

Casualties of the Global War on Terror and Their Future Impact on Health Care and Society: A Looming Public Health Crisis

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ABSTRACT This article is a primer to understand the medical advances and the future health care consequences of the current conflicts in the Middle East and Southwest Asia, known as the Global War on Terror. There have been significant advances in health care learned in caring for those injured by the conflict—often a polytrauma blast victim, but there are also very high incidence rates of the hidden injuries of war—traumatic brain injury, post-traumatic stress disorder, suicide, and depression. These lead to disruptive behaviors, homelessness, and family violence. Global War on Terror returnees are using medical services and applying for disability at higher rates than in previous conflicts. The costs for veterans' care may peak 30 to 40 years or longer following the conflict, and will inflict an enormous burden on services and resources. The effects of the war will linger for years and impact across generations because of the stress on families and children. We must mobilize government agencies, create public-private partnerships, and invest our resources now to mitigate the approaching tsunami of veterans' health care needs, the impact on our social services, and the devastating costs to society.

INTRODUCTION

This article highlights the future health care consequences of the current decade long conflict in the Middle East and Southwest Asia, known as the Global War on Terror (GWOT). The end of U.S. combat operations in Iraq and the drawdown of troops from Afghanistan may soon close this chapter in history, but is not the end of our nation's war-derived health concerns and resulting social impacts. To quote Winston Churchill, "This is not the end; it is not even the beginning of the end, but it is, perhaps, *the end of the beginning*."¹ This conflict may result in a major public health crisis and economic drain that will overtax social systems such that it could destabilize our society.

Returning veterans have serious physical and sometimes invisible wounds and problems that need to be addressed—this article is to give a voice to my brothers and sisters in arms who are less fortunate—"For he today that sheds his blood with me shall be my brother. . ."² This article reviews how the GWOT resulted in medical advances, the anticipated rise in cost of health care, and the need to improve our efforts to care for the veterans.

THE GOOD

Every war has advanced medical knowledge and patient care and this conflict is notable for improvements that have been adopted into civilian practice and helped save many lives. First responders are key to survival in those first minutes after wounding, and medics and corpsmen are better trained than ever, as are the individual warriors in self-care and buddy care. An example is using tourniquets to stop bleeding, which was not recommended in civilian trauma courses in

previous years, despite studies of the Vietnam conflict that had shown that there were preventable deaths on the battlefield because of bleeding.³ Tourniquets have improved, can be self-applied, and use is now integral to current military training and proven as lifesaving.⁴⁻⁶ Devastating wounds in patients with injured extremities who in previous conflicts often exsanguinated (bled to death) in the field can be stabilized long enough to reach definitive care. There are case reports of triple and quadruple amputees surviving because of rapid and precise tourniquet placement.^{6,7} Other new developments include tourniquets designed for control of hemorrhage in the groin and torso.⁸

New tools include hemostatic dressings deployed by the U.S. military into the battlefield: zeolite (QuikClot, Z-Medica, Wallingford, Connecticut) and chitosan (HemCon, HemCon Hemorrhage Control Technologies, Portland, Oregon). These had demonstrated success in controlling hemorrhage in animal models. Early clinical experience has shown efficacy in providing hemorrhage control, particularly in injuries not amenable to tourniquet use.^{4,9}

The "tyranny" of time, distance, and the tactical setting historically delayed definitive surgery. Casualties who receive definitive surgery during the "golden hour" after wounding have better outcomes. Hence moving surgery forward to the edge of battle saves lives. Mobile forward surgical units bring definitive care close, and their personnel brave conditions near or in actual combat to save those who would otherwise perish, placing themselves at risk.¹⁰ Richard Jadick's "On Call in Hell" is a vivid and poignant description that helps one appreciate the difficulty, stress, and ultimate reward of saving lives while in the line of fire.¹¹

Life and limb saving "damage control procedures" for massively injured patients are now standard practice. The patient undergoes abbreviated surgery, where control of hemorrhage and contamination is rapidly obtained and definitive repairs deferred—short quick fixes to get the injured off

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the operating table so that metabolic and coagulation needs can be corrected. Limited damage control surgery includes leaving open amputation wounds, debridement, external fixation of fractures, packing of bleeding sites, and temporary abdominal closure using synthetic barriers.^{4,12–15}

Massively traumatized patients must have short, quick operations. Longer operations can result in hypothermia (cold body core temperature), acidosis (buildup of lactic acid because of inadequate delivery of oxygen to mitochondria), and coagulopathy (blood does not clot)—a physiologic lethal triad that must be prevented. Concluding surgery quickly allows resuscitation with transfusion of blood and clotting factors, and warming to improve physiologic stability.¹² Stabilization may allow further procedures or onward evacuation to a higher level of care. The next surgeon will evaluate for hemodynamic status and possibly proceed to removal of packs, re-exploration, completion of repairs, establishment of stomas or gastrointestinal continuity, and wound closure.¹⁵ Contaminated wounds or fractures are debrided, cleaned, external stabilization devices applied/adjusted, and wounds covered or closed.¹⁶ Definitive surgery, restorative treatment, or evacuation to the next higher level of care in the chain can then be undertaken. Military and civilian surgeons both utilize this limited damage control approach followed by stabilization and then later definitive treatment in the polytrauma patient.

Resuscitation has evolved away from every trauma patient having 2 IVs and receiving at least 2 L of saline-based fluid to restore the circulating volume. A landmark study using a no-fluid resuscitation protocol in hypotensive patients after penetrating truncal injuries concluded that traditional rapid fluid resuscitation significantly decreased survival.¹⁷ Large volumes of fluid may promote a higher blood pressure, which might result in more bleeding; and there are dilution and coagulation issues with IV fluids as well. Supported by studies on the battlefield, priority is directed to stopping bleeding and allowing lower blood pressure in certain patients—permissive hypotension—to decrease the bleeding from uncontrolled bleeding points, until casualties reach definitive care where bleeding can be stopped.¹⁸

Blood is now favored over saline or other extenders for volume restoration in major traumas. Banked blood has had the plasma with most of its clotting factors removed, and the platelets deteriorate over time, so massive transfusion of banked blood can exacerbate coagulation problems. Battlefield observations suggest improved survival of patients receiving fresh whole blood, or with packed cell transfusion augmented by fresh frozen plasma and platelets.^{19,20} The clinical guidelines for resuscitation of combat-wounded patients in deployed U.S. surgical facilities in hemorrhagic shock requiring a massive transfusion recommend the infusion of fresh frozen plasma, packed red blood cells, platelets in a 1:1:1 ratio, and the minimization of crystalloids and synthetic colloids.²¹ This change is a direct result of observations and research both on the battlefield and in civilian trauma centers.

The most grievously wounded in previous conflicts could not tolerate evacuation even though they needed a higher level of care. Critical Care Air Transport Teams (CCATT) in this conflict evacuate the casualties with the most devastating injuries from the battlefield to Landstuhl Regional Medical Center (LRMC) in Germany and then onward to U.S. centers for treatment. A CCATT has a critical care physician, critical care nurse, and respiratory therapist along with the supplies and equipment to operate a portable intensive care unit within a cargo aircraft, and can care for six low-acuity patients or three high-acuity patients.²² Each member completes additional training in aerospace physiology and medical care in austere environments.⁴ These teams have worked out protocols for even the most complex intensive care—extracorporeal membrane oxygenation for cardiac and respiratory support to patients whose heart and lungs are so severely damaged that they can no longer serve their function of delivering oxygen to the tissues, previously done only in specialized intensive care units.^{23,24}

Information technology has improved so that records of care and images taken during care at each point are accessible to medical professionals along the evacuation and treatment chain. Every week, each critical patient in the evacuation pipeline is discussed on a video teleconference that spans nine time zones on three continents. Attendees include forward surgical teams, combat support hospitals, Landstuhl Regional Medical Center, NATO colleagues, and the Air Force Aeromedical Evacuation service. The conference may include participants at Walter Reed National Military Medical Center in the Washington, DC area; Brooke Army Medical Center in San Antonio, Texas; and the Veterans Health Administration (VHA).²⁵ The information coming forward and the rapid feedback loop to providers along the chain of care and evacuation is a catalyst for performance improvement and a patient care enhancement. There is also an element of morale boosting for forward deployed providers hearing that patients further down the evacuation chain have achieved significant milestones.

Enhanced training, better tools, and improved techniques augment the professionalism, selflessness, and devotion to duty of the military medical staff. First responder/field care, Forward Surgical Units, improvements in resuscitation, CCATT, and others have contributed to saving lives. Each of these developments was worked out by medical professionals in uniform observing, studying, and pushing the envelope. The validation of their observations has led to incorporation of many of these advances in the care of casualties around the world. The battlefield provides a robust laboratory for the advancement of medicine; to quote Dr. Mayo: “Medicine is the only victor in war.”²⁶

THE BAD

We know the visible injuries of war, but GWOT is a new conflict with a different pattern of injury. The hallmark

injury of the GWOT is the massive blast injury—penetrating fragment wounds, burns, toxic inhalation, blast overpressure, and kinetic collision with stationary objects. The patients can have multiple anatomic sites injured with simultaneous open amputations, head and spinal injuries, and complex torso wounds, and eye damage (Figs. 1 and 2). These patients survive to reach definitive care because of the advances in first responder care and forward surgery fielded during this conflict. They often require considerable care and rehabilitation for many years.

We now recognize that there are serious invisible injuries of war. These include injuries to the brain, which can be subtle and can result in significant disability, although not apparent on physical examination, found during surgical exploration, or seen with imaging studies like computed tomography scans. Traumatic brain injury (TBI) is another

legacy of the GWOT.²⁷ TBI can be a major obvious head injury or a mild concussion. There is evidence that repeated mild TBI injuries can result in cumulative problems.²⁸

TBI symptoms can include headache, confusion, behavioral changes, memory loss, concentration problems, and attention deficits. TBI patients have problems with higher level executive function such as planning, organizing, abstract reasoning, problem solving, and making sound judgments. Early dementia and Parkinson like syndromes may result.^{29–33}

In one recent study, 33% of all patients with combat-related injuries and 60% of the patients with blast-related injuries seen at Walter Reed Army National Military Medical Center had sustained a TBI.³⁴ Based on self-reported data, approximately 15% of troops engaged in active combat in Afghanistan and Iraq may have suffered a TBI.³⁰ TBI ranging from mild to severe was 19% in one study.^{32,35} The Department of Defense (DoD) has diagnosed 280,734 troops with TBI from 2000 through the 2nd quarter of 2013,³⁶ but there are disparate numbers of reported cases because of a lack of adequate screening and failure to capture data.

The other often invisible wound of combat is post-traumatic stress disorder (PTSD). This is an anxiety disorder that is a result of an overwhelming or dangerous event. It can lead to flashbacks, emotional numbness, depression, insomnia, and/or angry outbursts. The VHA reported 286,134 veterans of the wars in Iraq and Afghanistan had been seen for possible PTSD through the end of 2012. These numbers exclude those diagnosed and treated outside the VA system.³⁷ A study of almost 290,000 veterans of GWOT treated at the VA in the period 2002 to 2008 found that 37% had received mental health diagnoses, such as PTSD and depression.³⁸

There may be some overlap in the numbers of DoD and VHA cases, and there is no reporting of diagnoses from non-VHA community providers; the true numbers of veterans having issues may be much higher. The disparity in numbers of those who are treated by the VHA and other providers beyond the DoD counts of veterans with psychological and cognitive injuries may also be the result of delayed detection, delayed onset of symptoms, failure to self-recognize the problem, or avoiding the stigma of reporting although in uniform. Studies suggest that only half (53%) of GWOT veterans who need treatment for major depression or PTSD seek it.³² Many veterans do not recognize their problem, refuse to seek help, or self-medicate with drugs or alcohol.^{32,33}

Studies found that PTSD sufferers are 200% more likely to be diagnosed with an unrelated medical disease within 5 years of returning from deployment than the control group.³⁹ Another study found that veterans with PTSD used nonmental health care services—primary care, ancillary services, diagnostic tests and procedures, emergency services, and hospitalizations—at a rate 71% to 170% higher than those without PTSD.⁴⁰ Studies have shown that TBI, often overlapping with PTSD, places sufferers at higher risk for lifelong health problems such as heart disease, dementia, and other chronic ailments.^{30,39–41}



FIGURE 1. Dismounted marine IED injury: 3 limbs lost.



FIGURE 2. Demonstrates posterior leg and buttock injuries.

TBI and PTSD patients have trouble completing school, holding a job, keeping the family together, and often become homeless. Substance abuse and risk-taking behaviors—smoking, drug abuse, overeating, unprotected sex, fighting, and drunk driving—occur in high numbers in TBI and PTSD patients. Rates of substance abuse among veterans diagnosed with PTSD or other mental health issues range from 21% to 35%.⁴² Experts have estimated that at least 50% of GWOT veterans will present to either a community or VHA health care provider with one or more problems such as PTSD, TBI, depression, suicide attempt, and/or substance abuse.³² Many vets with problems may not seek VHA help.³²

Suicide of uniformed service members has become epidemic, at times averaging one suicide a day. The number of active duty service members who took their lives in 2013 has at times surpassed the number killed in combat.^{43,44} Among men in the general population ages 17 to 60, suicide represents 7% of deaths but 20% of deaths among men of this age in the military. The risk in the youngest cohort of military service members has suicide rates four times the national average.⁴⁵ Women veterans are two to three times more likely to commit suicide than nonveteran women.⁴⁶

The VHA has confirmed 18 suicides per day among the entire veteran population and 1,000 suicide attempts per month among all veterans seen at VHA medical facilities.^{47,48} Suicides among nonactive duty reservists are not counted by the military and the VHA reports only suicides among enrolled veterans. So the numbers are likely falsely low. This represents an ongoing, long-term cost to society that is another invisible cost of war.

Large numbers of troops on active duty are using psychotropic medications and this appears to be a monumental change in military culture and military medicine. Psychotropic medicine use, especially on the battlefield is an enigma when these medications can have severe side effects such as insomnia, suicidal thoughts, or hallucinations. A June 2010 internal report from the DoD's Pharmacoeconomic Center at Fort Sam Houston in San Antonio showed that 213,972, or 20% of the 1.1 million active duty troops surveyed were taking some form of psychotropic drug: antidepressants, antipsychotics, sedative hypnotics, or other controlled substances.⁴³ This psychotropic medication use will interweave with TBI, PTSD, depression, suicide, and other health problems, and is likely to complicate medical and mental health problems after discharge.

The GWOT has utilized a workforce of several hundred thousand contractors to sustain the war effort, and to lower the apparent number of active duty troops being deployed. These contractors have the same types of injury and mental health problems that uniformed troops have, which will impose both direct budgetary costs through federal subsidies to worker compensation and insurance companies, and projected higher costs to Medicare as they age. Such individuals account for up to 54% of the total of U.S. workforce in both countries.^{49,50} During the 18-month period from

fiscal year 2007 to the first half of 2008, there were approximately 200,000 contractor personnel in theater; and during this period there were at least 455 contractors killed and 15,787 injured.⁵¹ There are approximately 3,000 contractor deaths in the GWOT operational theater listed in the database of the Office of Worker's Compensation Programs through June 30, 2013.⁵¹ The U.S. government does not keep track of contractors killed and wounded, so these numbers are based on reports to the Department of Labor (which provides insurance) and may be underestimated.^{49–53}

Contractors served in the same places as uniformed personnel and have also suffered the same kinds of injuries as the troops, both physical, and invisible such as TBI and PTSD. One 2007 study measured rates of depression and PTSD at a combined 24% for DynCorp employees returning from the battle zones, a figure within the range of that found in returning troops (23%–31%).⁵⁴ Approximate numbers of U.S. contractors wounded are available through the Department of Labor: as of May 10, 2011, there were 33,295 claims for injury or illness that involved lost time on the job, but these figures are acknowledged to be quite incomplete. Contractor injuries in both wars have been conservatively estimated at 51,031 through March 2011, using Department of Labor numbers. It is a group with no ties to the military or access to veteran's health care services, but they will suffer the same long-term consequences of combat and contribute to the negative impact on society.^{49,50,52,53}

Approximately 2.5 million service men and women have served in Operation Iraqi Freedom, Operation New Dawn, and/or Operation Enduring Freedom in Afghanistan to date.⁵⁵ About 42% (941,743) had been deployed more than once. For every service member killed in action as of October 21, 2013 (7,092) there are seven wounded in action (51,670). When including "noncombat" injuries (56,874), the ratio of injured to killed jumps to 16 to 1.^{33,56}

One out of four veterans of the current conflicts has filed a disability claim at the VHA, and the VA has treated 30% of veterans of the two wars as of October 2011.^{33,39} Over 61% (1,442,987) of GWOT veterans are currently separated from active duty and are eligible for VHA services. As of September 2012, some 783,623 of GWOT veterans (50%) have filed disability claims with the VA, of whom 671,299 have been awarded service-connection so far, and 15,521 have been denied (the rest are pending in the VA system).⁵⁷ The actual number of GWOT veterans receiving government medical care has grown to more than 56% of the total.⁵⁷ This total, however, does not include the still large number of untreated or undiagnosed illnesses and war disability incurred by serving military, and the actual number may be much larger than these official numbers indicate.

There are large numbers of those who are ill or injured beyond what the DoD counts as the war wounded on its website. Many individuals suffering from PTSD, TBI, depression, and other psychological injuries of war have not been counted by official sources, may not recognize

they have problems, and often there is delayed detection and treatment.^{49,58,59} Many uniformed rape victims do not report the attack or apply to the system for help long after their injuries were inflicted.^{33,49,60,61} There are reports of Vietnam-era veterans developing delayed middle ear problems, hearing loss, and neurologic symptoms 30+ years after returning home without apparent disability (F. Burkle, personal communication, January 22, 2013).

The large number of veterans with complex injuries will need considerable resources—it is difficult to track, measure, and project future costs. Many of these patients require surgery multiple times at each stop along the evacuation chain. Care will be done in military facilities initially, but there will be a shift to the VHA and private sector care. Many will require more restorative procedures and extensive rehabilitation as they progress. This makes it difficult to quantify the cost now, let alone near impossible to predict for the future. Sizeable resources, large numbers of professionals, heroic efforts, and extraordinary expenditures are required for the care of our wounded warriors—and they deserve the best care that can be resourced.

THE UGLY

GWOT returnees are using veteran's medical services and applying for disability at higher rates than in previous conflicts. The costs of caring for veterans appears to peak 30 to 40 years or longer following the conflict because of age-related chronic disease overlying the initial problems.^{40,50,51} The costs of care are likely to escalate exponentially compared to prior wars for a variety of reasons: (1) there is enhanced survival of devastating injuries not seen in previous conflicts; (2) better health care has resulted in longer life spans; and (3) there are more expensive diagnostic and therapeutic tools, treatments, and prosthetics that did not exist for veterans of previous conflicts.

These physical injuries can have a high economic toll; yet, direct costs of treatment are only a fraction of the total costs related to mental health and cognitive conditions. Far higher are the long-term individual and societal costs stemming from lost productivity, reduced quality of life, family disruptions, homelessness, impaired health, substance abuse, and suicide.

Economists writing in *The Three Trillion Dollar War* state: "for the first time ever, when we went to war, we actually cut taxes, rather than raised taxes to finance the costs. Hence this war has been totally financed by deficit." They calculate that medical care and disability will be the second-largest expense of the war, estimating (as of 2008) this will cost ultimately cost \$700 billion and will represent the primary long-term expense of the conflict.⁶² The projected cost data keep rising as we accrue more casualties, PTSD, and TBI—and much higher costs as the GWOT grinds onward. The conflict and resultant cost has now run several more years on credit, and our children and grandchildren will pay the costs.

The cessation of hostilities of the GWOT is indeed "the end of the beginning"—but will begin a new phase with different problems. This is the opening chapter of a disruptive economic and public health crisis because of escalating medical care and mental health costs for veterans, contractors, their families, and others involved in the GWOT. It will lead to problems that will heavily impact and potentially overwhelm our emergency departments, health care systems, and social safety nets.

The visible and invisible injuries of war involve such large numbers that the potential social impact will be disastrous, while adding an enormous financial burden and substantial stress onto our society. Many statistics undercount the true numbers of those effected, many injuries or issues will manifest years later, and in some areas there are no metrics whatever, such as contractors' injuries and adverse family impacts.

THE UGLIEST OF ALL

Another huge impact on society for which there is no metric is the tragic effect of this fiasco on veterans' families. The family members of those on long deployments, whose family members have been wounded or killed, manifest mental health issues, or develop substance abuse will be forever damaged by this conflict.^{63–68} These conditions ruin relationships, disrupt marriages, aggravate the difficulties of parenting, lead to child mistreatment, and result in psychological problems in children that may extend the consequences of combat trauma across generations.^{63–69} The DoD and VHA do not measure this "collateral damage." It may represent the ugliest aspect of all social concerns related here. It is another future cost to society, which will be huge but is neither predictable nor quantifiable.

The veterans, their family members, and those hired contractors that no one has on their radar are going to crash into our society's structure like a tsunami. Homelessness, family disruptions, domestic violence, suicide, criminal acts, substance abuse, and risk taking behaviors are the legacy of the GWOT. Social services, law enforcement agencies, jails, prisons, shelters, emergency rooms, suicide prevention hot lines, and hospitals are going to be slammed.

The economic and geopolitical storm has also hit us. Money is tight, employment scarce, and we have outsourced to the point where we have a service economy and a poor manufacturing job base. We are cutting education opportunities and eating our academic, research, and intellectual seed corn. Twelve years of combat exposed troops with physical wounds or mental impairments will need help when we are least fiscally able to provide for them. The cost of their care will escalate over the next 30 to 40 years. We should spare no effort or expense—as Lincoln said "to care for him who shall have *borne the battle* and for his widow and his orphan."⁷⁰

History tells us that when conflicts end, the resources become scarce, can be diverted, national resolve can shift or wane, media and public interest become focused elsewhere.

There is no mention of the GWOT combat in today's newspaper or TV news, even though we have troops in battle in a foreign land. How can there be such disregard for this reality? No one feels the pain of raised taxes, material shortages, rationing, or the draft—but that is fodder for another discussion.

Federal agencies like VHA and DOD do not have a stellar record in caring for GWOT vets. They need to invest now to mitigate the cascade of health problems of the veterans of the GWOT. Budget projections must take into account the anticipated escalating expense as veteran's age. Health care and mental health services must be easily accessible, and the paperwork—now taking up to a year—needs to be simplified and acted on in a timely manner.^{33,71} Delivering effective care now and restoring veterans to better mental and physical health has the potential to reduce these longer term costs. We need to pressure our elected representatives to step up and be proactive for the veterans, and all of us need to participate in local veteran support activities.

Ultimately, as in all prior conflicts, I believe veterans will have to take care of each other.⁷² I doubt that the federal government can be visionary that the VHA can get ahead of the power curve, that politicians can do the right thing, or that most people care. Those who have worn the cloth of this country—every one of us is bound together—must continue to help each other.

I applaud those who have started their own local, regional, and national programs to help the injured veterans. New organizations such as “Purple Heart Homes”—building homes for disabled vets, “The Mission Continues”—wounded vet link for public services, “Hire Heroes,” to name a few, and similar programs are reaching out to help their less fortunate brothers and sisters.^{73–75} The people leading these efforts—whether large or small, local or national—are my heroes.

The President needs to establish a commission to act on veterans' needs and coordinate resources. There must be a comprehensive national strategy with a long-term plan that will include healthcare, psychological services, education and career transition, and family support. The plan should outline a vision for the future and establish a timeline for delivery. Public–private partnerships should be encouraged and facilitated. The plan should have a definition of roles and responsibilities; and coordination of individuals, communities, volunteer groups, government agencies, charitable groups, and private sector corporations.⁷⁶ Health care providers should look for problems aggressively and health screening should ask, “have you ever been in combat or been in a war zone,” and make the appropriate referral.⁷⁷ We have to be involved and get ahead of the downward spiral in mental and physical health in this population at risk.

CONCLUSION

The “Good” presented here is that there have been significant advances in health care learned in caring for those injured by

the conflict. Forward surgical units, better fluid resuscitation, damage control surgery, and care in the air transport have saved lives and improved outcomes. The “Bad” presented are horrendous visible injuries and the hidden injuries such as PTSD, TBI, and suicide. These can lead to disruptive and reckless behaviors, job loss, homelessness, and family violence. The “Ugly” is the true cost of the war. GWOT returnees are using medical services and applying for disability at higher rates than in previous conflicts. The costs for veterans' care will inflict an enormous burden on services and resources. The “Ugliest” will be the effects of the war on families and children and the impact across generations. We must mobilize government agencies, create public–private partnerships, and invest our resources now to mitigate the approaching tsunami of veterans' health care needs, the impact on our social services, and the devastating costs to society.

President John F. Kennedy said that we don't measure a nation by how many veterans it has, or how many days we take to honor them. We measure it by how those veterans are treated day in and day out. Kennedy stated: “As we express our gratitude, we must never forget that the highest appreciation is not to utter words, but to live by them.”⁷⁸

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