



United States Public Health Service

## Scientist Category Prevention Strategy



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## Introduction

*The National Prevention Strategy (NPS), developed under the direction of the U.S. Surgeon General and Chair of the National Prevention, Health Promotion, and Public Health Council, is an integrated domestic agenda that will guide our nation's health and well-being. The strategy identifies major priorities and encourages cross-sector partnerships to increase the health of Americans at every life stage through 1) Healthy & Safe Community Environments 2) Clinical & Community Prevention Services 3) Empowered People and 4) Elimination of Health Disparities.*

### Scientist Category

The Scientist Category, one of the eleven categories of the US Public Health Service (USPHS) Commissioned Corps, is comprised of 312 officers who hold doctoral degrees from over 46 general disciplines (Table 1). More than 60% of Scientist Officers demonstrate expertise in three major disciplines:

- Epidemiology/Public health
- Psychology – General and Clinical
- Biological Sciences

*The Scientist Category of the US Public Health Service Commissioned Corps has officers who hold doctoral degrees from over 46 general disciplines.*

The diversity of the Scientist Category allows officers to function at every point along the public health spectrum from the initial scientific discovery to clinical practice as healthcare providers. For example, Scientist Officers work as basic researchers, as epidemiologists who perform surveillance of chronic, infectious, environmental, and occupational health risks, as subject matter experts, as leaders who establish policies, guidelines, or recommendations that move science to practice, and as mental health providers to our nation's armed forces. The contributions by Scientist Officers fall well under the NPS, HHS Strategic Plan, and Healthy People 2020. As a whole, Scientist Officers have an enormous impact on the body of work across many public health agencies including the Bureau of Prisons (BOP), Food and Drug Administration (FDA), Centers for Disease Control and Prevention (CDC), Department of Defense (DOD), Environmental Protection Agency (EPA), Indian Health Service (IHS), National Institutes of Health (NIH), Office of the Secretary (OS), and state health departments.

### Purpose

The USPHS Scientist Category Prevention Strategy describes how the cross-cutting work and contributions by USPHS Scientist Officers are supporting the NPS under the seven priority areas. Scientist Officers work together, individually and collectively, with their civilian counterparts within the different agencies, to support and promote the priority areas through increased surveillance and epidemiology, support of state and local health departments, and through leadership for health reform. Scientist Officers also diligently work to develop national regulations, initiatives, and policy changes.

Scientist Officers are able to make an impact by:

- Supporting a comprehensive approach to preventing tobacco use,

*Scientist Officers work together, individually and collectively, with their civilian counterparts within the different agencies, to support and promote the priority areas through increased surveillance and epidemiology, support of state and local health departments, and through leadership for health reform.*

including discouraging tobacco first use, especially in young people, and providing support for cessation services;

- Supporting community-based programs to create a safe living environment for youths and warn of the dangers of drug abuse and excessive alcohol use;
- Actively engaging in improving nutritional standards and quality of the food supply and empowering people to make healthy food choices;
- Providing the evidence-based foundation for the benefits of physical activity and help facilitate policies and programs encouraging sustained physical activity;
- Increasing awareness of safe choices that prevent injury and violence and supporting design of the physical community environment that promotes safe living;
- Supporting programs that provide effective sexual health education and services for both adolescents and adults; and
- Providing support that gives individuals positive mental and physical well-being throughout the lifespan and a family and community environment that reinforces this well-being.

**Table 1: Scientist Category Disciplines**

<b>Epidemiology</b>	19%	<b>Neuroscience</b>	<1%
<b>Psychology, General</b>	15%	<b>Physiology, Human And Animal</b>	<1%
<b>Clinical Psychology</b>	10%	<b>Virology</b>	<1%
<b>Microbiology</b>	9%	<b>Anthropology</b>	<1%
<b>Public Health</b>	6%	<b>Biological Immunology</b>	<1%
<b>Chemistry, General</b>	6%	<b>Biostatistics</b>	<1%
<b>Pharmacology</b>	<5%	<b>Entomology</b>	<1%
<b>Biology, General</b>	<5%	<b>International Health</b>	<1%
<b>Biochemistry</b>	<5%	<b>Parasitology</b>	<1%
<b>Environmental Science/Studies</b>	<3%	<b>Zoology, General</b>	<1%
<b>Social Sciences, General</b>	<3%	<b>Botany, General</b>	<1%
<b>Toxicology</b>	<3%	<b>Business Statistics</b>	<1%
<b>Dietetics/Human Nutritional Services</b>	<3%	<b>Cell And Molecular Biology, Other</b>	<1%
<b>Physics, General</b>	<3%	<b>Ecology</b>	<1%
<b>Food Sciences</b>	<1%	<b>Materials Science</b>	<1%
<b>Genetics, Plant And Animal</b>	<1%	<b>Pathology, Human And Animal</b>	<1%
		<b>Philosophy</b>	<1%

Note: Some disciplines were collapsed under a general heading

## Tobacco Free Living

*Tobacco use is the leading preventable cause of disease, death and disability in the United States, accounting for approximately 443,000 deaths or one of every five deaths in the United States each year.<sup>1</sup> Smoking is a known cause of cancer in multiple organ systems, heart disease, stroke, complications of pregnancy, chronic obstructive pulmonary disease (COPD), and many other diseases. In addition, there is substantial adverse health impact from involuntary exposure to tobacco smoke. Despite the tragic health consequences of tobacco use, an estimated 45.3 million American adults currently smoke cigarettes.<sup>2</sup> Moreover, each day, about 3,800 youth ages 12 to 17 years smoke their first cigarette, and about 1,000 children and adolescents become daily cigarette smokers.<sup>3</sup> While tobacco products are legal products available for adult use in the United States, prevention of tobacco-related diseases requires a sophisticated strategy using a complete public health approach based on strengthening and expanding the science-base of effective tobacco control in order to prevent initiation among youth and young adults, promote cessation among tobacco users, eliminate exposure to second-hand smoke, and identify and eliminate tobacco-related disparities.*

### Recommendations: How are Scientist Officers...

#### **1. Supporting comprehensive tobacco free and other evidence-based tobacco control policies?**

*Despite the tragic health consequences of tobacco use, an estimated 45.3 million American adults currently smoke cigarettes.<sup>2</sup>*

Scientist Officers at various federal agencies have undertaken a number of important activities including generating and disseminating scientific data about the extent of tobacco use, its impact and effective interventions to reduce its use. For example, Scientist Officers at CDC are actively engaged in advancing the science base of tobacco control through a multidisciplinary program of applied research, surveillance, and evaluation. The goal of this work is to reduce the burden of disease through the synthesis and translation of research into practice and the dissemination of scientific findings. These officers have also taken a leadership role in assisting communities, states, and health systems in organizing their tobacco control program efforts that uses and maximizes interventions proven to be effective to ultimately eliminate the burden of tobacco use. Scientist Officers at CDC also contribute to the publication and dissemination of best practices to help states plan, implement, evaluate, and sustain their own tobacco control programs. A comprehensive approach to tobacco prevention and control requires coordination and collaboration across federal agencies.

#### **2. Supporting full implementation of the 2009 Family Smoking Prevention and Tobacco Control Act?**

On June 22, 2009, with the passing of the Family Smoking Prevention and Tobacco Control Act, Congress empowered the Food and Drug Administration (FDA) to regulate the manufacture, distribution, and marketing of tobacco products to protect public health. In August 2009, FDA established the Center for Tobacco Products (CTP) to oversee the implementation of the Tobacco Control Act. Under the guidance of a leading Scientist Officer, the CTP Office of Science has been tasked

to develop science-based regulations and guidance documents, review tobacco product submissions, develop a sound scientific knowledge base on tobacco products, fund and conduct research to fill the gaps in scientific understanding, evaluate scientific information from the public and industry, and support the Tobacco Products Scientific Advisory Committee. The CTP also educates the public about the harms of tobacco products.

*Scientist Officers are assisting states and territories in expanding tobacco cessation quitlines capacity to support federal initiatives, which currently have a goal of producing a projected 80,000 additional tobacco quitters compared with historical levels.*

### **3. Expanding use of tobacco cessation services?**

Presently, Scientist Officers at CDC are playing an integral role in establishing the National Quitline Data Warehouse (NQDW), the first-ever, large-scale initiative to create a national warehouse of data from state and territory tobacco cessation quitlines. Scientist Officers are assisting states and territories in promoting and expanding tobacco cessation quitlines as well as ensuring that adequate quitline capacity is in place to support federal initiatives, which currently have a goal of producing a projected 80,000 additional tobacco quitters compared with historical levels. It is hoped that this effort will help states and territories understand common and evidence-based practices in tobacco cessation to expand the reach of those seeking to quit use of tobacco products through the use of telephone quitlines.

Scientist Officers at CDC serve as experts and leaders on the Cessation subcommittee of the HHS Tobacco Control Strategic Action Plan and are engaged in tracking the Healthy People 2020 (HP2020) and other HHS cessation objectives. Scientist Officers also assist federal agencies, states, territories, and other partners to take advantage of current opportunities related to cessation policy and system changes in order to maximize the impact on quit attempts, aided quit attempts, and successful cessation. These current opportunities include ensuring that tobacco cessation quitline capacity is in place to support future federal initiatives (e.g. large scale media campaigns), expanding comprehensive cessation insurance coverage, and promoting development and implementation of effective health systems change policies in ways that maximize their population impact.

### **4. Using media to educate and encourage people to live tobacco free?**

Scientist Officers actively work with the media groups at the FDA and CDC to provide and disseminate scientific information on tobacco control to educate the public to prevent young people from using tobacco products and provide assistance to those who want to quit. This support includes scientific studies on the new proposed graphic health warnings which were selected based on data which support their ability to effectively communicate health risks of smoking to a diverse range of audiences.

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## Preventing Drug Abuse and Excessive Alcohol Use

*Drug abuse includes the use of illicit drugs and misuse of prescription drugs. The misuse of prescription drugs is becoming our nation's fastest growing drug problem.<sup>1</sup> Furthermore, the low cost and easy availability of alcohol have contributed to more than 79,000 deaths per year between 2001-20052 and to the perceived acceptability of excessive alcohol use. Drug abuse and excessive alcohol use has led to harmful risk-taking behavior that has resulted in incidences of crime, emergency room visits and death.<sup>2-4</sup> Preventing drug abuse and excessive alcohol use will increase people's chances of living longer and healthier lives. Restricting access to, providing treatment and support, and changing people's mindset on excessive alcohol use and drug abuse will have significant impacts on drug abuse and excessive alcohol use.*

### Recommendations: How are Scientist Officers...

#### **1. Supporting state, tribal, local, and territorial implementation and enforcement of alcohol control policies?**

Within Native American populations, substance abuse and suicide are interconnected.<sup>5</sup> Scientist Officers are leading training and education efforts to increase awareness and influence outcomes. For example, a Scientist Officer at the Indian Health Service, who is a subject matter expert in suicide, conducted Applied Suicide Intervention Skills Training for 600 community members, tribal employees, tribal leaders, medical providers and behavioral health providers from various American Indian tribes within Arizona, Utah, and Nevada, including on-site trainings for the remote Havasupai Tribe, who reside in the bottom of the Grand Canyon.

#### **2. Creating environments that empower young people not to drink or use other drugs?**

Scientist Officers encourage young people not to drink or use drugs through supporting community-based prevention activities and through drug abuse rehabilitation programs. For example, at the Lac Courte Oreilles Behavioral Health Department in Wisconsin, through the Native Aspirations national project and other grant opportunities, a Scientist Officer facilitates community-based prevention activities such as:

- Youth dance camp where the children learn traditional dance and regalia making skills from community members which serves as an opportunity for Behavioral Health staff to share important prevention education.
- A monthly sobriety feast including a speaker from the community in the winter and spring and during the summer and fall months, complimented by community picnics and family softball games and a Halloween celebration, all of which invited families to participate in sober activities.
- The Adolescent Day Treatment program, which focuses on family involvement in the treatment of adolescents with drug and alcohol abuse problems.

At the BOP, several Scientist Officers treat drug abusers while in prison to reduce

*A Scientist Officer at the BOP has taken inmate volunteers out to area schools to give testimony and has made over 60 presentations to more than 15,000 young people on the prevention of drug abuse and crime.*

*A Scientist Officer is leading the development of and conducting trainings for ArmySMART, an intervention program which aims to prevent alcohol and substance misuse, among other problems, in soldiers coming home from high-intensity combat deployments.*

drug use after release. One of these officers is the lead supervisor for an intensive, residential drug abuse rehabilitation program at a federal prison in the BOP. The program operates with two primary goals for inmates: (1) to live a sober, drug free lifestyle and (2) to be law-abiding and never return to prison. This Scientist Officer also runs a drug and crime prevention program in the community. Begun in 2002, the program takes inmate volunteers out to area schools to make drug abuse and crime prevention presentations. Over 60 presentations have been made to more than 15,000 young people on the prevention of drug abuse and crime.

### **3. Identifying alcohol and other drug abuse disorders early and providing brief intervention, referral and treatment?**

Several Scientist Officers provide treatment to alcohol and drug abusers through programs and research involving other stakeholders. A clinical psychologist detailed to the Department of Behavioral Health at the Fort Knox, Kentucky Army Post refers patients to an Alcohol and Substance Abuse Program (ASAP), where soldiers are evaluated and treated after an alcohol- or drug-related incident. This Scientist Officer also serves as a subject matter expert on prescription drug abuse to assist the Army with planning for research funding.

A Scientist Officer organized and has led the National Drug Abuse Treatment Clinical Trials Network (CTN) since 1999, providing an infrastructure for testing new treatments for drug abuse with an annual budget of \$40M. Under this Officer's direction, the CTN is now testing the practice of Screening, Brief Intervention, and Referral to Treatment (SBIRT) of drug-abusing patients seeking care at Emergency Departments around the nation. Over the past 18 months, this officer has collaborated with another Scientist Officer and together they have promoted the use of electronic health records (EHRs) among specialty providers. These Scientist Officers have developed a set of common data elements, established uniform screening tools to identify drug users presenting at general medical care facilities, and provide ongoing support of guidance relating to drug use that is essential for enhancing the SBIRT process in general, and the operability of EHRs, specifically.

### **4. Reducing inappropriate access to and use of prescription drugs?**

USPHS Scientist Officers are playing a role in the greater military community. For example, a Scientist Officer at the Walter Reed Army Institute of Research, is responding to this priority by conducting epidemiologic studies on the link between prescription drug use/abuse and pain. In addition, this officer is leading the development of and conducting trainings for a new six-session preventive intervention entitled, "Army Stress Management and Resilience Training (ArmySMART)", which aims to prevent alcohol and substance misuse, among other problems, in soldiers coming home from high-intensity combat deployments. Scientist Officers in the CDC's Division of Reproductive Health are also impacting this area by providing technical assistance for surveillance and analytic activities to states regarding maternal analgesic drug use and abuse and neonatal withdrawal symptoms.

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# Healthy Eating

Healthy eating can help Americans reduce their risk of obesity and chronic disease. The work of Scientist Officers support safe and healthy eating from birth to adulthood, including in early care and education centers, schools, workplaces, hospitals, and communities.

## Recommendations: How are Scientists Officers...

*Scientist Officers conduct research and surveillance on key nutrition behaviors to help identify and monitor disparities which can then be addressed to ensure opportunities for all Americans to improve their diet quality in order to reduce obesity and chronic disease.*

### **1. Increasing access to healthy and affordable foods in communities?**

Scientist Officers conduct research and surveillance on key nutrition behaviors and identify and track geographic, racial/ethnic, economic and other disparities in access to healthy foods and beverages. The goal of these studies is to identify and monitor disparities which can then be addressed to ensure opportunities for all Americans to improve their diet quality in order to reduce obesity and chronic disease. Scientist Officers were involved in the development of the *CDC State Indicator Report on Fruit and Vegetable Consumption*<sup>1</sup> and the *CDC Children's Food Environment State Indicator Report*<sup>2</sup> both of which provide states with information on policy and environmental indicators of access to healthy foods and beverages. Scientist Officers develop and disseminate evidence- and practice-based guidelines and provide training and technical assistance to state, community, and other partners to implement and evaluate best practices for increasing access to affordable, healthier foods. These programs include forming food policy councils, increasing healthier choices in food retail outlets such as convenience stores and farmers markets, improving community drinking water access, and promoting farm-to-where-you-are programs. Scientist Officers are supporting an assessment of the availability of healthy foods and beverages in the National Parks, and the National Park Service's "Healthy Parks Healthy People" initiative which encourages park concessioners to sell healthy, affordable foods and make available free drinking water.

### **2. Implementing organizational and programmatic nutrition standards and policies; improving nutritional quality of the food supply?**

Scientist Officers are working with partners to assist in implementation and evaluation of nutrition standards and food and beverage offerings in a variety of settings including hospitals, government agencies, worksites, early care and education centers, schools, and park/recreation facilities. For example, Scientist Officers are actively engaged in "Let's Move Salad Bars to Schools" which aims to put 6000 salad bars in schools by 2013, and "Let's Move! Child Care" which has several goals for improved nutrition in early care and education centers and child care homes. Scientist Officers are also involved in policy evaluation of nutrition topics through the CDC Prevention Research Centers.

### **3. Helping people recognize and make healthy food and beverage choices?**

Scientist Officers analyze a variety of data sources, including the Behavior Risk

*Through the “Let’s Move! Child Care” initiative Scientist Officers assist child care providers in teaching young children about food and nutrition, such as reinforcing nutrition messages through classroom activities and teaching children about “anytime” versus “sometimes” foods.*

Factor Surveillance System, HealthStyles, Youth Physical Activity and Nutrition Survey, and the National Health and Nutrition Examination Survey, to describe the knowledge, attitudes, beliefs, and practices of the population related to food and beverage choices. Scientist Officers played a key role in developing the Strategic Plan for NIH Obesity, the research priorities of which include basic, applied, and translational research to help understand and support healthier food and beverage choices. Through the “Let’s Move! Child Care” initiative Scientist Officers are assisting child care providers in teaching young children about food and nutrition. Components of the initiative include reinforcing nutrition messages through classroom activities and teaching children about “anytime” versus “sometimes” foods. Scientist Officers are collaborating on the HHS Healthy Beginnings project to develop healthy eating recommendations for children five years and under for health care, early care, and education providers. Scientist Officers serve on the National Collaborative on Childhood Obesity Research (NCCOR) which is a partnership between NIH, CDC, USDA and the Robert Wood Johnson Foundation to improve childhood obesity research.

#### **4. Supporting policies and programs that promote breastfeeding?**

Scientist Officers were very involved in the development of the *Surgeon General’s Call to Action to Support Breastfeeding*,<sup>3</sup> which outlines steps for health care, employers, communities, and public health practitioners to support breastfeeding. Scientists promote hospital policy and practice improvements through various activities, including implementation of the National Maternity Practices in Infant Nutrition and Care survey (mPINC). Scientist Officers were involved in the development of the survey, analyzing the data, and producing individual reports for each facility. These facility specific reports provide individual facilities with valuable information for improving hospital practices to support breastfeeding. Scientist Officers help produce the *CDC Breastfeeding Report Card*,<sup>4</sup> an annual report of state breastfeeding rates and policy and environmental supports for breastfeeding. Scientist Officers provide technical assistance to state breastfeeding coalitions, and state and community grantees to implement policies and programs to support breastfeeding, and a quality improvement collaborative that will help 65 hospitals improve policies and practices to support breastfeeding. Through the “Let’s Move! Child Care” initiative, Scientist Officers are working to support breastfeeding in early care and education centers. This initiative encourages centers to follow a mother’s wishes on whether to feed her infant breast milk, formula, or both, and to create an environment where mothers can breastfeed or pump breast milk.

#### **5. Enhancing food safety?**

Scientist Officers at FDA conduct research on procedures for isolating and identifying pathogens from foods and on the definition of the kinetics of growth, survival, or destruction of foodborne pathogens under the environmental conditions that occur during food processing and storage. Scientist Officers are responsible for reviewing industry submissions such as petitions for food and color additives, Generally Recognized as Safe (GRAS) notices and biotechnology notifications. Through inspection, Scientist Officers assess new manufacturing processes or changes in current manufacturing processes used in foods and make recommendations to the appropriate office, center, or agency regarding the relative

safety or hazard of a food substance. Scientist Officers also conduct analyses using complex results from safety, pharmacological and microbiological testing of food substances to derive conclusions regarding the overall safety of the food substance. To help protect the U.S. food supply, Scientist Officers at FDA and CDC track cases of foodborne illness and help to coordinate and supervise investigations into outbreaks. Scientist Officers also provide technical assistance to states in conducting their own foodborne illness outbreaks. In Kentucky, two state-assigned CDC Scientist Officers prompted creation of a foodborne/waterborne guidance manual for Kentucky epidemiologists, improving foodborne outbreak investigation processes.

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## Active Living

*Engaging in physical activity is one of the most important ways to improve and maintain health in youth and adults. Scientist Officers throughout state and federal governments are involved in research and programmatic work to support active lifestyles that include regular health-enhancing physical activity.*

### Recommendations: How are Scientists Officers...

#### **1. Encouraging community design and development that supports physical activity?**

*Scientist Officers determine key barriers and facilitators to walking or biking for transportation; conduct meta-analytic studies to quantify the national health burden associated with living in close proximity to busy roadways; and summarize the scientific literature on air pollution exposure and dose by mode of transportation.*

Scientist Officers are actively engaged in studies to determine the impact of environmental features on physical activity of children and adults. Scientist Officers provide technical support to the physical activity component of the National Heart, Lung, and Blood Institute's Healthy Communities Study, which will add to our understanding of how the man-made environment relates to children's physical activity. Using national-level datasets, Scientist Officers are contributing as follows: estimating the prevalence of active transportation and determining key barriers and facilitators to walking or biking for transportation; conducting meta-analytic studies to quantify the national health burden associated with living in close proximity to busy roadways; and summarizing the scientific literature on air pollution exposure and dose by mode of transportation. Results from studies of this type aid in the development of best practices for healthy community and transportation system design. The goal is to provide supportive environments in which people may live an active lifestyle and realize the substantial health benefits of physical activity.

#### **2. Promoting and strengthening school and early learning policies and programs that increase physical activity?**

Scientist Officers help lead the First Lady's "Let's Move! Child Care" initiative designed to encourage early care and education providers across the country to meet national policy and practice standards for physical activity. Scientist Officers were involved in the development of CDC's *State Indicator Report on Physical Activity, 2010*,<sup>1</sup> which provides, in part, assessment of policies implemented to enhance physical education and activity in schools, and physical activity in child care settings. Indicators within the report highlight program areas in which a state has been successful along with areas where more work may be needed.

Additionally, a Scientist Officer oversees the national Youth Risk Behavior Survey (YRBS). The YRBS survey, which has been conducted by CDC biennially since 1990, monitors priority health risk behaviors among 9<sup>th</sup>-12<sup>th</sup> grade students in public and private schools in the US. This Scientist Officer serves as the lead scientist on the major reporting activity and the release of national, state, and large urban school district YRBS data. YRBS data are used by state and local education agencies to improve and target programs aimed at promoting physical activity. For example, in Mississippi, YRBS data were used to support the Mississippi Healthy Students Act (MHSA; passed in 2007) which recognizes the relationship between

healthy students and academic achievement. The MHSAs aim to keep students healthy by providing increased amounts of physical activity, health education, and improved school nutrition programs. Lastly, Scientist Officers provide technical assistance to state asthma control programs. These programs work with schools to create safe physical activity environments for children with asthma.

### **3. Facilitating access to safe, accessible, and affordable places for physical activity?**

*Scientist Officers helped develop messages for the public on how to minimize air pollution exposure while being physically active outdoors.*

The National Park Service recently launched the “Healthy Parks Healthy People US” initiative, the goal of which is to reconnect humans with nature in a way that is beneficial to humans and the surrounding ecosystem. Led by a Scientist Officer, the “Safe Adventures” component of the initiative is designed to provide support to parks to mitigate risks to visitors, thereby promoting safe, accessible, and affordable physical activity. The “Safe Adventures” program identifies opportunities to educate the public on planning and preparation, identifying sources of information (such as park rangers), and adapting to changing circumstances using good judgment during the visitor’s park experience. A second example of Scientist Officer involvement in providing safe places for physical activity is a CDC-sponsored workshop, during which an expert panel examined the state of the science and developed recommendations for future public health guidance regarding physical activity and exposure to outdoor air pollution. The workshop’s recommendations will be used to develop messages for the public on how to minimize air pollution exposure while being physically active outdoors.

### **4. Supporting workplace policies and programs that increase physical activity?**

Scientist Officers help to support workplace policies and programs that increase physical activity by providing technical assistance to states, communities and worksites. Specifically, Scientist Officers have enhanced the translation and dissemination of the *2008 Physical Activity Guidelines for Americans*<sup>2</sup> to workplaces through the development of a toolkit that employers can use to create worksite cultures that promote physical activity among employees. Scientist Officers have assisted the National Safety Council in developing surveillance tools and educational modules for assessment of and training in worksite wellness by employers. Also, Scientist Officers have assisted the Office of Personnel Management’s federal worker *Health and Wellness Policy Review* in the development of recommendations to increase federal worker wellness.

### **5. Assessing physical activity levels and providing education, counseling, and referrals?**

Scientist Officers are actively engaged in efforts to improve the assessment and monitoring of physical activity within the general population and as part of targeted studies. Scientist Officers directly support the inclusion of objective measures of physical activity, sleep, and strength in the current National Health and Nutrition Examination Survey. As National Institutes of Health Extramural Program Directors, several Scientist Officers are supporting advancements in physical activity assessment. Assessment is essential to the ability to evaluate the recommendations included in the National Prevention Strategy.

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# Injury and Violence Free Living

In 2008, unintentional injury was the leading cause of death for people aged 1-44 in the United States.<sup>1</sup> The leading causes of unintentional injury deaths that year included motor vehicle-related injuries, unintended poisoning, and falls.<sup>1</sup> Homicide and suicide ranked in the top five leading causes of intentional injury death for people aged 1-44 and 10-54, respectively.<sup>1</sup> Scientist Officers throughout various HHS agencies work toward many of the NPS Injury and Violence Free Living recommendations as highlighted below.

## Recommendations: How are Scientists Officers...

### **1. Implementing and strengthening policies and programs to enhance transportation safety?**

*A Scientist Officer works on promoting and implementing CDC's "Parents Are the Key" campaign<sup>2</sup>, where parents are offered tools and proven steps for reducing teen driving injuries and deaths, and businesses and other groups receive assistance for programs aimed at keeping young drivers safe.*

Scientist Officers at CDC's National Center for Injury Prevention and Control (NCIPC), Division of Unintentional Injury (DUIP) contribute directly to fulfilling this recommendation. For example, one Scientist Officer is providing guidance and technical assistance to ten states funded to improve their motor vehicle child passenger safety policies. This Scientist Officer assists the states' efforts toward passing more inclusive child passenger safety seat, booster seat, and seat belt laws, and stronger graduated licensing laws. This Scientist Officer also serves as a technical advisor on a funded project assessing the cost and benefit of implementing effective motor vehicle injury prevention interventions, which include primary seat belt laws and sobriety checkpoints. The Scientist Officer is working on promoting and implementing CDC's "Parents Are the Key" campaign.<sup>2</sup> Through the "Parents Are the Key" campaign, CDC offers parents tools and proven steps for reducing teen driving injuries and deaths, and facilitates businesses' and other groups' programs to keep young drivers safe by spreading campaign messages through posters, fact sheets, social media tools, and more.<sup>2</sup>

### **2. Supporting community and streetscape design that promotes safety and prevents injuries?**

Scientist Officers in CDC's National Center for Environmental Health (NCEH) Healthy Community Design Initiative are providing technical assistance and resources to reduce injury risk through streetscape design and providing safe community environments for active transportation. Scientist Officers are accomplishing this by establishing Health Impact Assessment (HIA) cooperative agreements with six entities that will conduct HIAs and provide training on HIA to local professionals. A pilot program trained over 600 health and urban planning professionals, and established state-level data resources regarding transportation modes used, pedestrian and bicyclist injuries, and air quality. Scientist Officers also provide technical assistance to the U.S. Department of Transportation, under the auspices of the Non-Motorized Transportation Pilot Program, to support safe walking and biking programs within four pilot communities. Additionally, Scientist Officers served as Subject Matter Experts for the U.S. Department of Defense on the environmental health impacts of redeveloping closing military bases (Base Re-Alignment and Closure [BRAC] projects), reintegrating the property into the

surrounding communities using the Complete Streets Model to create communities that are safe for pedestrians, bicyclists, and vehicle occupants. Scientist Officers worked with national Safe Routes to School organizations to deliver best practices guidance to local public health and transportation professionals in all 50 states and the District of Columbia. Scientist Officers have also worked to improve school health and policy surveillance by working with CDC's Division of Adolescent and School Health to assess community design attributes near schools that impact health, such as school zone speed limits, presence of sidewalks and walking paths, and policies that support active transportation options.

*Scientist Officers worked with national Safe Routes to School organizations to deliver best practices guidance to local public health and transportation professionals in all 50 states and the District of Columbia.*

### **3. Strengthening policies and programs to prevent violence?**

Scientist Officers within the Division of Violence Prevention at CDC's National Center for Injury Prevention and Control currently provide scientific oversight and guidance for the National Intimate Partner Violence and Sexual Violence Surveillance System (NISVS). The NISVS is the first ongoing survey dedicated solely to monitoring intimate partner violence, sexual violence and stalking prevalence as public health issues.

Scientist Officers also provide assistance to several states participating in the National Violent Death Reporting System (NVDRS). NVDRS data help to inform decision makers and program planners about the magnitude, trends, and characteristics of violent deaths so that appropriate prevention efforts can be identified and put into place. NISVS provides detailed information about the magnitude, characteristics, and consequences of these forms of violence for the nation and for individual states. NVDRS data also facilitate the evaluation of state-based prevention programs and strategies.

Officers from the CEFO program, NCIPC, and those assigned to state health departments regularly evaluate state surveillance systems for violence related injuries and deaths. For example, a Scientist Officer in the CDC Career Epidemiology Field Officer (CEFO) program assigned to the North Carolina Division of Public Health has critically evaluated their state's violent death reporting system. This Scientist Officer found serious weaknesses in how deaths are reported and how death rates are calculated. After enhancing partnerships with medical examiners and local law enforcement and applying more sound epidemiologic methods for data collection and death rate estimation, this Division has significantly increased reporting of violent deaths and can now more accurately calculate both intentional and unintentional violent deaths (and generalize those rates across the state).

### **4. Providing individuals and families with the knowledge, skills, and tools to make safe choices that prevent violence and injuries?**

CDC's Division of Violence Prevention (DVP) Scientist Officers work with communications specialists to develop evidence-based materials for lay audiences on the risk and protective factors and adverse effects associated with different forms of violence, including suicide, child maltreatment, elder maltreatment, bullying and other peer violence, intimate partner violence, and sexual violence. Some of the products of these science/communication collaborations include fact sheets,

tool kits, CD-ROMs, and social media (e.g., Twitter and Facebook) messages.

*A Scientist Officer at the National Park Service has created and manages a national injury prevention program to conduct research, develop policy, create staff training and establish risk communication programs to prevent unintentional injury in visitors who come to recreate in national parks.*

The DUIP Scientist Officer noted earlier also collaborates with communication specialists to increase awareness of prevention measures for motor vehicle-related injuries and death through CDC podcast recordings, media interviews, and review of center materials, website content, and social media messages.

One of the Scientist Officers at NCIPC serves as a suicide subject matter expert (SME). In this role, this Scientist Officer responds to media and public inquiries sent via phone and email to CDC, and provides assistance to local and state representatives on topics related to suicide risk and protective factors. Suicide SMEs also provide extensive consultation on suicide cluster investigations including development and administration of qualitative protocols for focus groups, selection of items for surveys and case control study interviews, development of risk management protocols, training in suicidal behavior incident management procedures, and offering ethical considerations when working to prevent suicide as a public health concern.

A Scientist Officer at the National Park Service has created and manages a national injury prevention program to conduct research, develop policy, create staff training and establish risk communication programs to prevent unintentional injury in visitors who come to recreate in national parks. The program serves 270 million visitors in 395 parks nationwide and provides support to 20,000 employees. With focus in areas such as drowning prevention, falls, transportation related incidents, hiking incidents, heat and cold related illnesses, among others, the program uses epidemiological techniques to provide evidence based findings that drive prevention efforts.

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# Reproductive and Sexual Health

The NPS focuses on improving reproductive and sexual health by empowering people with information to make healthy, respectful, and responsible choices, and increasing effective use of health care services. USPHS Scientist Officers contributed to the NPS by providing assistance to building the evidence base that leads to effective public health policy and practice. Activities include conducting and supporting public health surveillance and epidemiologic investigations, as well as the development, implementation, and evaluation of programs related to contraception, family planning, pregnancy, and chronic and infectious disease prevention. Scientist Officers also provide technical assistance and training to governmental and non-governmental organizations on surveys and reproductive health risk assessments, improvement of reproductive health service delivery, and health education campaigns.

## Recommendations: How are Scientists Officers...

### 1. Increasing use of preconception and prenatal care?

Preconception care is recognized as a critical component of health care for women of reproductive age (WRA). The main goal of preconception care is to provide health promotion, screening, and interventions for WRA to reduce risk factors that might affect future pregnancies. Scientist Officers played a pivotal role by conducting surveillance, quantitative and qualitative research, and evidence-based systematic reviews necessary to the development, dissemination, and evaluation of recommendations.

Scientist Officers are national leaders of the Preconception Health and Health Care (PCHHC) initiative<sup>1</sup>, and many head national work groups charged with creating measurable action steps for each of the 10 recommendations, expanding routine surveillance and monitoring of PCHHC behaviors and outcomes, and ensuring inclusion of PCHHC as a Healthy People 2020 objective<sup>2</sup>.

Scientist Officers provided essential surveillance and research data requested by the Institute of Medicine that were used to revise guidelines related to gestational weight gain. These recommendations will guide health care professionals' counseling of over 4.3 million pregnant women in the U.S. each year.

### 2. Supporting reproductive and sexual health services and support services for pregnant and parenting women?

A Scientist Officer evaluated the work-related health effects on flight crews of exposure to cosmic ionizing radiation and alterations of circadian rhythm to examine the risk of adverse reproductive health outcomes, cancer, and mortality. Studies of adverse outcomes such as spontaneous abortion, menstrual disorders, and time-to-pregnancy will be used to update health policies for flight crews, including radiation exposure guidelines.

Scientist Officers contributed to the adaptation for use in the United States of two internationally accepted cornerstones of family planning services: the World Health

*Scientist Officers provided essential surveillance and research data that were used to revise guidelines related to gestational weight gain, affecting counseling of over 4.3 million pregnant women in the U.S. each year.*

Organization's *Medical Eligibility Criteria for Contraceptive Use*<sup>3,4</sup> (MEC), and the World Health Organization's *Selected Practice Recommendations for Contraceptive Use*<sup>5</sup> (SPR). Scientist Officers responded to an Institute of Medicine family planning recommendation by contributing to the revision of the federal Title X family planning program guidelines which are expected to serve as the standard of care for providing family planning and related reproductive health services for females and males in the U.S.

*Scientist Officers contributed to the revision of the federal Title X family planning program guidelines which are expected to serve as the standard of care for providing family planning and related reproductive health services for females and males in the U.S.*

Scientist Officers helped to develop and implement a survey of prenatal and postpartum care providers regarding their knowledge, attitudes, beliefs, and practices towards screening for gestational diabetes mellitus during pregnancy and postpartum screening for Type 2 diabetes mellitus (T2DM). Results, which were sent to providers through a state diabetes newsletter<sup>6</sup>, are being used to guide additional research on barriers to postpartum diabetes screening, and to inform the state's diabetes prevention plan. The project aim is to prevent or delay T2DM among mothers at higher risk due to having gestational diabetes previously.

Scientist Officers have leveraged resources and are collaborating with USAID and other donors to ensure the provision of an integrated package of services including antenatal care, treatment of sexually transmitted infections (STI), family planning, and enhanced quality of emergency obstetric care to the Haitian people following the 2010 earthquake. One of the primary goals of these efforts is to make available all relevant protocols and guidelines in wards and consultation rooms. This project will have a particular emphasis on supply chain management at the site level to ensure the availability of supplies and emergency obstetric/childbirth-related medications.

Serving as a key member of CDC's Maternal Health Team during the 2009 H1N1 influenza pandemic, a Scientist Officer led an evidence-based review of mother-to-child transmission of H1N1 during the intrapartum and postpartum periods. This effort was instrumental in helping CDC develop national guidance on how to handle mothers with suspected or confirmed H1N1 in obstetrical settings to prevent newborn infection.

### **3. Providing effective sexual health education, especially for adolescents?**

As mentioned earlier in the Active Living priority, a Scientist Officer oversees the national component of the Youth Risk Behavior Survey<sup>7</sup>. YRBS data are also used to implement health education curricula and develop health programs for schools and communities.

Scientist Officers use data from the CDC-funded, five-year, longitudinal Youth Asset Study<sup>8</sup> is used to evaluate associations among youth assets<sup>9-11</sup> (protective factors that strengthen risk reduction) and risk behaviors, such as the influences of parental income, virginity pledges, and youth assets on adolescent sexual risk behaviors. Data from in-person interviews with 1,089 adolescents and their parents offers information on 17 youth assets believed to influence adolescent behavior. Results are intended, in part, to inform community-level intervention programs designed to reduce or delay sexual intercourse among adolescents.

*Scientist Officers use data from interviews with 1,089 adolescents and their parents, to support community-level intervention programs designed to reduce or delay sexual intercourse among adolescents.*

A Scientist Officer at CDC conducted an assessment of college students' knowledge, attitudes, and practices related to sexual behavior and screening for common STIs. Understanding students' awareness of STI transmission, prevention, and treatment options will improve educational materials, increase the number of students being tested and treated for STIs, and decrease the burden of disease over time.

#### **4. Enhancing early detection of HIV, viral hepatitis, and other STIs and improve linkage to care?**

A Scientist Officer serves as a Public Health Analyst in the Ryan White HIV/AIDS Program for thirteen grantees in the State of Mississippi. The Ryan White Program<sup>12</sup> is designed to provide care and treatment for persons with HIV/AIDS. Scientist Officer activities include providing oversight of grants to build capacity in caring for and treating people with HIV/AIDS. In addition, epidemiologic skills are used to analyze program effectiveness and to make recommendations to senior staff to advise funding decisions and include more programmatic guidance to grantees.

A Scientist Officer is using YRBS7 to monitor the prevalence of adolescents ever being tested for HIV and track trends in adolescents' HIV- and other STD-related risk behaviors over time. Results are disseminated regularly through peer-reviewed publications and can be used to inform development of HIV/AIDS prevention programs for youth.

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## Mental and Emotional Well-Being

*Mental and emotional well-being are important contributors to one's overall health. The World Health Organization defines mental health as "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community."<sup>1</sup> Well-being is impacted by life satisfaction, relationship quality, emotions, and resilience. Assaults to mental health may not only impact one's psyche, but may contribute to both communicable and non-communicable diseases and both unintentional and intentional injury.*

### Recommendations: How are Scientist Officers...

*Scientist Officers are involved in the Comprehensive Soldier Fitness Program for the Army, program that focuses on building resilience among soldiers and their families, allowing individuals to maintain positive mental health and achieve their full potential so that they can tackle both physical and psychological challenges during deployment and upon their return home.<sup>6</sup>*

#### **1. Promoting positive early childhood development, including positive parenting and violence-free homes?**

The goal of maternal and child health scientists is to improve the health and well-being of mothers, children, and families. Scientist Officers from the CDC work to build maternal and child health capacity in local public health agencies/institutions via field placements, as part of the Maternal and Child Health Epidemiology Program. The program encourages the application of sound epidemiologic research and scientific information for a variety of programs and policies related to maternal and child health.<sup>2</sup> Scientist Officers in CDC's Division of Reproductive Health monitor mental disorders among reproductive age women, an important factor related to child and family well-being, and provide technical assistance to developing countries to conduct needed surveillance.

Scientist Officers contribute to the development of scientifically-backed evidence and advice for various educational efforts and programs. For example, CDC makes available educational information for parents on their website. Topics include child development, parenting tips specific to child age, child maltreatment prevention, and violence prevention.<sup>3</sup>

#### **2. Facilitating social connectedness and community engagement across the lifespan?**

Various groups across federal agencies where Scientist Officers are stationed work on social connectedness and community engagement across the lifespan. For example, the work of Scientist Officers at the CDC's National Center for Health Statistics supports the statistical needs of Healthy People 2020,<sup>4</sup> which includes new topic areas addressing the lifespan and social determinants of health. Scientist Officers support the development, communication, monitoring and implementation of these objectives, including helping to provide evidence-based resources for stakeholders to promote social connectedness and community engagement in their respective spheres of influence. CDC also maintains a Social Determinants of Health website, which includes resources, publications, definitions, and frequently asked questions collected from various CDC national centers.<sup>5</sup> Scientist Officers contribute to data and development of several of the resources on the site, including Healthy People and Community Health Status Indicators.

*Scientist Officers conduct Applied Suicide Intervention Skills Training (ASIST) to community members and leaders, medical providers, and behavioral health providers on how to identify and help someone who may be at risk for suicide. Today, 5,000 registered trainers have delivered ASIST to over one million caregivers around the world.<sup>9</sup>*

### **3. Providing individuals and families with the support necessary to maintain positive mental well-being?**

Many Scientist Officers, particularly Clinical Psychologists, have volunteered for assignments following the MOU with the Department of Defense (DoD). These Scientist Officers are working to facilitate gaps between mental health and clinical services and are making a difference through outreach to the greater military community. Currently, some of these Scientist Officers are involved in the Comprehensive Soldier Fitness Program for the Army, a multi-faceted program that focuses on building resilience among soldiers and their families. This allows individuals to maintain positive mental health and achieve their full potential so that they can tackle both physical and psychological challenges during deployment and upon their return home.<sup>6</sup> Scientist Officers also work with returning and injured service members providing individual and/or group support and counseling for Post-Traumatic Stress Disorder and other mental health issues. In addition, Scientist Officers at the Department of Defense conduct research to design and test preventive mental health interventions, ensuring that individuals have the effective tools necessary to maintain positive mental and emotional well-being.

### **4. Promoting early identification of mental health needs and access to quality services?**

Early identification of mental health problems is essential to assure that individuals get access to the appropriate treatment. Through the Department of Defense Deployment Mental Health Assessment program, Scientist Officers identify mental health conditions including Post-Traumatic Stress Disorder, depression, and other psychological health conditions that require referral for additional care and treatment.<sup>7</sup> This program enhances the early detection of mental health needs and provides access to quality services, as well as improves the quality of life for service members and their families. Scientist Officers also conduct Applied Suicide Intervention Skills Training (ASIST), two-day workshops that teach community members and leaders, medical providers, and behavioral health providers how to identify and help someone who may be at risk for suicide. The goal of this training is to turn denial, avoidance and stigmatization regarding suicide into vigilance, understanding and help in order to prevent suicide.<sup>8</sup> Today there are 5,000 registered trainers, who have delivered ASIST to over one million caregivers around the world.<sup>9</sup>

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## Conclusion

As we recognize the significant cost of disease to the economy, families and to businesses, we realize that prevention of disease may be most effective method in mitigating these costs as well as improving one's life expectancy and overall well-being. The Surgeon General's National Prevention Strategy provides the framework to begin to meet the prevention of diseases and improvement of individual through the life stages.

Scientist Officers fully embrace the National Prevention Strategy as demonstrated by the USPHS Scientist Category Prevention Strategy. Again, the highlights of the USPHS Scientist Category Prevention Strategy in support of the priority goals are as follows:

*A prevention strategy rather than a reaction strategy.*

- 1) Supporting a comprehensive approach to preventing tobacco use, including discouraging tobacco first use, especially in young people, and providing support for cessation services;
- 2) Supporting community-based programs to create a safe living environment for youths and warn of the dangers of drug abuse and excessive alcohol use;
- 3) Actively engaging in improving nutritional standards and quality of the food supply and empowering people to make healthy food choices;
- 4) Providing the evidence-based foundation for the benefits of physical activity and help facilitate policies and programs encouraging sustained physical activity;
- 5) Increasing awareness of safe choices that prevent injury and violence and supporting design of the physical community environment that promotes safe living;
- 6) Supporting programs that provide effective sexual health education and services for both adolescents and adults; and
- 7) Providing support that gives individuals positive mental and physical well-being throughout the lifespan and a family and community environment that reinforces this well-being.

The diversity of the USPHS Scientist Officers allows our category to support the NPS priorities from the grassroots to implementation. This report is not inclusive of all the work of Scientist Officers in the USPHS, but provides the initial review of the work of our category. In summary, USPHS Scientist Officers are dedicated to increase the health and well-being of our nation through prevention efforts in partnerships with other stakeholders to support the priority goals under the NPS.