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# Nationally Connected Network of Trainers Empowers Fishers as Medical First Responders: A Case Study in Collaboration and Capacity Building

Ashleigh Palinkas<sup>a</sup>, Amelia M. Vaughan<sup>b</sup>, Shannon Eldredge<sup>c</sup>, Leann Cyr<sup>d</sup>, and Amanda Gladics<sup>b</sup>

<sup>a</sup>California Sea Grant, Scripps Institution of Oceanography at University of California, San Diego, California, USA; <sup>b</sup>Oregon State University, Corvallis, Oregon, USA; <sup>c</sup>Fishing Partnership Support Services, New Bedford, Massachusetts, USA; <sup>d</sup>Alaska Marine Safety Education Association, Seattle, Washington, USA

## ABSTRACT

Immediate access to advanced medical care in the event of an emergency or injury is not equitable across socioeconomic, occupational, and environmental conditions. Research has shown that basic first aid techniques, when standardized and provided to the public, can significantly improve victim survival in a traumatic event. The Fishing First Aid & Safety Training (FFAST) considers these factors to provide accessible, low, or no cost training across coastal regions of the United States that is adapted specifically for commercial fisheries. The foundation for FFAST is rooted in the theory and practice of austere medicine, which is generally practiced where traditional medical infrastructure, resources, or facilities are absent. Austere medicine often requires decision-making with limited information and resources to optimize patient outcome. FFAST curriculum emphasizes regional adaptations to fit specific fishing audiences and hands-on training and skills practice. Training is delivered using in-person instruction by culturally competent instructors, embedded within fishing communities throughout the United States. To enhance training quality and sustain instructor capacity, we have established a nationally connected network of trainers who actively collaborate to build capacity to provide FFAST to the communities in their respective regions. We support the network through regular all-team meetings to exchange knowledge and report outcomes, and inter-regional train-the-trainer coordination so each partner benefits from best practices and lessons learned across the alliance. The collaborative network supports all partners to meet commercial fishing professional's growing demand for FFAST training.

## KEYWORDS

Austere medicine; capacity building; commercial fisheries; community of practice; first aid; IFISH 6; occupational injuries; workplace training

## Background

Commercial fishing is a dangerous occupation. Commercial fishers in the US face increased safety hazards while working at sea,<sup>1</sup> increased time to treatment in the event of an emergency, and increased barriers to access more extensive training in austere medicine and wilderness first aid. In the United States, each fishing vessel is recommended by US Coast Guard (USCG) requirements under 46 CFR § 28.210 to have at least one crew member trained in Basic First Aid (BFA) and cardiopulmonary resuscitation (CPR).<sup>2</sup> However, community-level BFA/CPR training courses available in many regions of the United States lack pertinent information and skills training specifically applicable to the work environment out at sea and on a working vessel, which can be hours if not days away from advanced

medical care. FFAST instructors hold current CPR/BFA/Automated External Defibrillator (AED) Instructor certification from accredited organizations such as the American Heart Association (AHA), American Red Cross (ARC), and American Health & Safety Institute (HSI). FFAST instructors are additionally qualified to teach from wilderness first aid principles, because they complete a Wilderness First Responder training (80 h). Therefore, participants who successfully complete FFAST receive a BFA/and CPR/AED certification that fulfills USCG requirements for CPR/AED/BFA and remains current for 2 years.

Austere medicine is the practice of life-preserving skills without standard modern resources such as organized and structured hospital systems.<sup>3</sup> It encompasses a range of applications such as

Tactical Combat Casualty Care (TCCC), which is presently the standard for battlefield trauma care in the US Military and for many allied nations<sup>4</sup>; and wilderness first aid, which is intended for nonmedical professionals for whom first aid delivery is a secondary responsibility.<sup>5</sup> This applies to the captain or deckhand on a commercial fishing vessel and is derived from evidence-based medicine and the most current first aid practices. Nationally recognized training programs in austere medical first aid often present barriers for commercial fishers in the US due to the costs incurred from tuition ( $\geq$ \$600 USD) and work time lost to complete certification coursework (5+ days).<sup>6</sup> The Fishing First Aid & Safety Training (FFAST) program offers an example of how increased access to adapted wilderness medicine can improve safety and emergency medical response for a wide variety of austere environments encountered by commercial fishers. Nonfatal injuries, which can result in permanent disability, provide an opportunity for austere medicine practice in commercial fisheries whose work takes place in a wilderness context.

Best practices for offering FFAST to fishing fleets across the country include an established and shared storage location for all training materials, including checklists of equipment, teaching slides, and student feedback forms; regular all-team meetings to share updates, experiences, and ideas; visits and observations between regions, including attendance and participation in cross trainings; and regular troubleshooting to address challenges in the curriculum, regional variance, or emerging issues.

### ***iFish6 panel discussion***

Practitioners from four different organizations (Oregon State University [OSU]/Oregon Sea Grant [OSG], Alaska Marine Safety Education Association [AMSEA], Fishing Partnership Support Services [FPSS], and California Sea Grant [CSG]) were brought together to discuss their collaboration (2019-present) in developing, delivering, and building capacity for advanced first aid trainings based on the principles of austere medicine in four regions across the United States (Alaska, Pacific Northwest, California, East Coast). Each organization serves as a regionally independent training hub, connecting commercial

fishing communities to a variety of tailored safety training, workforce development, and other wellness programs.

A critical feature of the collaboration has been a supportive community of practice for fishing first-aid trainers and practitioners. Our trainers serve a unique audience and therefore the professional development opportunities available for community first aid and CPR instructors are rarely relevant to their needs. The community of practice has synergized each individual organization's efforts through instructor peer mentoring, sharing best practices, lessons learned, iterative refinements, and novel teaching approaches while retaining flexibility to customize training approaches and curriculum based on local needs and constraints. The collegial sharing of resources, regular exchange of ideas, and supportive acknowledgement of excellence has accelerated the team's success in developing regionally relevant, culturally specific training that reached over 488 commercial fishers between September 2022 and August 2023. This collaborative approach was presented on a panel at iFISH6 as a model for other regions interested in advancing local safety training efforts and inviting others interested in commercial fishing first aid training to join our community of practice.

### ***Oregon state university (OSU) and Oregon Sea Grant (OSG)***

OSU and OSG have been conducting research into commercial fishing safety for over 10 years, and in 2015, conducted an injury survey with 419 Dungeness Crab fishers along the West Coast of the US. OSU/OSG learned that although commercial fishers were required to have at least one person on their vessel certified in BFA/CPR, available courses were not applicable for the often harsh and remote work environment of Pacific Northwest commercial fishing vessels. They did not feel adequately prepared to respond to a medical emergency at sea. The Fisherman's First Aid and Safety Training (subsequently re-named Fishing First Aid and Safety Training) was developed based off the principles of wilderness first aid, where it is assumed you are at least 2 h from medical care and need to respond to injuries and situations in a way more nuanced than just calling 911. In 2016, the first FFAST course was

offered in Astoria, OR. The curriculum uses real-life injury scenarios and is specific to the commercial fishing work environment.<sup>7</sup> Since then, delivery of FFAST has grown to include the entire West coast in close partnership with Washington Sea Grant (WSG) and California Sea Grant (CSG). On the West Coast, a total of 240 participants in 22 courses and 11 FFAST instructors have been trained or are in the process of being trained. From the beginning, the team at OSU was inspired by the efforts of AMSEA and FPSS who had long offered safety training courses that were specific to commercial fishing. In 2018, a chance meeting at iFish5<sup>8</sup> sparked a collaboration that would lead to a 2019 training grant from NIOSH, “Building Capacity for Fishermen First Aid and Safety Training”. This funded grant provided an opportunity to bring together these partners with a shared vision for commercial fishing work environment-specific training. The partnership has continued to grow and innovate since that time, bringing in new partners and increasing the network of instructors nationally who can offer this type of specialized training, including a new expansion in 2024 to include University of Georgia (UGA) and Georgia Sea Grant (GSG), who will adapt this critical training for currently underserved fishers in the United States Southeast region.

### ***Fishing partnership support services (FPSS)***

FPSS is a nonprofit dedicated to improving the health, safety, and economic stability of commercial fishers, their families, and their communities. Their safety programs provide fishers with relevant training and practical skills to be first responders at sea. Designed by fishers for fishers, the FPSS version of FFAST is rooted in the Patient Assessment System, emphasizing scene safety, mechanism of injury and level of consciousness assessment, taking vital signs and performing a complete physical examination, and methods for recording and communicating that information to the US Coast Guard in the event of a MayDay call. Instructors also cover practical skills such as CPR, using an AED, splinting orthopedic injuries, using a combat tourniquet, infection prevention, signs/symptoms/treatment for common medical emergencies, hypothermia treatment and prevention (PFDs), injury prevention, and

how to respond to an opioid emergency using NarCan, the life-saving medicine that reverses an opioid overdose.

Prior to collaborating with the FFAST team, FPSS had offered a 3 h, urban-based BFA/CPR certification. They received consistent feedback from their trainees that a BFA course did not provide enough relevant information and skills to respond to emergencies while working offshore. In 2020, they trained new instructors in wilderness medicine and revamped their BFA program in collaboration with the FFAST team. Since 2021, FPSS has trained over 1000 fishers along the East Coast using the FFAST model. FPSS is successful in connecting fishers to training events because of the work of their Community Health Navigators. FPSS’ Navigators are certified Community Health Workers who are from fishing families or have been commercial fishers themselves and have strong relationships with the fishing families they serve. Instructors, who are commercial fishers, retired USCG personnel, fisheries researchers, and marine surveyors, are all highly trained as Marine Safety Instructors and Emergency Medical Technicians (EMTs) or Wilderness First Responders, and assist with outreach in their coastal communities and in building partnerships with the USCG where many training events take place.

Commercial fishers along the Eastern Seaboard have provided personal stories of emergencies they have incurred at sea after taking the FPSS training. This feedback informs FPSS and affiliated training providers on how to evaluate the effectiveness, relevancy, desirability, and accessibility to fishers countrywide. These stories reiterate that the FFAST training reduced panic in an emergency event, provided a methodical way to approach the emergency, and resulted in positive outcomes. All have emphasized the importance of practical knowledge to reduce panic and successfully manage available resources resulting from FPSS safety training.

### ***Alaska Marine Safety Education Association (AMSEA)***

AMSEA, an Alaska-based nonprofit, aims to reduce injury and death in the marine and freshwater environment through education and training provided by a network of qualified Marine

Safety Instructors. AMSEA has been offering marine safety training to commercial and non-commercial fishers since 1985. A network of instructors based in port communities on Alaska, Pacific, Gulf, and Atlantic coasts provide affordable, effective, accessible, hands-on marine safety training close to where fishers live and work. Since 1985, AMSEA has trained marine safety skills to over 200,000 students, including more than 2,700 AMSEA instructors, many of whom are fishers.

Although fishers face many first aid hazards and challenges, they share many strengths to address these. One of these strengths is a strong marine culture of looking out for one another and sharing knowledge and resources. AMSEA's Mariners' First Aid teaches skills fishers need to manage emergencies and conditions at sea, but importantly, this course utilizes the greatest tool fishers have in an emergency: one another. Decades of AMSEA instructor experience in training and working on fishing vessels has demonstrated that fishing crew learn most effectively from hands-on experiential teaching methodologies. Due to the great distance they travel in remote areas, fishers excel at developing creative solutions to problems that develop onboard, including medical issues. The course fosters a learning community in which fishers share their first aid challenges, fears, successes, and lessons learned. Fishers have shared innovative solutions to common problems such as the fisher-invention of wristers to prevent wrist muscle strain, the invention of scrapers with a bend in the tool to reduce bend of the wrist, the use of items that may be found in a galley to prevent infections (i.e., meat tenderizer or black tea bags), or creative tips to store and access food and water when time to eat and hydrate is limited.

The FFAST partnership utilizes this collaborative strength by bringing together leading national commercial fishing safety training and research organizations. Just as fishers in AMSEA's Mariners' First Aid use the course to share their unique hazards, challenges, and solutions, the FFAST partners collaborate during quarterly video meetings to share and determine best practices for training this unique group of workers. AMSEA has used the FFAST partnership to expand its Mariners' First Aid outreach and help deliver skills to more fishers by sharing lessons

learned in training to other organizations. Likewise, in the FFAST partnership, AMSEA learns new training strategies from other training and research partners. AMSEA's Mariners' First Aid has utilized course materials and resources developed under OSU's FFAST project such as training videos, presentation slides, interactive handouts, and fishing-specific first aid scenarios for students to practice the course content hands-on. During the collaborative video meetings, partners also brainstorm strategies to address emerging needs in the industry. Some examples include prevention and response to opioid overdoses and other substance abuse-related problems, use of ergonomics principles for prevention of musculoskeletal disorders, and strategies to address mental health challenges. The sharing of resources and knowledge between trainers and researchers under the FFAST partnership builds on a great strength of the fishing industry: a strong maritime tradition of collaboration and innovation.

### **California Sea Grant (CSG)**

As the newest FFAST provider, California Sea Grant (CSG) presented a fresh insight into methods for implementing a training program in a new region. Successful implementation is grounded in a trusting relationship between the provider organization and the community it aims to serve, which can often-times take years, or even decades, to build. CSG achieves this largely through its Extension Program, which connects research and academic resources and expertise with local communities. In this case, CSG supports local fishing communities through efforts to make commercial fishing a safer and more viable career. Having fishing communities trust in and feel supported by an organization invites honest input from the community about what the specific needs are. As in other US regions, this input pointed to a high demand for accessible safety training offerings in California.

Despite having a strong, long-time relationship of trust with California fishers, CSG had to navigate components critical to implementation of FFAST throughout the state. Ensuring these safety trainings are easily accessible to communities and limiting the financial burden to fishers who take the training is essential, for which reliable funding



is required. Internal funding provided by CSG, in addition to the partnership grant with OSU and NIOSH, helped meet these financial needs.

Partnering with existing organizations who then shared their curriculums, lessons learned, and guiding insights made this possible, as CSG would not have had the resources or expertise to develop this course from scratch and be able to offer it so soon. CSG has utilized the existing FFAST resources to certify an instructor who can provide training throughout the state of California. The process for certification of a new instructor begins with a BFA/CPR/AED Instructor course at an accredited organization (in this case, the American Red Cross) followed by the 5-day or 10-day Wilderness First Responder (WFR) course. Once these certifications are acquired, candidate instructors may attend FFAST courses as a student, assist with hands-on skills monitoring, or a co-instructor role depending on the level of prior training experience and comfort. After serving as a co-instructor for one or two FFAST courses, the newly-minted instructor may proceed with leading instruction. This mentoring process ensures the delivery of high-quality training, and helps strengthen relationships among instructors to provide ongoing feedback and support.

Providing training to a new region, particularly one that covers such a large geographic span as the California coast, is only accomplished by engaging in local partnerships. In this case, CSG coordinated with out-of-state FFAST instructors when possible and utilized locally based first aid and medical trainers to co-teach. New initiatives include partnering with AMSEA certified marine safety instructors to develop and co-teach combined Drill Conductor and FFAST trainings to provide fishers with a “one and done” training to obtain all their required certifications. Additionally, partnerships with local seafood distributors, restaurants, fishing community organizations, and industry working groups are critical for identifying specific local training needs and successful marketing and student recruitment.

## Conclusion

This case study highlights the power of sharing an adaptable curriculum with a professional

community of practice that allies trainers serving a unique audience. Stories of lives saved and lessons learned are shared across regional training teams and incorporated into an adaptive curriculum through this alliance of partners. These partnerships enable practitioners to empower vulnerable communities with valuable skills and resources proven to save lives and improve working conditions, both of which bolster the workforce capacity of US fishing communities.

All of our work and resulting impacts on injury prevention, improved safety at sea, and preparation of commercial fishers as effective first responders relies on access to sustainable funding. The USCG/NIOSH Commercial Fishing Occupational Safety Training Project Grants program is one of the few funding sources that can support this kind of work on a scale to match the need. Across our alliance, our capacity to implement these trainings and engage in professional development cross-training would be extremely limited without ongoing support provided by these competitive grants.

Our experience also highlights the value in providing opportunities for practitioners to gather and share experiences and expertise across a broader community, both virtually and in-person. As grantees in the USCG/NIOSH Commercial Fishing Occupational Safety Training Project Grants program, we have access to additional community of practice through quarterly calls and knowledge exchange opportunities with researchers and trainers across the country. The 2024 IFISH conference held in Rome, Italy, provided the opportunity to learn from experts in the field at an international level, informing improved curriculum development of FFAST nationwide and garnering wider support for safety training offerings to commercial fishers worldwide.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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