of all participating FSRRN investigators. For the public and other stakeholders, it provides summaries of project publications and results, news items relevant to commodity stakeholders, links to information focused on best farming management practices, information about systematic reviews for agriculture, and documents the support of the Pork Board and other sponsors. Additional information for food safety researchers about project design, and a manual for systematic reviews in both English and Spanish are available on the site. An internal site requiring investigators to login has provided administrative and other resources for participating investigators, and access to a gallery of images for use in scientific presentations. The funding provided to support study design and reporting guidelines for agriculture studies has produced a major advancement in the standardization of guidelines for authors submitting articles to peer-reviewed journals. The effort, REFLECT, (Reporting Guidelines for Randomized Control Trials), was adapted from a similar effort, CONSORT (Consolidated Standards of Reporting Trials), guiding the implementation of intervention trials for human medicine. The REFLECT document is the product of a consensus meeting supported by these Pork-Board and FSRRN funds that brought together 24 biostatisticians, epidemiologists, food-safety researchers, livestock production specialists, and journal editors. The REFLECT statement provides guidelines for intervention trials in support of livestock and food safety and provides a 22-item checklist to be used by researchers when designing their studies and reviewers when evaluating studies for publication. The REFLECT effort proposed new more consistent terminology for common use in livestock production trials. The REFLECT statement was adapted to guide reporting at the upcoming International Symposium of Epidemiology of Foodborne Pathogens in Pork, and has been endorsed as the method to report random control trials in five journals. These guidelines serve as a framework for researchers and graduate students preparing to submit the results of their research for publication, and for reviewers assessing if the research is suitable for publication in peer-reviewed journals. The REFLECT statement was also incorporated in the 2nd edition of the text *Veterinary Epidemiological Research*. The use of the REFLECT statement, which is focused on livestock trials should improve the design and reporting of studies conducted in support of livestock production and food-safety. A similar effort, that reflects prior guidelines developed for the comparison of tests for detecting pathogens in humans, Standards for the Reporting of Diagnostic Accuracy (STARD) is being adapted for use by food-safety researchers and agricultural commodities. This effort that was partially supported by Pork Board funds is in progress and will introduce standardized guidelines for the evaluation of assays used to detect bacterial pathogens such as *Salmonella*, *Campylobacter*, and *Escherichia coli*, O157:H7 in animal, food, and environmental samples. The guidelines developed by these efforts will facilitate the effective comparison, and interpretation of research studies and assist researchers, pork and other industry workers and policy-makers in their efforts to make informed decisions in support of food safety. Contact: Jay Levine, Jay_Levine@ncsu.edu.

Introduction:

The Food Safety Research and Response Network is a national consortium of food-safety researchers and food safety practitioners. Funding from the Pork Board was provided to support the development of a Web Site for the

network and to provide funds for travel to support the development of study design and reporting guidelines for commodity-supporting research. The FSRRN Web site (www.fsrrn.net) established with these funds serves as the communication hub for the food safety consortium. It provides the public with: 1) Access to the contact information and expertise of all participating FSRRN investigators; 2) Publications reflecting the product of FSRRN studies; 3) News items related to the safety of livestock food products; and 4) Information about best agricultural practices supporting the safety of pork and other livestock products.

Objectives:

1. Develop a Web Site to serve as the communication hub for the Food Safety Research and response network
2. To provide travel funds for laboratory workers to receive hands-on laboratory training.
3. Provide travel and meeting support for census meetings focused on establishing guidelines for food-safety research.

Materials & Methods:

Objective 1: Develop a Web Site to serve as the communication hub for the Food Safety Research and response network

A web design company, Page Progressive (previously Technigrapha) was hired to develop the web site for the network. The FSRRN team was consulted to determine what types of items should be included on the web site, and what functionality was needed to support their work. Initial design renderings were provided and shared with FSRRN researchers for review. Feed-back was obtained from FSRRN members, and the overall design content, and navigational features refined after several iterations of review. A web-assistant was hired to facilitate maintenance of the web site.

The project director, Jay Levine, served as web master for site development and site maintenance. The web site included a content management system that facilitated varied levels of control over web page development and site maintenance. Investigators all received login and password information, their avatars were posted on the site, and they then had the opportunity to input professional information (e.g. laboratory web sites), they wanted to share with other Network members and the public. Content for site development was provided to the site developer, and the web master and web assistant added content to the site, and have maintained the site since its inception. After two years of use, and additional feedback from FSRRN members the site was redesigned to enhance its visual appeal, remove features that were not being used, and improve navigational features.

Objective 2: To provide travel funds for laboratory workers to receive hands-on laboratory training.

An element of the web site was developed to inform commodity and other laboratory workers about an opportunity for them to travel to and work within the laboratories of FSRRN researchers. Investigators were contacted and informed about the opportunity, and encouraged to speak with commodity colleagues and other investigators about the opportunity. An on-line form was created on the web site to facilitate application to the program. A network of investigators in the European Union working with the FSRRN were also informed about the opportunity.

Objective 3: Provide travel and meeting support for census meetings focused on establishing guidelines for food-safety research.

Teams of investigators with the needed expertise were identified by team members and commodity worker colleagues for participation in the REFLECT and STARD-like efforts. The meetings were schedule, and needed arrangements were made with hotels and airlines, and a department accountant was identified to work with participants to facilitate submission of receipts and reimbursement of the travelers and hotels providing services for the meetings.

Results

Objective 1: Develop a Web Site to serve as the communication hub for the Food Safety Research and response network

The FSRRN web site was established at the inception of the FSRRN. The site was truly a state-of the art use of a web content management system to support the interactions of a large consortium of individuals. It facilitated communication between members, and provided easy public access to network information, as well as information useful for pork and other commodity workers. The site's web content management system provided substantial control to the web master and web assistant, and its user friendly interface facilitated rapid modification and posting of site content. The internal site component of the web site that was produced facilitated: 1) personal control of information for posting by investigators; 2) posting of news items of interest to investigators, commodity workers and the public; 3) taking polls of FSRRN investigators; 4) creation of forms for administrative purposes and submission of project reviews and reports; 5) A discussion forum; 6) An image gallery for use by investigators in research presentations and teaching; and 7) the opportunity to share documents by upload and download files. A complete redesign of the site was eventually made that reflected these comments and suggestions. Features that were not being used by FSRRN investigators, such as the discussion forums, were eliminated from the site, and the overall appearance and navigational features of the site were refined. A new version of the content management system was introduced to manage the new site. Since July 2009 when site-hosting functions were updated, the site has been visited more than 43,000 times (> 480,000 hits). The first page of the Pork Board Funded web portal and Web site use statistics is provided below. **FSRRN Pork-Board Funded Web Portal:** www.fsrrn.net



Did you know?

The U.S. pork industry is responsible for more than \$72 million in total domestic economic activity.



Hello Dr. Levine!
[Log out](#) | [Edit Profile](#) | [Administration Menu](#)



- Food Safety Investigators
- FSRRN Food Safety Projects
- Administrative Core
- Epidemiology Core
- Microbial Detection Core
- Food Safety Response Team
- Network Publications
- Systematic Reviews
- Agricultural Commodity BMPs
- Advisory Board/Committees
- Research Opportunities

Food Safety News

- Russian food claims may be false (2010/1/19)
- Mixed message on Bisphenol A (2010/1/16)
- Salmonella in peppers (2009/7/7)
- Widespread tomato blight (2009/7/6)

Upcoming Events

- ▶ (continuing) - 6th Mar American Association Swine Veterinarians
- ▶ 4th Mar NC Pork Council Price Risk Management Workshop
- ▶ 9th Jun World Pork Expo
- ▶ 28th Jul National Cattleman's Beef Association Annual Convention and Summer Conference

Recent Outbreaks and Recalls

[Click here](#) for information about recent outbreaks of food-borne illness and product recalls.

[Add an Event](#)

Member Links:

- Team Resources
- Image Gallery
- Internship Program
- Lab. Training Program
- Sample/Isolate Database
- Polls
- Member Articles
- FAQs

The FSRRN Journal

The newsletter of the Food Safety Research and Response Network



Featured Cooperating University:

NC State University

[View all cooperating universities](#)

Food Safety Spotlight



Narry Tiao is an Emerging Infectious Disease Fellow at the Centers for Disease Control and Prevention in Atlanta, working in the molecular epidemiology laboratory in the division of parasitic diseases. Her current project is titled Multilocus Sequence Typing of *Cryptosporidium hominis* in the United States in 2008.

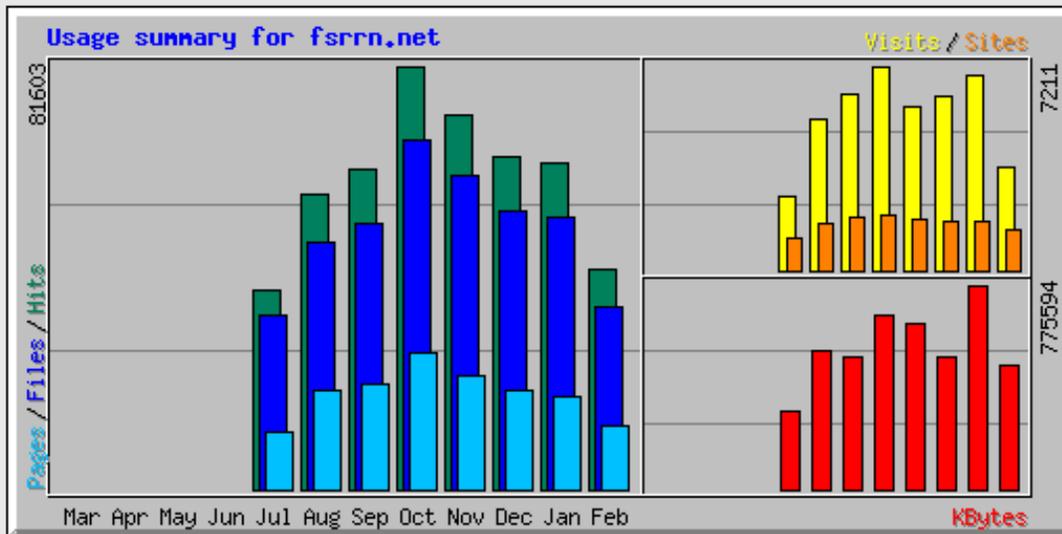


Funding for the FSRRN is provided by the USDA Cooperative State Research, Education and Extension Service National Research Initiative.



Funding supporting the development and maintenance of the FSRRN web site is provided by the National Pork Board.

[View all: Sponsors / Partners](#)



Summary by Month										
Month	Daily Avg					Monthly Totals				
	Hits	Files	Pages	Visits	Sites	KBytes	Visits	Pages	Files	Hits
Feb 2010	1841	1532	535	157	1442	469810	3615	12319	35253	42356
Jan 2010	2032	1689	579	221	1746	775594	6876	17950	52382	63017
Dec 2009	2065	1724	621	198	1714	500642	6166	19278	53468	64026
Nov 2009	2401	2018	726	193	1824	632715	5795	21781	60558	72058
Oct 2009	2632	2178	845	232	1957	662836	7211	26224	67527	81603
Sep 2009	2057	1710	675	206	1864	504750	6205	20250	51318	61736
Aug 2009	1833	1534	618	172	1656	524140	5338	19164	47572	56831
Jul 2009	2023	1764	573	138	1126	296116	2622	10889	33520	38447
Totals						4366603	43828	147855	401598	480074

Objective 2: To provide travel funds for laboratory workers to receive hands-on laboratory training.

Although we established an opportunity for commodity laboratory workers to travel to receive laboratory training, we did not have laboratory workers take advantage of the program. We established an on-line form for commodity workers to apply to the program using the form capabilities of the established web site. We informed network colleagues about the opportunity and encouraged them to have industry contacts take advantage of the program. We also opened the opportunity up to colleagues overseas, but did not have anyone take advantage of the program. After consulting with our Pork Board colleagues we revised the effort, eliminated the laboratory training opportunity and created a third objective.

Objective 3: Provide travel and meeting support for census meetings focused on establishing guidelines for food-safety research.

REFLECT Initiative

The team assembled to participate in the REFLECT effort met and reviewed the current state of trials being conducted to improve livestock management practices in support of food safety. Based on their discussions a standardized vocabulary for use in intervention trial research was developed. Working with this lexicon the

team then developed guidelines for reporting interventional trials that serve as a template for researchers and their students when designing and submitting studies for review. The proposed guidelines were distributed for broader review and comment. These guidelines also serve as a framework for reviewers evaluating articles for potential publication in peer-reviewed journals. A second meeting was held of a smaller group assembled to write the document. The guidelines have been adapted by various food-safety journals as a framework for potential authors and use by their reviewers: Journals adapting REFLECT include: Preventive Veterinary Medicine, Zoonoses and Public Health, The Journal of Food Protection, The Journal of Veterinary Internal Medicine, and The Journal of Swine Health and Production.

The process used to develop the guidelines and the guidelines have been presented at numerous venues to food-safety researchers and reviewers.

Related Presentations

O'Connor, A.M., J Sargeant, P Bennett, J Dickson, I Gardner, M Torrence. Methods and Processes for modifying the CONSORT statement for livestock interventions studies. [FSRRN]. In: Conference of Research Workers in Animal Diseases, Chicago, IL. 6-8th Dec, 2008

O'Connor, A.M. Modifying the CONSORT statement for livestock intervention trials. Australian College of Veterinary Scientists college science week scientific meeting 2-4th July 2009

O'Connor A.M., Sargeant J, Gardner I, Dickson J, Bennett P, Torrence M.E. Standards for reporting clinical trials: The REFLECT statement for clinical trials in veterinary medicine. 12th International symposium on veterinary epidemiology and economics, Durban, South Africa, 10-14th August, 2009.

O'Connor, A.M. Establishing Guidelines for Reporting Clinical Trials: An Extension of the CONSORT Statement for Trials Involving Livestock with Production, Health, and Food Safety Outcomes. American Association for Bovine Practitioners, Omaha Convention Omaha, Nebraska, 10-12th September, 2009.

O'Connor, A.M. Standards for reporting clinical trials: The CONSORT statement for clinical trials in livestock. Application to food safety. Annual Meeting of the American College of Epidemiology, Washington D.C.-Silver Spring, 12-15th September, 2009.

Related Publications

O'Connor, A.M., et al., The REFLECT statement: Methods and processes of creating Reporting Guidelines For Randomized Control Trials for livestock and food safety. *Prev. Vet. Med.* (2010), in press

O'Connor, A.M., et al., The REFLECT statement: Methods and processes of creating Reporting Guidelines For Randomized Control Trials for livestock and food safety. *Zoonoses and Public Health.* (2010), 57:95-104

O'Connor, A.M., et al., The REFLECT statement: Methods and processes of creating Reporting Guidelines For Randomized Control Trials for livestock and food safety. *Journal of Food Protection.* (2010), in press

O'Connor, A.M., et al., The REFLECT statement: Methods and processes of creating Reporting Guidelines For Randomized Control Trials for livestock and food safety. *Journal of Veterinary Internal Medicine.* (2010), in press

O'Connor, A.M., et al., The REFLECT statement: Methods and processes of creating Reporting Guidelines For Randomized Control Trials for livestock and food safety. *Journal of Swine Health and Production.* (2010), in press

Effort to Improve Reporting of Test Comparisons

A second effort building on the experiences and successes of REFLECT was initiated to develop guidelines for the comparison of tests used to detect bacterial food safety pathogens. A team was assembled, and third partner, the National Cattlemen's Beef Association was identified to co-sponsor the meeting and provide funds for a follow-up meeting for editorial purposes. The effort, which is on-going, focused on adapting guidelines previously developed for the evaluation of diagnostic tests by physicians. Two meetings have been held, and a framework and check-list for food-safety researchers that can be used when preparing to report studies to peer-reviewed journals was developed. These guidelines are being refined for broader review and eventual publication and potential adoption by peer-reviewed journals.

Discussion:

The web site established to support the FSRRN played an important role in establishing a national presence for the FSRRN consortium. It has facilitated ready contact with FSRRN investigators and access to FSRRN-related efforts by the public and pork and other commodity stakeholders. As an information resource it provides a conduit to guidelines supporting best-management practices in support of the production of pigs and other livestock species. Investigators have effectively used the site to access administrative materials, to provide reviews and submit progress reports. The FSRRN site has fulfilled its intended purpose and has also served as a model for similar web sites that were subsequently developed by other networks.

The REFLECT and on-going STARD-like efforts focus on enhancing the quality of food-safety research. These initiatives evolved from the FSRRN's adaptation of systematic review methodology for use in production agriculture. Systematic reviews have been effectively used by the human medical profession to evaluate therapies and medical procedures in support of human health. The FSRRN published English and Spanish version manuals for conducting systematic reviews on the FSRRN web site, and conducted reviews of food-safety intervention strategies conducted in support of pork and broiler production. These reviews identified marked flaws in study design and reporting that minimized the ability of the investigators conducting the systematic reviews to identify viable intervention strategies. The REFLECT meeting supported by the Pork Board and subsequent published recommendations have been adopted by numerous journals as guidelines for authors and reviewers. By establishing a checklist of design and reporting criteria that need to be addressed by authors the REFLECT document has helped establish the foundation needed to facilitate future comparisons of intervention trials. The effort in progress that has also been supported by the Pork Board to establish guidelines for facilitating the comparison of new techniques for detecting bacterial food safety pathogens should be of similar benefit to livestock industries. The guidelines will help investigators, policy makers and pork and other commodity laboratory workers identify the most appropriate tests for detecting food-safety pathogens in the various animal, food and environmental matrices that need to be evaluated. In this manner these efforts should collectively enhance the food safety of pork and other livestock products.