



# **Wounded Ill and Injured Project 141 Progress Report**

Public Health Support for Our Nation's Warriors



**NAVY AND MARINE CORPS PUBLIC HEALTH CENTER**  
PREVENTION AND PROTECTION START HERE



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## Letter from the Commanding Officer



### Captain Michael J. Macinski

"The Navy and Marine Corps Public Health Center's commitment to serving our Sailors, Marines and their families remains as enduring as their commitment and sacrifice in support of our nation's freedom."

The honor of serving as a United States (U.S.) Sailor or Marine comes with the risk of injury or illness during wartime and peace. Once a Sailor or Marine is wounded, ill or injured, the U.S. Navy is committed to providing the best possible care and treatment for the individual warrior and support for their family.

Providing the best means ensuring that our service men and women receive the most efficient, effective, and evidenced-based preventive and clinical health care services available. Providing the best means identifying and understanding how Navy Medicine can be as efficient and effective as possible.

Knowing how to best serve our nation's wounded, ill and injured warriors and their families is not possible without comprehensive health surveillance, data measurement, and health outcome analysis. This analysis provides our healthcare professionals a complete picture of the significant mental and physical impacts of deployments and deployment-related diseases and injuries, and is foundational to understanding the healthcare landscape our Sailors and Marines face going forward as they heal.

The Navy and Marine Corps Public Health Center (NMCPHC) is an integral part of the Navy Medicine Wounded, Ill and Injured (WII) Program. Through state-of-the-art data collection and health care data analysis programs, we deliver critical information to improve the care and treatment of our wounded, ill, and injured warriors and their families. This progress report and accompanying compendium demonstrate how the NMCPHC is using science, epidemiology, health analysis and health promotion initiatives to ensure that our Sailors and Marines are afforded a full spectrum of world-class healthcare intervention support.

I am proud of the work of the NMCPHC and invite you to review our progress and contributions to improve the quality of life of our wounded, ill and injured Sailors, Marines, and their families. Our goals are to prevent illness and minimize its impacts; to enhance health outcomes, and to maximize readiness. I truly believe we are exceeding these goals!

M. J. MACINSKI  
Captain, Medical Service Corps  
United States Navy  
Commanding Officer





This report is dedicated to our nation's Sailors and Marines.  
The NMCPHC is committed to protecting their health and  
enhancing their well-being.





## Executive Summary

In 2012, our Sailors and Marines will conclude a decade of the highest operational tempo since World War II, resulting in significant new readiness, retention, and physical and mental health challenges. To meet these new challenges, Navy Medicine established the Bureau of Medicine and Surgery's (BUMED) Wounded III and Injured (WII) Program to improve the care and treatment offered to affected service members, their families, and caregivers.

The NMCPHC's WII 141 Project includes five distinct but interrelated projects that focus on health analysis, epidemiologic analysis, health promotion, and two separate deployed war fighter protection projects that address entomology and health hazard assessment. Initially funded in FY2010, the WII 141 Project informs Navy Medicine on issues related to access to care, quality of care, health promotion, screening and surveillance.

WII 141 products and services align with the Navy Surgeon General's priorities to support the care of the war fighter, ensure operational readiness, assess value when making strategic and tactical decisions, leverage informatics to inform care, and ensure that the Navy's global engagement efforts strengthen the nation's diplomatic presence in the world. Because of the WII 141 Project's strong analytic capabilities, it plays an increasingly vital role in conducting assessment and evaluation of WII-funded initiatives across the Navy Enterprise. As such, the value of the WII 141 Project transcends Navy Medicine and supports the Military Health Systems'(MHS) aims to provide a fit and ready force.

This progress report and companion compendium illustrate the depth and breadth of work completed by the NMCPHC in support of the WII 141 Project. The report provides a project overview and additional detail on the five WII 141 Projects. The compendium offers a listing and brief description of products and services developed from inception of the project through Spring 2012.







## Program Overview

The WII 141 Project was developed in response to a Navy Medicine leadership request made to the NMCPHC in 2009 for a multi-project support system that would tie together four key concepts: surveillance, prevention, intervention and measurement while capitalizing on existing data systems and data collection tools. First funded in FY2010, the vision for the WII 141 Project when fully implemented in FY2015 was that the project would provide a full descriptive picture of the circumstances and needs of each wounded, ill and injured Navy and Marine Corps service member.

The NMCPHC recognized the vital role that the WII 141 project would play in assisting Navy Medicine and made a significant commitment to restructure space and personnel to meet BUMED's needs for enhanced WII-related surveillance and metrics. In FY 2010, the NMCPHC reconfigured space in their Portsmouth, VA, location to accommodate the new project. Renovations were completed in 2011. Since its inception, swift progress has been made.

The WII 141 Project has identified metrics and best practices that assist our deployed warfighters and their families prior to, during, and after deployments. WII 141 products and services have significantly impacted BUMED's approach to health resource allocation and decision making. The NMCPHC, already the Navy's hub for the public health surveillance, developed one entirely new capability using WII Program funds and has expanded several other capabilities to better meet the informational needs of national and regional Navy leadership, military treatment facilities (MTFs), service members and their families.

This WII 141 Progress Report and product compendium demonstrate the depth and breadth of Navy Medicine's commitment to caring for our nation's wounded, ill and injured Sailors and Marines.



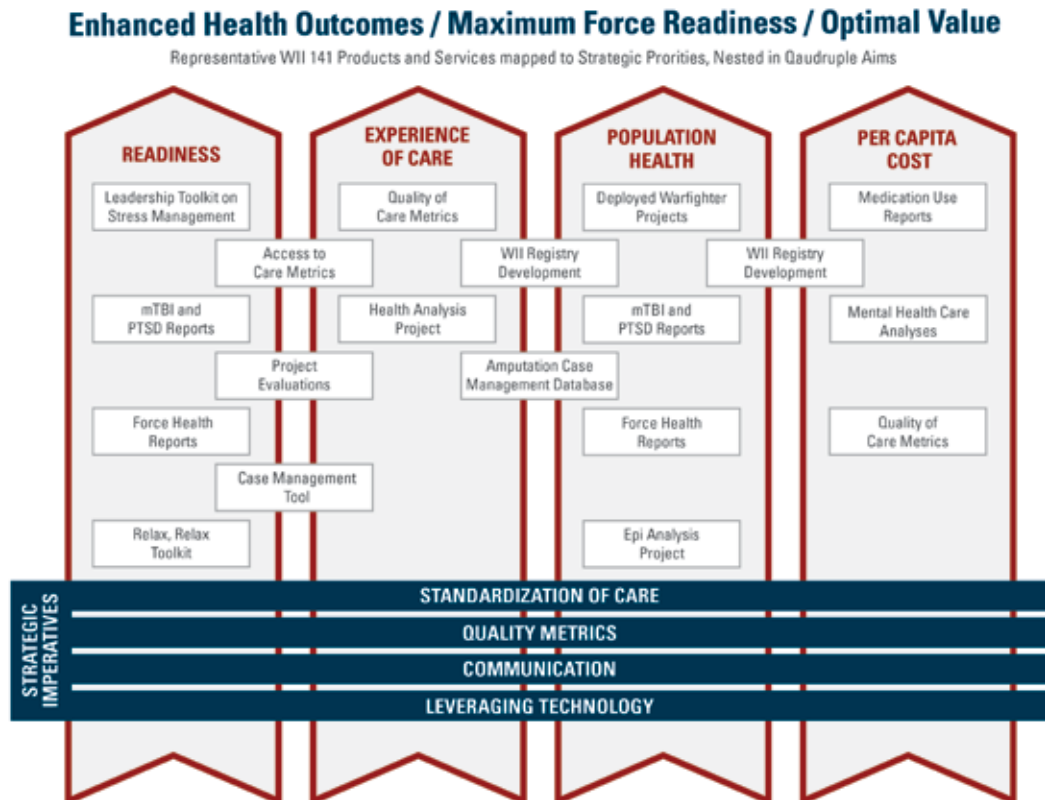
## Program Overview

### ALIGNMENT WITH STRATEGIC GOALS OF WOUNDED ILL AND INJURED(WII)

The WII 141 Project aligns with Navy Medicine's strategic goals for the WII Program. The WII 141 Project has developed metrics and surveillance reports that enable BUMED to monitor both access to care and quality of care provided to the WII population, including experiences with case management. Comprehending this information is foundational to developing a full descriptive picture of circumstances and needs of Navy and Marine Corps service members. The WII 141 Project also is an enterprise-wide resource for evidence-based health promotion programs that support service member resiliency, rehabilitation and recovery.

STRATEGIC GOALS-NAVY MEDICINE WOUNDED ILL AND INJURED PROGRAM	
<b>Access to Care</b>	Ensure all beneficiaries have timely access to comprehensive healthcare
<b>Quality of Care</b>	Provide world-class treatment through recommended and standardized evidence-based practices
<b>Performance Enhancement</b>	Building the strength and fortitude of Sailors, Marines, and their families for optimal personal and professional functioning
<b>Transition of Care</b>	Improving the quality and effectiveness of treatment through coordination and management of care patients during transition between networks, providers and duty status
<b>Screening and Surveillance</b>	Identify and communicate deployment associated health threats for warriors and their families

The WII 141 Project also addresses the MHS' Quadrangle Aims: Readiness, Experience of Care, Population Health and Per Capita Costs, as depicted in Figure 1 below.



**Figure 1** WII 141 Project Alignment



### WII 141 PROJECTS

The WII 141 Project provides Navy Medicine with scientific data and analyses to answer questions and make pivotal decisions regarding our wounded, ill and injured service members and their families. The WII 141 Project, conceived as a multi-project initiative, brings together five complementary but individual projects. Taken as a collective, the five projects described briefly here and in more detail on pages 8-11, provide Navy Medicine with the foundational public health data, analysis, and resources to ensure that the WII population is afforded every healthcare advantage.

#### Health Analysis

The Health Analysis (HA) Project, an entirely new capability at the NMCPHC, was made possible by WII funding from BUMED. The HA Project provides Navy Medicine leaders with public health informatics to assist in making strategic decisions about all aspects of healthcare of our wounded, ill and injured service members.

Facing increasing demands for health services, rising healthcare costs and inevitable budget cuts, the use of analytic resources to drive decisions is vital to ensure the optimal utilization of Navy Medicine resources. The HA Project uses their collective expertise to quickly generate comprehensive, detailed analysis to help national and regional leaders manage resources, standardize medical care, coordinate research and provide for the more efficient delivery of healthcare. The HA Project assesses and reports on all provisions of health care, including costs related to staffing, treatments, prescription drugs, and individual encounters. Their analysis also illuminates variations in access to, or quality of, care and assists healthcare leaders with remediation of these disparities.

The HA Project is recognized throughout Navy Medicine for its analytical expertise. In 2011, the HA Project team was awarded the prestigious Bureau of Medicine and Surgery Analytics in Navy Medicine Team Award, presented by the Navy Surgeon General at the Navy Medicine Resources, Logistics and Analytics Symposium. This award was given for the HA Project team's innovative Wounded, Ill and Injured Access to Care metrics which spanned the entire healthcare continuum. BUMED relies on the HA Project's expertise to evaluate the efficiency and effectiveness of WII funded projects to identify best practices for dissemination across the Navy Medicine enterprise.

#### Epidemiologic Analysis

The Epidemiologic Analysis (EA) Project provides information to both medical and operational leaders on communicable and infectious diseases that impact military readiness. The EA Project team gathers clinical data each day from every MTF around the world, using stringent security and privacy controls to ensure confidentiality and integrity of patient data. Nineteen Department of Defense (DoD) healthcare databases provide a stream of eight million lines of data each day to the EA Project.



#### Health Analysis Project

The NMCPHC HA Project was the winner of the BUMED Analytics in Navy Medicine Team Award for its innovative and quality work in developing the WII Access to Care metrics. The Navy Surgeon General presented the award at the 2011 Navy Medicine Resources, Logistics and Analytics Symposium.

#### Epidemiologic Analysis Project

The EA team produced a multi-year report that used inpatient discharges and ambulatory encounters for all active duty, recruit, reserve personnel and family members to identify cases of Post Traumatic Stress Disorder (PTSD), major depressive disorder and incidence rates of alcohol/substance abuse or dependence.

## Program Overview



### Health Promotion Project

Health Promotion clinical studies have confirmed that cigarette smoke impedes the healing of tissue. In response to these findings, the HP Project team created tobacco cessation resources, including evidence-based training modules, tailored to the special needs of the WII population.

One major source of data used by the WII 141 Project is the Navy and Marine Corps Deployment Health Assessment database which is housed and managed at the NMCPHC. This database allows for large scale epidemiologic analysis of trends in disease burden and deployment-limiting health conditions. Every month, the EA Project analyzes surveillance data and develops and distributes Force and Fleet Health Reports on health conditions and readiness issues that impact deployability. This surveillance activity measures the incidence and prevalence of Post-Traumatic Stress Disorder (PTSD), Traumatic Brain Injury (TBI), depression, alcohol abuse, suicide ideation, selected prescription drugs, and number of visits to behavioral/mental health clinics. These reports are used by Operational Commanders to assess their state of military readiness and identify units that need additional mental and behavioral health resources. The PTSD and TBI analysis reports have been used by Congress, the Navy, the Marine Corp, the Department of Veteran's Affairs (VA), and others federal agencies to understand and assess the impact of mental health conditions on active duty personnel and their families. The EA Project currently is working on a major undertaking with regional WII coordinators to create a Wounded Warrior registry of all wounded, ill and injured service members to improve tracking and case management. The registry is a vital component of the WII 141 Project vision to understand the circumstances and needs of each WII Navy and Marine Corps service member.

### The Health Promotion Project

The WII 141 Health Promotion (HP) Project provides Navy Medicine with evidence-based health promotion programs and services that facilitate readiness and resilience, prevent illness and injury, hasten recovery and promote lifelong healthy behaviors. The HP Project provides policymakers and health providers with an accurate understanding of the tools, training modules, and products that can deliver evidence-based health promotion to the WII population. The HP Project identifies the health and wellness needs of the operational forces, including the clinical and nonclinical needs of case managers, WII service members and their families.

The HP Project developed and maintains a comprehensive WII website for service members, families and providers that provides resources on signature injuries (TBI and PTSD), and commonly experienced problems – sleep disruption, management of pain, intimacy, substance abuse, stress, fitness challenges, poor nutrition, and tobacco use, associated with injuries and illness.

The HP Project works with MTFs, operational units, and veteran and civilian programs to identify and meet the specific needs of the WII population. For example, the HP Project team examined the needs of amputees in five functional areas: weight management and nutrition, functional movement, physical activity, physical fitness, and injury prevention, and developed informational toolkits to address these needs. The HP Project partnered with the VA to address the high rate of tobacco use in the WII population, and developed educational campaigns to address the adverse effects of smoking on healing and recovery. These types of products and services enhance care coordination, provide outreach and supporting data to inform policy and program development, evaluate effectiveness of policies and programs and promote health behaviors across the continuum of health and wellness.

### DEPLOYED WAR FIGHTER PROTECTION PROJECT

The WII 141 project includes two Deployed Warfighter Protection programs that offer new possibilities for protection from illness and injury. The Vector Control (VC) Project is directed by the Navy Entomology Center of Excellence (NECE), and the Health Hazard Assessment (HHA) Project is managed by the NMCPHC Expeditionary Preventive Medicine Department.

#### Vector Control

Diseases like malaria, leishmaniasis, and dengue are on the increase world-wide and are more of a threat to deployed forces today than 30 years ago.

The VC Project leverages intellectual capital and expertise from a consortium of federal agencies, academia and industry to protect our deployed war-fighters from blood feeding insects that transmit debilitating human disease. The WII Project expanded the capabilities of the VC Project allowing for additional and much needed testing of insecticides and sprayers. The VC Project conducted additional testing on over 800 insecticide compounds for efficacy against insects that impact military readiness. The VC Project also evaluated 50 new insecticide application machines and 14 insecticide application techniques. Additionally, seven products were assigned National Stock Numbers (NSN) ensuring availability through the Federal Stock System, two patents awarded and thirteen peer-reviewed journal articles published, disseminating insect control information world-wide to those responsible for protecting deployed war-fighter.

#### Health Hazard Assessment

HHAs are conducted to determine if environmental contaminants from current and prior land use, disease vectors, or other environmental conditions exist at deployment sites that could pose health risks to deployed personnel. They identify industrial facility operations, and/or commodities on and near a deployment site that, if destroyed, damaged, or released could result in catastrophic health risk to deployed forces. The protocols used by the HHA Project team are mission-oriented to determine the nature and magnitude of the health risks associated with industrial, agricultural and urban activities so that commanders can make informed risk management decisions.

The HHAs, known as Periodic Occupational and Environmental Monitoring Summaries (POEMS), provide population-based risk assessments for discrete deployment sites to medical practitioners, service members, and other stakeholders.

The HHA Project has a “Joint” focus and interfaces with the Office of the Assistant Secretary of Defense for Health Affairs, the MHS Office of Force Health Protection and Readiness and the U.S. Army Public Health Command. The HHA Project team prepares the POEMS after analyzing years of environmental samples, prevailing meteorological conditions, and disease and non-battle injury data to determine if deployment conditions could pose health impacts on warfighters. The HHA Project team also develops training plans, materials, curriculum, and programming for POEMS.



#### Vector Control Project

As a result of the WII 141 Project, NECE is revolutionizing the approach to protecting our military personnel from vector-borne diseases. A patent is pending for an insecticide-embedded Velcro patch that attaches to the outside of military uniforms avoiding direct contact with human skin and preventing insect bites. This scientific breakthrough will improve readiness, reduce health care costs, improve service member safety, and save lives!

#### Health Hazard Assessment Project

The WII 141 HHA Project manages the pre-deployment training for Forward Deployable Preventive Medicine Units (FDPMU), as well as public health physicians, scientists and technicians ensuring that Navy Medicine personnel are able to deploy and provide valuable operational risk management advice.





## WII 141 Project Accomplishments

### HEALTH ANALYSIS

Good health care does not just happen. Medical practice has a continuing requirement for quality improvement. It is driven by data and analysis on what works. The HA Project, a new capability at the NMCPHC created in its entirety through WII 141 Project funding, provides Navy Medicine with clinical health analysis that allows local, regional and national administrators to make informed choices about the health care available to WII service members and their families. The HA Project assesses existing data to identify gaps in access to, and quality of care. The HA Project also uses rigorously developed evaluation metrics to identify programs and services across Navy Medicine that generate the greatest return on investment for the wounded, ill and injured populations.

#### Health Analysis Project - Leaders in Health Informatics

- 1 Analytics in Navy Medicine Award** - The HA Project team was the winner of the 2011 Analytics in Medicine Award for its innovative and quality work in developing the WII Access to Care Metrics.
- 2 Access to Care Metrics** - Created and provided comprehensive analysis on three enterprise level metrics and

a composite score for BUMED on access to mental healthcare. The metrics provided leadership with insight into network costs, staff efficiency, and beneficiary categories that are driving the demand for services. Metrics trend data from FY07 to present and are updated quarterly.

- 3 Quality of Care Metrics** - The HA Project created 11 evidence-based quality of care metrics focusing on 4 high volume, high risk, and high cost conditions: Traumatic Brain Injury (TBI), PTSD, Major Depressive Disorder and Substance Use Disorder. These metrics, based on VA/DoD Clinical Practice Guidelines, emphasize the importance of utilization of best evidence to improve patient care and potentially reduce inappropriate variation in care. The HA Project provides BUMED with quarterly reports that track changes and highlight trends.
- 4 Beneficiary Access to Mental Health Services** - This report provides the results of analysis of the distribution of mental health patients, providers, and facilities to determine gaps in access to care for all eligible beneficiaries and to improve mental health services for Navy families.
- 5 Mild TBI (mTBI) Balance and Gait Disorders** - In collaboration with the Naval Health Research Center, the HA Project established metrics to evaluate rehabilitation programs for mTBI, and balance and gait disorders.
- 6 Suicide Case Review** - A comprehensive medical history review was conducted by the HA Project for all suicide cases that occurred in the Navy in 2010. This information was analyzed and the results used during a week-long case review with key



stakeholders to identify strategies to improve policies and procedures regarding care and data collection.

- 7 Wounded, Ill and Injured Care Program** - The HA Project assessed standardization of care and case management coordination for TBI patients receiving treatment at select Navy healthcare facilities in the U.S. and Europe. The assessment provided estimates of the demand for care and identified quality of care improvement strategies.

► To learn more about the HA Project, visit: [http://www.theNMCPHC.med.navy.mil/data\\_statistics/health\\_analysis/ha\\_overview.aspx](http://www.theNMCPHC.med.navy.mil/data_statistics/health_analysis/ha_overview.aspx)

### EPIDEMIOLOGIC ANALYSIS

Data is collected every day throughout the world to determine the medical readiness of our military personnel. The EA Project accesses 19 DoD healthcare databases that provide a stream of eight million lines of data per day. The NMCPHC developed two of those databases, the Deployment Health Assessment database and Mental Health database, to provide actionable health data not previously collected or analyzed for military personnel. The EA Project analyzes this data for the Navy and Marine Corps to better understand the impact of communicable diseases, infections and deployment health issues on military readiness. Understanding Sailors and Marines health status prior to, during, and after deployment is crucial to predicting readiness, as well as the potential demand for services from MTFs.

#### Epidemiologic Analysis Project - Leaders in Public Health Surveillance

- 1 Monthly Force Health Reports** - This surveillance report summarizes the compliance of the Marine Corps with deployment health assessments and referrals. The report provides an overview of instances of chronic pain, sleep disturbances, anti-depressant medication use and deployment-limiting injuries. Similar versions of this monthly report were developed for the Navy Expeditionary Combat Command and Naval Special Warfare Command.
- 2 Navy WII Registry** - The EA Project has been instrumental in developing case definitions and sample reports for the WII registry. When fully implemented, the registry will reduce the number of reports and databases required to efficiently track the health of the Navy WII population.

#### 3 Multi-Drug Resistant Organism (MDRO) Surveillance -

In collaboration with the Army Multi-Drug Resistance Surveillance Network, the EA Project developed a pilot project that will provide DoD with the first-ever comprehensive approach to surveillance of MDROs across the military. Early identification of MDROs will result in more effective treatment and reduced hospital stays.

#### 4 Report on PTSD in Active Duty Navy and Marines Corps -

The EA Project accessed the Defense Medical Epidemiology Database to compile a comprehensive report on PTSD cases from 2001 through 2010. This information allowed the enterprise to increase outreach activities and forecast necessary resources for treatment of this population.

#### 5 Co-morbid PTSD and Alcohol Abuse/Dependence in Marines -

The EA Project reported on co-morbid PTSD and alcohol abuse/dependence for the Behavioral Health Branch of the Marine and Family Programs Division. The report is used and updated monthly as part of an ongoing effort to quantify mental health issues in the Marine Corps.

#### 6 Mental Health Assessments -

In partnership with the Navy Center for Combat and Operational Stress Control, the EA Project analyzed data from mental health assessments and post-deployment health assessments for returning service members. This data enabled Navy Medicine to allocate resources needed to address the mental health concerns of returning Sailors and Marines.

► To learn more about the EA Project, visit [http://www.theNMCPHC.med.navy.mil/data\\_statistics/epidata\\_center/epidatacenter\\_overview.aspx](http://www.theNMCPHC.med.navy.mil/data_statistics/epidata_center/epidatacenter_overview.aspx)

### HEALTH PROMOTION PROJECT

Effective healing is heavily dependent upon healthy lifestyles and behaviors, and this is especially true for our wounded, ill and injured service members. The HP Project recognized the need to adapt and expand traditional HP programs to meet the unique needs of our warriors. The HP Project provides Navy Medicine, as well as Fleet and Shore healthcare providers, with evidence-based model programs that are proven to improve the health of service members.

## WII 141 Project Accomplishments

### Health Promotion Project - Leaders in Health Promotion and Wellness

- 1 WII Websites** - The HP Project developed a new comprehensive website for service members, families and providers that includes resources on signature injuries from recent conflicts (TBI and PTSD) and commonly experienced problems associated with injuries and illness – sleep disruption, management of pain, intimacy, substance abuse, stress, fitness challenges, poor nutrition, and tobacco use. The HP Project also expanded the Health Promotion and Wellness website to include additional psychological, emotional and behavioral health topics and materials. Resources are now available on resilience and hardiness, navigating stress in an operational environment, managing anger, mental health, sleep, suicide prevention and substance abuse. These resources provide and foster optimal health behavior support in order to enhance readiness, build resiliency, and promote an improved level of wellness.
- 2 Tobacco Cessation Programs** - The HP Project focused efforts on educating the WII population on the detrimental effects of tobacco use on wound healing, physical performance, and optimization of health. They modified tobacco cessation training and Train-the-Trainer programs to specifically target the WII population. The HP Project partnered with the VA to address the high rate of tobacco use within the WII population, and helped Navy Medicine integrate tobacco cessation interventions into their mental health treatments.
- 3 Health Risk Assessment (HRA)** - The HRA is a tool that heightens awareness about key health issues, identifies specific issues that pertain to the individual, provides credible sources of health information, and serves as a tool for dialog with a healthcare provider. It also empowers individuals to better manage their personal health by providing them with tailored feedback and reports that contain pertinent and realistic recommendations. The HP Project produced a web-based HRA; a stand-alone CD version for ships and units without internet access; and a CD version tailored for an older population. The HP Project team trained 525 HRA Administrators throughout the DoN who remarkably completed over 190,000 assessments in FY 2011. The HP Project currently is developing a modified HRA that targets Sailors and Marines who have become wounded, ill, and injured. It is designed to identify high risk health behaviors that may affect healing, recovery, and overall resilience. Targeted interventions based on HRA results can assist WII members in adjusting to life in the face of prolonged stress, trauma, adversity, and tragedy.
- 4 Co-morbidities in the Amputee Population** - The HP Project analyzed retrospective data related to health behaviors associated with co-morbidities within the amputee population. It identified 174 traumatic amputations from 1 Jan 2010 - 31 Aug 2011 and assessed prevalence of PTSD, Major Depressive Disorder (MDD), anxiety, stress, alcohol and drug abuse/dependence, tobacco dependence, nutrition, and other co-morbidities. This information will be disseminated to enable MTFs to reduce incidence of co-morbidities through promotion of healthy behaviors. It also will provide support for the WII population by highlighting the importance of development and sustainment of healthy lifestyles and behaviors in order to restore resilience which will encourage mission readiness, build resistance to relapse and future injuries, and improve recovery outcomes.
- 5 Case Management Needs Assessment** - This assessment identified case managers' need for additional health behavior resources in the areas of sleep, TBI, PTSD, as well as Nutrition/Weight management. These resources provide educational and awareness support to WII members, their families, and providers. Data collected was used to show an evidence-based need and provide direction for the development and modification of educational tools, materials, and programs. These programs address health behaviors to prevent and mitigate factors that could adversely affect the ability of wounded, ill, and injured Sailors and Marines to recover and adapt, and provide greater potential for more effective, timely healing.
- 6 ICD-9 Coding Guide** - The HP Project developed a uniform coding guide that allows case managers and other providers to readily identify health behavior support. The guide makes it easy to identify health behavior codes frequently reported by case managers and used to obtain metrics that assess the utilization of health promotion and wellness resources. It also will help identify the need for additional resources, products, and services required to build resilience and maintain mission readiness.
- 7 Sleep Support Analysis** - The Case Management Needs Assessment revealed that case managers identified that 39% of wounded, ill and injured patients frequently suffer from sleep disturbances, and 51% reported sleep disturbances at various times throughout their careers.

This assessment data was the basis for a sleep disorder cross-sectional analysis for FY 2011. The goal was to assess the prevalence of sleep disorders in active duty and reserve populations, including those who have become wounded, ill, and injured. The data identified 71,312 medical encounters related to sleep disorders at MTF's Navy-wide. This analysis provided evidence-based data to support the need for additional resources. It also led to the creation of products to raise awareness about positive health behavior changes that can mitigate sleep disturbances and promoted sufficient sleep as an essential aspect of health promotion and chronic disease prevention.

- 8 WII Resource Directory** - This resource is a "one stop shop" concept that can be utilized by providers to educate their patients on health promotion and wellness topics. It highlights various healthcare organizations and contains information on substance abuse, case management, suicide prevention, compassion fatigue, fitness, stress, nutrition, PTSD, TBI, sleep and additional resources to support WII members in their recovery. The resource directory is posted on the HPW Wounded, Ill, and Injured website and can be used to gather information to improve care and treatment offered to service members, their families and caregivers. It also provides tailored informational tools and materials for healthy living.

- To learn more about the HP Project, visit: <http://www.theNMCPHC.med.navy.mil/WII/>

## DEPLOYED WAR FIGHTER PROTECTION PROJECTS

### Vector Control

The current insecticide products and application methods used by the military are decades old, not suited to the high-heat desert environments, and ineffective against many insects encountered in the Middle East. New products and techniques are key components of ensuring military readiness and global public health. The VC Project, managed by the NECE, has leveraged project collaborations with government agencies, commercial companies, and universities to develop and field test new insecticide formulas and application technologies that protect deployed war-fighters from blood-feeding insects that transmit human disease.

### Vector Control Project - Leaders in Preventing Disease Transmission

- 1 Insecticide Compound Tests** - The VC Project is revolutionizing the approach to protecting military personnel from vector-borne diseases by developing insecticide-embedded Velcro patches that attach to the outside of military uniforms and avoid direct contact with human skin. A patent is pending on this novel approach and the return on investment will be significant. The VC Project team also is responsible for testing over 800 insecticide compounds for efficacy against medically important insects, and field testing 50 new insecticide application machines and 14 insecticide application techniques.

- 2 Integrated Vector Management Technical Reports** - The VC Project developed an integrated vector management approach for deploying cost-effective and sustainable methods of vector control on and off the battlefield. This approach considers disease transmission, local disease ecology, and the role of military personnel in increasing risks of disease transmission. The VC Project researched, developed and published nine technical reports on these integrated methods for proper control of disease-carrying insects. These reports also are available on military and professional websites and easily accessible to personnel responsible for protecting our deployed warfighters.

- 3 Smartphone Applications** - *Vector Sprays*, a downloadable application for Android and Apple iPhones, was developed by the VC Project to assist users in choosing proper insecticides and sprayers depending on location and environment. To date, the application has been downloaded over 1000 times by deployed military and other global users.

- For more information about the Vector Control Project, visit: [http://www.theNMCPHC.med.navy.mil/field\\_activities/nece\\_overview.aspx](http://www.theNMCPHC.med.navy.mil/field_activities/nece_overview.aspx)

### Health Hazard Assessment

Numerous environmental stressors impact individual health and unit

## WII 141 Project Accomplishments



Navy FDPMU scientist collects particulate matter air sample in Iraq to determine service members' potential health stressor exposures.

readiness for Fleet and ground forces, including poor air quality and contaminated water. The HHA Project collects occupational and environmental health surveillance samples to evaluate health risks associated with environmental stressors at base camps, airbases, seaports, forward operating bases, and forward operating locations.

POEMS describe sources of exposure, summarize data collected, and provide an assessment of the significance of any known or potential acute (short-term) and long-term (post-deployment) health risks to the population deployed to the site. The findings from the POEMS are available to military public health personnel and healthcare providers, including those from the VA and the civilian sector. Service members also benefit from POEMS because the data informs them of the health risks associated with their exposures.

### Health Hazard Assessment Team - Leaders in Worksite Risk Evaluation

- 1 Completion of Inaugural POEMS Assessment** - The HHA Project team is forward deployed with our troops on the ground in Camp Lemonnier, Djibouti, sampling the environment to evaluate health risks and hazards. The HHA Project will publish the first POEMS for Camp Lemonnier in June of 2012, providing valuable information to Navy Leadership about the health hazards experienced by our deployed service members in this geographic area.
  - 2 Simulated Training Exercises** - The HHA Project conducted a week-long simulated exercise that instructed deploying preventive medicine personnel on how to perform POEMS in theater.
- For more information about the WII 141 HHA Project, visit: <http://www.theNMCPHC.med.navy.mil>



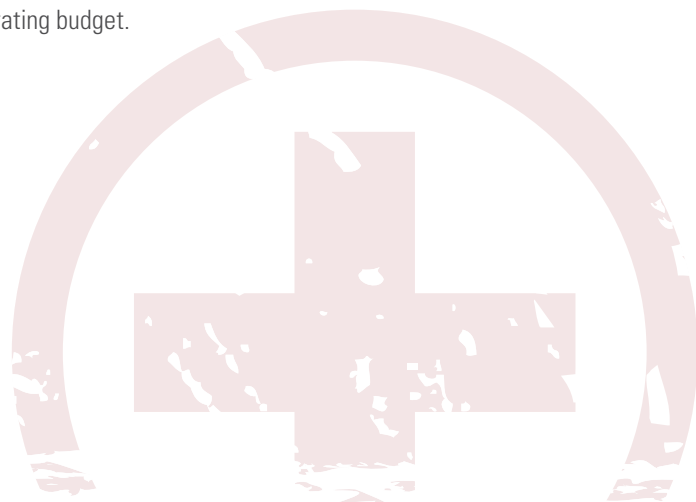


## The Way Forward for the WII 141 Project

In the near term, the way forward for the WII 141 Project is clear. It will continue to support Navy Medicine through data analysis, scientific discovery, program design and program evaluations that identify evidence-based programs, services and protocols that assist wounded ill and injured service members and their families. The NMCPHC has significantly contributed to improving Navy Medicine's effectiveness and efficiency through its work with the WII 141 Project. A major success of the WII 141 Project is Navy Medicine's increased reliance on health monitoring and surveillance data to maintain readiness, contain healthcare costs, and improve quality of life. The WII 141 Project also provides Navy Medicine with the foundational data and health informatics needed to serve the WII population and enhance delivery of care. Future WII 141 Project initiatives include:

- ▶ Enhancing the WII 141 Web portal to ensure it remains a world-class resource for beneficiaries, health care providers, and other stakeholders
- ▶ Expanding WII 141 Project outreach to and support of MTFs by offering enhanced metrics and evaluation support for WII-related programs
- ▶ Leveraging technology to enhance utilization of current and future WII 141 products and services (i.e. mobile and computer-based applications for health assessments and dissemination of health and wellness information)
- ▶ Engaging new partners in academia and the civilian community to expand our work

In the long term, the future of the WII 141 Project is less certain. When funding for the WII Program ends in FY2015, the NMCPHC will be unable to continue many of these vital programs and capabilities now integral to Navy Medicine's evidence-based decision process. After 10 years of sustained conflict, the enormity and complexity of health consequences in our warriors are just beginning to appear. The loss of WII 141 Project would significantly impact Navy Medicine by reducing its ability to conduct real-time surveillance projects and analyze access to care and quality of care. This loss also would reduce Navy Medicine's capability to provide health threat assessments, develop innovative techniques to combat disease-carrying insects, and limit its ability to deliver HP products specifically designed for the WII population. There is an urgent need to incorporate sustained funding in the NMCPHC's annual operating budget.



## Appendix: Product Compendium

This compendium provides a representative overview of the products and services produced by the NMCPHC' WII 141 Project from inception through Spring, 2012.

### HEALTH ANALYSIS PROJECTS

#### Access to Care and Quality of Care Metric Reports

Quarterly analysis and trending reports of mental healthcare data at Navy treatment facilities

#### WII Project Level Evaluations

Evaluations of best practices across WII enterprise for access to and treatment of:

- ▶ TBI Balance and Gait disorders (WII Project #116)
- ▶ Co-occurring Substance Abuse and Mental Health Disorders (WII Project #129)
- ▶ Navy Hearing Conservation Program (WII Project #139)
- ▶ Comprehensive Aesthetic Restorative Efforts (WII Project #163)
- ▶ Project REACH (Reintegrate, Educate and Advance Combatants in Healthcare) (WII Project #184)
- ▶ Expansion of Orofacial Pain Services (WII Project #166)
- ▶ NAVHOSP Jacksonville Wounded Warrior Mental Health Rehabilitation Program (WII Project #226)

#### Mental Health Access to Care Analysis Series

Assessment and trend analysis of mental health access to care categories, referrals, provider encounters, appointment types, prescriptions, and case management workload

#### Tailored Needs Assessment for mTBI Quality of Care

Needs assessment of mTBI quality of care to establish and standardize coordinated case management for mTBI patients

#### Family Mental Health Access to Care

Report on distribution of mental health patients, providers and facilities

#### Analysis of Substance Abuse Rehabilitation Program

Five-year analysis of staffing, location, and workload of Navy Alcohol Abuse and Drug Abuse Counselors

#### Trauma and Operational Stress Services Evaluation

Evaluation of care of PTSD patients with anxiety in Navy primary care clinics

#### Methadone and Sudden Death Drug Safety Analysis

Analysis of methadone prescribing practices with focus on potentially toxic combinations with co-occurring conditions

#### Cancer Referral Trends Analysis

Metrics to determine Naval Medical Center Portsmouth cancer trends to optimize care and improve both access to and quality of care

#### Marine Corps Semper Fit Needs Assessment

Needs assessment for the Headquarters Marine Corps Semper Fit program focused on obesity, tobacco use, type 2 diabetes, and rhabdomyolysis rates and trends

#### WII Conference Evaluation

Assessment of relevance and cost effectiveness of conference offerings

#### Chief of Naval Air Training Suicide Investigation and Recommendations

Report to Chief of Naval Air Training on suicide prevention focus group findings at Naval Aviation Training commands

### Naval Operations N135 Suicide Medical History Review

Medical history review for all 2010 Navy suicide cases to identify necessary improvements in policies and procedures regarding mental health care and suicide data collection

### Institute of Medicine PTSD Report

Analysis of care for service members diagnosed with PTSD, including treatment location, duration of treatment, and categories of providers

### Assistant Commandant of the Marine Corps BUMED Report

Analysis of incidence, prevalence, and co-morbidity of PTSD, Major Depressive Disorder, TBI and alcohol abuse among Navy service members

### Performance-Based Budget Tobacco Intervention Metric Report

Report on Navy Medicine documentation of tobacco use during medical diagnosis process to identify current tobacco users, determine patient motivation to quit, and proceed with interventions

### Asthma Action Team Analysis

Analysis on Navy spirometry rates for persistent asthmatics to focus education and allocate resource to facilities with greatest need for services

### Subjective Tinnitus Report

Report on subjective tinnitus addressing service-specific trends among Active Duty and Guard/Reserve personnel from FY2005 to present

### Evidence Based Healthcare Advisory Board (EBHAB) Consultation

Partnered with EBHAB to improve clinical care at all Navy MTFs

### BUMED Musculoskeletal Continuum of Care Advisory Board (MCCAB) Strategic Plan Consultation

Partnered with MCCAB to develop specific, measurable, achievable, realistic, and timely strategic objectives to improve musculoskeletal care

### Analysis for Deputy Assistant Secretary of Defense Clinical Proponency Steering Committee

Analysis of FY2011 Triennial Health Related Behaviors Surveys designed to prioritize resources to maintain and improve the health of service members

### Database Transition Support

Navy lead for creation of Health Services Data Warehouse and Medical Data Repository

## EPIDEMIOLOGIC ANALYSIS PROJECTS

### Vice Chief of Naval Operations Monthly Report

Surveillance metrics for PTSD, TBI, major depression, and substance abuse

### Monthly US Marine Corp (USMC) Force Health Report

Report on deployment health assessment compliance and referrals; chronic pain, sleep, anti-depressant medication use and injuries

### Force Health Report for Naval Special Warfare Command

Report of medical conditions that impact readiness Navy Wounded Warrior Registry WII registry and related reports

### Navy Wounded Warrior Registry

WII registry and related reports

## Appendix: Product Compendium

### PTSD Report

Annual reports from 2001-2012 on incidences of PTSD in active duty Navy and Marines Corps

### Report on PTSD, Major Depressive Disorder, and Substance Abuse

Report from 2004-2010 on PTSD, Major Depressive Disorder, and Substance Abuse in Explosive Ordnance Disposal personnel

### Report on Co-morbid PTSD and Alcohol Abuse/Dependence in U.S. Marines

Annual report

### Medical Situational Awareness in Theater

Pilot study to determine effects of extended in-theater treatment time for musculoskeletal interventions on number of medical evacuations

### Navy Center for Combat and Operational Stress Control Mental Health Assessments

Analysis of mental health and post-deployment health assessments

### Mental Health Assessment Support for I Marine Expeditionary Force 3rd Battalion/5th Marines

Mental health assessments of over 500 Marines using new wireless system, developed by the NMCPHC, that reduced wait time for mental health appointments

### PTSD and Major Depressive Disorder Prevalence in Navy Beneficiary Population Report

Report on prevalence of PTSD in the Navy beneficiary population from 2009-present

### Concussion Rehabilitative Care Center Evaluation

Evaluation of the concussion care program operationalized by the Marine Corps in Afghanistan

### 1st Naval Construction Division Medication Use Report

Summary report of specific medication use trends

### Hepatitis B and C in Active Duty Navy and Marine Corps Report

Evaluation of prevalence/incidence of Hepatitis B and C in active duty Navy and Marine Corps personnel in 2009 and 2010

### Fungal Infection Surveillance

Assessment of risk of fungal infections in wounds of combat injured personnel from OIF/OEF

### MDRO surveillance collaboration with Army Multi-Drug Resistance Surveillance Network

Report on Navy-wide surveillance of MDRO

### Quarterly Analysis of MDROs Colonizing in the Groin of OIF/OEF patients

Analysis of frequency and type of groin MDROs colonizing in OIF/OEF patients at the Walter Reed National Navy Medical Center

### Deployment Limiting Conditions Report for Navy Expeditionary Combat Command

Report on impact of deployment limiting conditions on assigned personnel

### Spinal Injury Report

Summary report of deployment-related spinal injuries from 2004 to present

### Support for Research on Traumatic Blood Loss

Partnered with Naval Medical Center Portsmouth to investigate effects of terlipressin on lactate levels in traumatic injuries



### Support for the Health Patriot Study

Partnered with Naval Health Research Center on a 3-month mental health Post Deployment Health Risk Reassessment

### Marine Expeditionary Force Support

Identified and tracked personnel diagnosed with PTSD

### Acenitobacter Baumannii Infection Study

Created research methodology for Acenitobacter Baumannii Study in Afghanistan

### Integrated Disability Evaluation System Metrics Development

Metrics used to evaluate timeliness of Medical Evaluation Boards, suspensions, terminations and client satisfaction

### Navy Post-Deployment Health Re-Assessment Compliance Rates Reports

Reports on PDHRA compliance efforts at United States Fleet Forces and Navy Expeditionary Combat Command

### Data Sharing with Army and Air Force

Navy lead on joint data sharing process for deployment health assessments

### Rotary-Wing Aircraft Seating Analysis

Analysis of medical encounter data for injuries of Navy helicopter pilots and crew members from 2002-2010

### Support for Navy Expeditionary Combat Command embedded Mental Health Program (eMHP)

Baseline rates for mental health conditions prior to implementation of eMHP in the United States Navy Construction Battalions

### Rabies Surveillance

Identification of military personnel reporting exposure to animal bites during deployments

### Behavioral Health Surveillance for WII and Family Members

Developed framework for assessing behavioral health burden and surveillance metrics

### Amputation Patient Database

Database and accompanying training video to track amputation patients for the WII Case Management team

### PTSD By Occupational Specialty Report

Analysis of Navy PTSD cases by occupational specialty for Congressional report

### Medical Burden of USMC PTSD Cases

Analysis of USMC PTSD cases from 2002-2010

### Malaria Surveillance in Africa for NAVAf Force Health Protection Monitoring

Compilation of Navy and Marine Corps malaria cases acquired in Africa

### Report to Congress on Deployment Related Health Concerns

6-month summary report of new PTSD, TBI, Major Depressive Disorder, and Alcohol Abuse for members assigned to USMC Warrior Transition Units and Navy Safe Harbor

## HEALTH PROMOTION PROJECTS

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### WII Website

Comprehensive website for service members, families and providers on psychological health, injuries and commonly experienced problems – sleep, pain management, intimacy, substance abuse, stress, fitness, nutrition, and tobacco use

### Health Resources Directory

Web-based health resource directory for medical teams and WII service members

## Appendix: Product Compendium

### Navy Psychological Fitness Stress Control Program for Leaders

Curriculum, videos, workbooks and guides

### Case Manager Needs Assessment

Comprehensive analysis of the specific needs of the targeted population and their providers

### Needs Assessment for Amputees

Needs assessment for amputees in five areas: weight management and nutrition, functional movement, physical activity, physical fitness, and injury prevention

### Health Promotion and Wellness Analytic Assistance for Case Management

Case management tool to increase surveillance of care and standardize decision-making processes for case managers

### WII Health Promotion Educational Aids

- ▶ Patient-Centered Prevention Counseling Guidelines - A brief guide for alcohol risk assessment and intervention.
- ▶ Alcohol Health Promotion Toolbox - Information on personal responsibility, responsibility as a shipmate and the health/legal consequences of alcohol abuse
- ▶ Controlling Anger Brochure - Myths about anger and 10 steps to managing anger
- ▶ Managing My Anger Self-Help Guide - Proven strategies for controlling anger
- ▶ Got Anger? - Interactive presentation on anger management
- ▶ Injury Prevention Strategies That Work Presentation - Discussion on the impact that injuries have to the medical readiness of military personnel
- ▶ Musculoskeletal Injury Prevention Fact Sheet - Details on the NMCPHC injury prevention program
- ▶ Navy Leader's Guide to Managing Sailors in Distress Toolbox - Describes a broad range of supportive interventions, resources, and strategies for supporting Sailors in distress
- ▶ Operational Stress Leaders Actions Fact Sheet - Quick guide to signs of operational stress and action to be taken by leadership
- ▶ Stress Management Resource CD - CD containing stress management materials
- ▶ Operational Stress Signs & What to Do Fact Sheet - Quick guide to signs of operational stress and action to be taken by an individual
- ▶ OSC Stress Pocket Card - Card sized guide with signs of stress and resources for help
- ▶ Stress Continuum Brochure - Tool for individuals to identify where they are in response to stress and to provide information on actions that may be needed
- ▶ Relax, Relax Toolkit - A compendium of evidence-based relaxation approaches
- ▶ Relaxation Basics Brochure - Steps to basic relaxation
- ▶ Relaxation Training CD - CD containing breathing, progressive relaxation, visualization exercises and prayers
- ▶ Tips for Better Sleep Fact Sheet - Five tips to take to help improve sleep
- ▶ Watch Stander Fatigue — Signs, Symptoms, Solutions - Signs, symptoms, and solutions for fatigue in personnel
- ▶ Not Sure Where To Turn Suicide Prevention Poster - Information on where to get assistance
- ▶ Suicide Awareness Fact Sheet - Outlines the major behavioral and psychological risk factors often associated with suicidal behavior
- ▶ Worried About Shipmates Suicide Awareness Fact Sheet - Actions to take in response to concerns about shipmate behaviors
- ▶ Patient-Centered Prevention Counseling Guidelines—Tobacco - Flow chart for tobacco use counseling
- ▶ No Dips and/or Butts Manual for Quitting Tobacco - Unofficial military manual for quitting smoking and dipping
- ▶ Tips To Be Tobacco Free Fact Sheet - 14 tips for being tobacco free
- ▶ Tobacco Prevention and Cessation Toolbox - Resources for tobacco prevention and tobacco cessation
- ▶ Tobacco Resources for Clinicians and Providers - Website for clinicians and providers

- ▶ Tobacco Resources for Health Educators - Website for health educators
- ▶ Traumatic Brain Injury Fact Sheet - Explanation of TBI and links for additional information
- ▶ Minding Your Mental Health Fact Sheet - Definition of common psychological problems, symptoms, treatments and therapies
- ▶ PTSD Checklist - Problems and complaints that are sometimes experienced in response to stressful experiences

## DEPLOYED WAR FIGHTER PROTECTION PROJECTS

### Compendium – Vector Control

#### Insecticide Compound Testing

Efficacy testing results of 756 insecticide compounds against medically-relevant insects

#### Field Testing Insecticide Application Techniques

Field testing results of efficacy of new insecticide application techniques

#### Technical Reports

Nine technical public-health reports providing guidance on methods for control of disease-carrying insects that impact military readiness

#### Smartphone Application

Downloadable application for Android and Apple iPhones that assist users in choosing proper insecticide sprayer and insecticide

### Health Hazard Assessment

#### Periodic Occupational and Environmental Monitoring Summary (POEMS) Training Materials

Published process to conduct technically sound and scientifically defensible health hazard assessments on actual and potential chemical, biological, and physical stressors faced by deployed warriors; includes materials, curriculum, and programming support

## PUBLICATIONS AND PATENT

### Publications

Britch SC, Linthicum KJ, Wynn WW, Walker TW, Farooq M, Smith VL, Robinson CL, Lothrop BP, Snelling M, Gutierrez A; Lothrop HD, Kerce JD, Becnel JJ, Bernier UR, Pridgeon JW (2010) Evaluation of ULV and thermal fog mosquito control applications in temperate and desert environments. J. Amer. Mosquito Cont. Assoc. 26: 183-197.

Britch SC, Linthicum KJ, Wynn WW, Walker TW, Farooq M, Smith VL, Robinson CL, Lothrop BP, Snelling M, Gutierrez A; Lothrop HD (2010) Residual mosquito barrier treatments on U.S. Military camouflage netting in a Southern California desert environment. Military Medicine, 175: 599-606.

Farooq M, Walker TW, Heintschel BP, Hoffmann WC, Fritz BK, Smith VL, Robinson CA, English T, 2010. Impact of electrostatic and conventional sprayers characteristics on dispersion of barrier sprays. J Am Mosq Control Assoc, 26: 422-429.

Britch SC, Linthicum KJ, Walker TW, Farooq M, Gordon SW, Clark JW, Ngere F, Ngonga D, Chepchieng, C. Evaluation of ULV applications against Old World sand fly (Diptera: Psychodidae) species in equatorial Kenya. J Med Entomol, 48: 1145-1159.

Britch SC, Linthicum KJ, Wynn WW, Aldridge RL, Walker TW, Farooq M, Dunford JC, Smith VL, Robinson CA, Lothrop BB, Snelling M, Gutierrez A, Wittie J, White G, 2011. Longevity and Efficacy of Bifenthrin Treatment on Desert-Pattern US Military Camouflage Netting Against Mosquitoes in a Hot-Arid Environment. J Am Mosq Control Assoc 27: 272-279.

### Patent

A new molecular RNAi insecticide for controlling specific mosquitoes at a molecular level. This insecticide will not effect mammals or other vertebrates.



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