It Wouldn't Hurt to Create a Safer Military

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Injuries are one of the biggest health threats confronting the U.S. Armed Forces; their magnitude, severity, and causes are well documented.[1] Military health and readiness depends on an intensive effort to control injuries. Given the historical success of the military in warding off infectious and communicable diseases, the Armed Forces are taking the right step now by investing in injury prevention.

The Centers for Disease Control and Prevention (CDC) itself did not immediately recognize injuries as a predictable and preventable public health problem. When the CDC was created in 1946 as part of the activity for Malaria Control in War Areas (MCWA), its mission was to protect U.S. Armed Forces and civilians from malaria during World War II.[2] As the health burden on Americans changed, the scope of CDC activities evolved, too. The CDC expanded its focus to include occupational and environmental health, and more recently injury prevention and control.[3]

There is a long history of successful collaboration between the CDC and the U.S. military resulting in joint injury-related projects and consultations. For example, the CDC and its grantees have participated in the Army Surgeon General's workshop on training-related injuries, the Armed Forces Epidemiological Board (AFEB), and the AFEB Injury Prevention and Control Work Group.[4] Bruce Jones, MD (COL, U.S. Army retired), now at the U.S. Army Center for Health Promotion and Preventive Medicine, was a leader at the CDC and directed the motor vehicle injury prevention activities at the National Center for Injury Prevention and Control (NCIPC). Michelle Canham-Chervak, MD, MPH, helped produce the first CDC/National Center for Health Statistics (NCHS) Atlas of United States Mortality, and she participates in the CDC/National Institute for Occupational Safety and Health (NIOSH) grant reviews and contributes to the CDC/NIOSH National Occupational Research Agenda.

More recently, the CDC participated in the Defense Safety Oversight Council's (DSOC) Joint Services Physical Training Injury Prevention Work Group, the results of which are presented in the papers in this supplement to the *American Journal of Preventive Medicine*.[5–24] These collaborative efforts have strengthened both the U.S. military and the CDC's capabilities to address injuries as preventable conditions, and have facilitated the application of what we know from civilian populations to U.S. soldiers and their families, and vice versa.

Using the Public Health Approach

The NCIPC conceptualized how a public health approach to disease prevention can be used to prevent injuries.[25] This process includes defining the problem with surveillance data; identifying risk and protective factors, designing, and implementing intervention strategies; and translating effective interventions for widespread adoption (Figure 1).

The U.S. military adopted a similar approach to its injury problem, moving from an understanding of the problem to solutions that can be widely applied. Taking an empirically based public health approach to identifying the causes and consequences of injuries is an important first step taken by the military.[26] Military populations are little different from civilian communities when it comes to identifying injury problems and intervening with effective solutions. Specifically, the sheer numbers of men and women on active duty in the military, their standardized training regimes, the availability of complete medical records, and the routine provision of preventive services provide a unique opportunity to understand the frequency, causes, and consequences of injury—something that is not readily available in the civilian world.

The richness of military databases for safety research and surveillance is exemplified by the level of detail captured for motor vehicle injury risk factors; sport and recreational injuries; training/exercise-related injuries; musculoskeletal injuries; and injuries related to noise, lifting, and other occupational hazards. Safety data used to estimate the costs of these injuries are also of great value. This knowledge can have wider ramifications than just improving the safety of military personnel; it can also be applied creatively to civilian populations where the conditions that give rise to injuries are similar.

Lessons Learned from Military Populations

Progress made since publication of the April 2000 *American Journal of Preventive Medicine* supplement Injuries in the U.S. Armed Forces[26] has been remarkable. As part of the prevention prioritization processes described in this supplement, data on common injuries have been collected and analyzed, and recommendations on injury surveillance, prevention, and control have been made to

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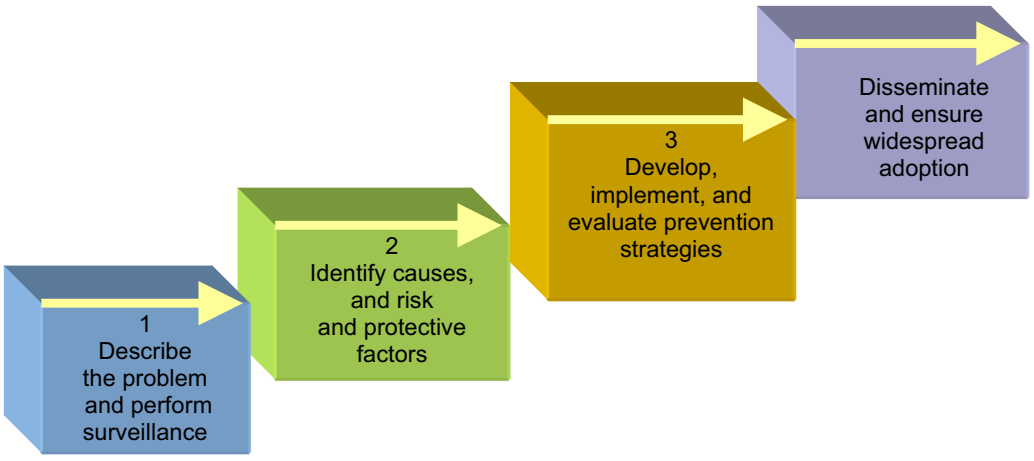

Figure 1. Public health model of disease control applied to injury prevention

the senior military leadership through the DSOC. This is an important model that can be emulated in communities and states to bring about widespread changes in how we view and respond to injuries as a public health problem.

For civilians, preventive medicine specialists, and those in community public health, the progress made on injuries in the military is important for several reasons:

- **Detailed surveillance:** The strength and importance of accurate and consistent injury databases to support military injury prevention are well established. Surveillance of fatal and nonfatal injuries in the military will provide ongoing assessment of the effectiveness of programs, policies, and investments to protect the health of military personnel and their families. The papers in this supplement present tools (e.g., injury-related musculoskeletal matrix; ICD-9 codes defining eye, noise-induced, and oral–maxillofacial injuries) that will be useful in this endeavor.
- **Known risk factors:** The epidemiology of certain types of injury among military personnel (e.g., from playing football or basketball) is now known for the first time. This foundation in surveillance is useful for prevention planning and as baseline data for comparative purposes.
- **Effective interventions:** There are tremendous opportunities to implement novel interventions and adapt what we know works in the military population. There is a strong role for health promotion, public health, and preventive medicine in contributing to the evidence base and informing the implementation and dissemination of interventions.
- **Cost savings:** A focus on prioritization of injury problems will allow the most numerous, costly, and preventable injuries to be addressed first.
- **Science in action:** The use of various methods for analyzing military injury data underscores the importance of using science as a basis for decision making.

Future Directions

Many injury epidemiologists and prevention practitioners have worked with their counterparts in the U.S. military to explore ways to strengthen data systems, identify new risk and protective factors, test interventions on military bases, and conduct evaluations of existing injury-prevention efforts. Collaborations between civilian public health and the military have contributed to reductions in not only unintentional injuries, but violence as well.[27]

The drastic reduction in aviation-related fatalities in the military shows what can be accomplished when data are used for decision making and action. Reductions in motor vehicle deaths and hospitalizations in service members provide another illustration of what is achievable when there is a focus on the prevention of a specific injury problem.[27] The initial success of the U.S. Air Force program in suicide prevention provides another vivid example of successful injury prevention in a military environment.[28]

What we have learned so far paves the way to a safer military. This new knowledge, if acted upon, can lead to: (1) identifying new injury problems that are unique to military personnel; (2) improving the quality and timeliness of military injury data; (3) helping the Department of Defense (DoD) and its partners define an appropriate research agenda to close the gaps in existing knowledge; (4) translating injury prevention priorities into prevention programs; (5) evaluating prevention efforts in military settings and among tri-service populations; and (6) delivering quality injury prevention programs that affect the widest cross-section of active military personnel, veterans, and their families. Many federal agencies can play a role in assisting in these efforts, including the Departments of Transportation, Justice, Labor, Veteran Affairs, Education, and Health and Human Services.

There are no easy solutions to the injury problem in the military. Translating data on military injuries into policies and practices takes leadership but also requires ex-

pertise in implementing effective programs and evaluating the results; this special issue demonstrates that the U.S. military command structure is poised to do so, and on track.

Further progress requires complementary strategies targeting different military populations in various settings, and enlisting the participation of new partners. It is important to focus on injury prevention on- and off-base, in training, during active duty, and in leisure time. Injury prevention can be part of a "culture of safety" in military families, in schools and on military posts, during deployment, and in the theater of combat.

Perhaps the biggest enemy is unintentional injury, especially considering that unintentional injuries, not battle wounds, are the leading cause of aero-medical evacuations from the theater of combat operations.[14] An injury to a soldier (whether obtained in training, at home, or on the highway) reduces combat readiness and compromises national military strength. We cannot afford a military plagued with injury, particularly when DoD disability costs continue to rise.[29] We will need to use the same scientific vigor and discipline to reduce injuries that it took to defeat infectious and communicable diseases, only it may take longer.

A safer military is within our reach. The epidemic is no longer hidden.[1,4–24] Training regimes that reduce the chances of injury; recreation and sports programs that use best practices; and vehicle transportation policies that minimize crashes are three examples of how the military can apply evidence-based strategies[30] to protect soldiers and reduce injuries.

It wouldn't hurt to create a safer military. It would save lives, reduce days lost, save money, and preserve our investment in force protection.

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