

**Medical Costs of War in 2035:
Long-Term Care Challenges for Veterans of Iraq and Afghanistan**

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ABSTRACT [238 words]

This paper focuses on the long-term challenges that families, communities and governments will face in caring for veterans of the wars in Iraq (OIF) and Afghanistan (OEF). It briefly reviews the medical impacts of war – examining new patterns of injury and illness in the current conflicts for which the government, military, Veterans Affairs (VA) and related services will need to provide medical and psychological care to wounded servicemen and women, especially as they reach middle age in 2035. This paper specifically discusses the *future, long-term* burdens of veterans' *current* medical maladies—a topic not often discussed—and suggests proactive health programs that may help contain costs and ensure the provision of quality care.

Major medical conditions among OEF/OIF veterans are Post-Traumatic Stress Disorder (PTSD), Traumatic Brain Injury (TBI), amputations/polytrauma, and the complications that develop either from or together with these disorders. There are short-term medical expenses that include transportation, surgery, and hospitalization; and long-term medical costs, which include mental health care, rehabilitation, and disability. Communities or families adapting to care for wounded veterans will absorb costs that include private medical care, informal at-home care, lost job productivity, and the effects of family stress.

Developing appropriate mitigating interventions for our wounded service personnel in the near term—such as smoking cessation, alcohol-abuse counseling, weight control, resilience programs, and physical therapy—will not only better serve these veterans, but may also reduce the potentially enormous cost burden of their future healthcare.

1. Introduction/Summary

In 2010, the US conflict in Afghanistan surpassed Vietnam as the longest American war in history,¹ with approximately 2 million US service members having been deployed to Iraq or Afghanistan.² As of June 13, 2011, service deaths attributable to Operation Enduring Freedom (OEF) in Afghanistan totaled 1,606 with 12,002 wounded in action, while Operation Iraqi Freedom (OIF) and Operation New Dawn (OND) have resulted in 4,451 deaths and 32,120 wounded in action.³ By September 2009, the VA had treated about 510,000 unique veterans from either conflict,⁴ and that number is probably closer to 800,000 today.^{4(ibid)}

This paper examines the long-term burdens associated with caring for veterans of these wars, and illustrates emerging knowledge about the best treatment practices that may ultimately help reduce the costs associated with war wounds. Many factors determine war-related medical costs. More military personnel are surviving injuries that would previously have killed them: there have been 7.5 wounded service members per fatality in Afghanistan, and 7.2 in Iraq; compared to 3.2 in Vietnam, 3.1 in Korea, 2.3 in WWII and 3.8 in WWI (**Table 1**).^{3, 5(pp.2,9), 6(p. 6)}⁶⁾The Improvised Explosive Devices (IEDs) commonly used by enemy forces in Iraq and Afghanistan often injure service members in a pattern known as “polytrauma”—multiple injuries that may include several lost limbs; brain injury; severe facial trauma, including blindness; and other wounds that may require decades’ worth of rehabilitation.⁷⁻⁸ Their rehabilitation poses great medical and social challenges. Both the veteran and the family will incur physical, mental and financial costs, and these challenges will be long-lived. In 2009, the average OEF/OIF service member was in his or her late twenties,^{2(p. 18)} and whether wounded or not, surviving veterans can expect to live many more years. 2035 is a timeframe when these service members will enter middle age, when comorbidities tend to surface—akin to what military, VA and civilian doctors are now seeing in Vietnam Veterans.

The long-term nature of the challenge calls for proactive, creative interventions to be devised and undertaken now, even though there remains much uncertainty about the nature of these signature wounds. A recognition of the developing problems now, with appropriate mitigating interventions (smoking cessation; alcohol-abuse counseling; weight control; early diagnosis, intervention and treatment of post-traumatic stress disorder (PTSD); ongoing rehabilitation and physical therapy for amputees, etc.) will not only better serve veterans, but may also help minimize the lifetime costs of these war wounds through prevention.

Table 2 provides an accounting of fatalities and war injuries drawn from public reports. Unfortunately, the extent of polytrauma, or overlap between these distinct categories, is impossible to assess in these data, although we know it is important. And except in the cases of death and dismemberment, which are clearly permanent, another key unknown is the persistence of these ailments, especially of mild TBI and also PTSD. Finally, these statistics cannot speak to the prevalence of comorbidities or undiagnosed conditions that may reveal themselves later. For these and other reasons, long-run estimates of the costs associated with treatment war wounds are highly uncertain. But there appears to be an emerging consensus among clinicians, government officials, and economists that costs are likely to be large.^{4,6,7,11-14}

In the fall of 2010, the Congressional Budget Office estimated that between 2011 and 2020, VA health care costs associated with treating OEF/OIF veterans could total between \$40 and \$54 billion in inflation-adjusted 2010 dollars.⁴ A simple extrapolation of their estimates produces a present value of total lifetime treatment costs, *i.e.*, discounted over 40 future years, of between \$300 and \$600 billion if trends were to continue. In their book *The Three Trillion Dollar War*, published in 2008, economists Joseph Stiglitz and Linda Bilmes⁶ predicted lifetime VA health spending of between \$121 and \$285 billion in present value. For Congressional testimony given in October 2010, they updated their forecasts to lie between \$201 and \$348 billion.¹²

Modern innovations in technology, surgery, and health care delivery are reducing lowering the costliness of war associated with injury or deployment.^{15,16} But there are many long-term sequelae of combat and injury that are also costly; thus, VA and DOD must continue to explore new technologies and care delivery processes to provide efficient care for veterans as they age.

The sections that follow outline the medical costs, first short-term and then long-term. Short-term medical expenses include costs accrued before deployment (*e.g.*, treating military personnel for pre-deployment stress) and the acute costs of post-trauma care, including surgery, transportation, rehabilitation, and prostheses. Long-term medical costs include disability or care for major long-term medical conditions such as amputations/polytrauma, PTSD, TBI, and the chronic medical conditions that develop either as a result of, or in concert with, these disorders. Often one medical condition begets another, as when a PTSD sufferer blots painful memories with alcohol. And finally, many of the medical costs are invisible or hidden; these include life insurance, at-home care, relocation expenses, lost job productivity, family and community stress, divorce, and increased administrative and staff costs for caring for wounded veterans, etc.

2. Short-Term Medical Costs

2.1 Pre- and Post-deployment Health Stressors – Impacts on the Service Member and Family

Military members and their families face unusual stressors from long and repeated deployments with extended separations. Anxiety over impending deployment can lead to unhealthy behaviors, including tobacco and alcohol abuse;^{18,19} overeating; children's behavioral problems, including psychosocial morbidity, fear and anxiety;^{20,21} increased domestic abuse;⁹ reckless driving or other risk-taking behaviors, which may lead to trauma; or high-risk sexual

activity. Military personnel, especially women, may have increased depression or worries about family functioning during an upcoming deployment.²² The spouses' mental health also can be impacted.²³ These problems can persist after deployment as returning veterans readjust to "normal" life.

2.2 Acute Trauma Care

The acute costs of medical care are higher for service members injured in the current wars, because, as highlighted previously, successes in healthcare delivery have resulted in more service members surviving with more complex and serious injuries than in any previous war in US history.⁵ Medical costs include care at various points in the military health care system, including battlefield evacuation, surgery, transportation, and rehabilitation – including possible job retraining and assistive devices (prostheses, wheelchairs).

2.3 Mental Health, Stress, and PTSD

Traumatic injuries and stress have lasting and sometimes fatal physical consequences,²⁴ but the ramifications for mental health are equally dire. The media has reported widely on how patterns of repeated deployments in Afghanistan and Iraq seem to be associated with mental illness, PTSD, and elevated rates rates of suicide.²⁶⁻²⁷ Many veterans develop PTSD whether or not they have been physically injured. PTSD can correlate with substance abuse;²⁹⁻³¹ depression and anxiety;^{32,33} heart disease and obesity; diabetes and peripheral vascular disease; and gastrointestinal, dermatologic, and musculoskeletal disorders.³³⁻³⁶ Suicide rates among soldiers nearly doubled between 2004-2008,²⁶ and in 2009, suicides by active-duty personnel exceeded deaths in combat.²⁷ The most comprehensive study of PTSD and major depression and the costs associated with these conditions estimated the prevalence of each at 14 percent, with an overlap of 4 percent, in a representative sample of OEF/OIF service members.¹³ That study also estimated that the total societal cost per case—a measure that includes the burden of lost

earnings and the costs of suicide—were between \$5,900 and \$25,800 over two years, of which only about 3% represented treatment costs paid by DoD, VA, or private payers. A follow-up study with improved data on personnel and treatments re-estimated two-year costs at about \$16,000 per case.¹⁴ If rates of price inflation and prevalence remain unchanged, the societal cost could reach nearly \$50,000 per case over two years by 2035. Mental health issues are two-phased, with impacts both acute and long-term. PTSD and its sequelae in the long term are described further in section 3.

2.4 Additional Short-Term Cost Considerations

Other short-term medical costs that are less overt may include at-home nursing care for the wounded and any costs associated with stress induced by delayed response to medical claims.¹¹ Access to care poses challenges for a force that requires more care while providers themselves may be deployed. Currently the Army lacks sufficient health care providers for the active force: 16% of Army soldiers and family members are unable to see their primary-care clinicians, and may seek care off-base, at greater personal cost.³⁷

There are also many additional costs beyond those that are directly associated with medical treatment. Returning service members face mental health challenges³⁸ and suffer high divorce rates²⁵ probably as a consequence. Their productivity and earnings may suffer. Family members may need to relocate in order to care for wounded veterans, forgoing their own earnings, and their own mental health may suffer. Systems of care may or may not be burdened by these “invisible” or hidden costs, but regardless they represent harms to physical and emotional well-being.

3. Long-Term Costs of Military Medical Care in 2035 and Beyond

Current military service members will enter middle age, a time of increasing medical costs, in about 2035. While some veterans may experience only short-term psychological issues, mild PTSD that resolves, or minor physical injuries, others will experience long-term medical costs—either from the initial illness or trauma, developing chronic medical conditions, or long-term disability. Economist Dr. Linda Bilmes, testifying before the House Veterans Affairs Committee in 2010, said, “...veterans from recent wars are utilizing VA medical services and applying for disability benefits at much higher rates than previous wars.”¹² Drs. Stiglitz and Bilmes noted that over 513,000 returning veterans had filed disability claims by 2010, and roughly 600,000 had been treated in the VA. Their revised estimate for the cost of providing medical care and disability for returning veterans is \$589 billion to \$984 billion depending on the length and intensity of the conflict. Bilmes stated that “...the cost of caring for war veterans peaks in 30 to 40 years or more after a conflict.”^(ibid) VA had almost one million backlogged benefits claims in 2009^{39,40} and has over 800,000 backlogged claims today,⁴¹ an issue that VA continues to work to resolve. **■** Amputation care, PTSD, and Traumatic Brain Injury are likely to cause the greatest long-term medical and disability costs.

3.1 Amputations

The rate of war-related amputations in the military is now double that seen in previous wars.⁴⁴ John B. Holcomb, a trauma surgeon at the University of Texas at Houston and retired Army colonel, and colleagues at Landstuhl Regional Medical Center in Germany conducted a study of injured soldiers who were treated at Landstuhl before returning to the US. Their report, to be published in 2011, showed that in 2010, there were twice as many wounded U.S. soldiers with limb amputations as compared to either 2009 or 2008. There were three times as many soldiers who lost more than one limb, and nearly three times as many who suffered severe genitourinary (GU) wounds. From 2009 to 2010, the incidence of wounded evacuees at Landstuhl who required amputations rose from 7% to 11% - an increase of nearly 60%. Because of the nature of the blast injury often coming from underfoot, the proportion of evacuees

suffering concomitant genitourinary injuries went up from 4% to 9% - a greater than 100% increase. The report suggested that the greater injuries might have resulted from increased foot patrols in Afghanistan in 2010, during which soldiers could step on a buried mine.⁴⁵

As of May 2011, there have been 1,621 OIF/ OEF amputee patients treated in all Military facilities.⁴⁶ Amputations pose the greatest challenges and perhaps the highest costs of war, financially, physically and socially. In the acute setting, amputees require trauma care and experience complications including infections, anemia, and heterotopic ossification. In one study of Iraq and Afghanistan amputees, 80% needed to use physical therapy, occupational therapy, prosthetic devices, and psychiatric treatment.⁴⁷ OIF/OEF amputees reported lower quality of life if their amputation was accompanied by either a combat-related head injury, a greater injury to the non-amputated limb, or a need for assistance with daily life activities.⁴⁸

Although rates of amputation have been recently rising, and they constitute a hefty “cost” associated with the benefit of increased survival from wounds, improvements in care and delivery have also raised the rate of return to duty. A recent study found that among a group of major limb amputees between 2001 and 2006, 16.5% returned to active duty, while the comparable rate in the 1980s was 2.3%.⁴⁹

Amputees’ anatomy will change with age and weight gain; obesity is a serious concern. Newer prostheses that allow amputees to run or remain physically active may help mitigate this effect. Amputees may experience increased cardiovascular disease; joint disorders/ osteoarthritis; lower back pain; and phantom limb pain in 50-80%.⁴⁴ Their prostheses, wheelchairs and assistive devices may require repairs or replacement. As technologies progress, this equipment will require upgrades. As with Moore’s Law⁵⁰ which predicts ongoing exponential growth in digital devices’ capabilities, and with the advent of new technologies such as neurally controlled prostheses,⁵¹ these additional costs will likely impact these

veterans' devices forever. On the other hand, improved technologies, techniques and treatments might reduce the long-term disabilities, and therefore, reduce costs.

3.2 PTSD and Associated Illnesses

Symptoms of PTSD have been observed in veterans of every war in recent history, with the name varying from “shell shock” to combat fatigue, battle fatigue, combat neurosis, Post Vietnam Syndrome, and now PTSD. In a 2010 Study of US service members in Iraq, the prevalence rates of PTSD and depression after returning from combat ranged from 9% to 31%, depending on the level of functional impairment.^{52, 53} PTSD can be a key factor by which trauma translates to poor long-term health.^(24 p.248-249) If trauma does not directly cause morbidity or mortality, it often leads to PTSD—which causes changes in attentional processes, psychosocial issues (depression and anxiety), health-risk behaviors, and biological-hormonal functions, which may then result in medical illness. PTSD causes, and is associated with, costly medical care, and may therefore not be accounted for completely in future cost estimates. Any PTSD treatment accounting should also include treatment for related physical-health consequences.^(ibid)

PTSD is associated with alcohol and drug abuse; the conditions **require concomitant treatment** since psychological disease can reduce the effectiveness of drug-abuse treatments. The long-term effects of alcoholism include cirrhosis, weight gain and poor general health.⁵⁴ Although the Army has a Substance Abuse Program, drug use remains challenging, and an estimated 25,000 Army soldiers with drug problems have not yet been treated.⁵⁵ Clinicians therefore must understand and treat PTSD and substance abuse as related, interdependent disorders, in much the same way that smoking and heart disease tend to be interrelated.

PTSD was associated with smoking, depression and anxiety in a study of Vietnam veterans.⁵⁶ In a later study by the same author, PTSD patients who smoked had higher heart rates and greater anger than those without PTSD, which amplifies the impact of smoking on

their cardiovascular health.²⁹ The long-term effects of tobacco use include lung cancer, chronic obstructive pulmonary disease, and oral cancers. Smoking-cessation interventions combined with PTSD mental-health care have been proven more effective than smoking-cessation treatment alone.⁵⁷

PTSD is a common comorbidity of depression, which correlates with poor physical health. However, PTSD alone can also directly impact physical health, and PTSD appears to be independently costly. A survey of 30865 women veterans found that, regardless of age, women with PTSD had more medical problems and poorer health than women with depression alone, or with neither condition.³² In a study of 606 veterans, mostly men over 55, patients with PTSD and depression used more mental-health care and medications, with higher care costs than depressed patients without PTSD.⁵⁸

Veterans with PTSD have a lower quality of life and more medical problems than those without PTSD.¹⁷ They may experience chronic fatigue and somatic symptoms; heart disease, obesity, and elevated lipid levels; diabetes and peripheral-vascular-system problems; gastrointestinal, dermatologic, and musculoskeletal disorders; or increased dementia.^{29, 33-36, 59-60}

Obesity, which is associated with PTSD, is seen in an alarming proportion of older veterans,⁶¹⁻⁶⁶ especially amputees with limited mobility. Obesity's long-term effects include heart disease, cancer, diabetes, surgical complications, and shortened life. In contrast, some deployed military women who had seen combat, and are thus at risk for PTSD, had a higher risk of weight *loss* post-deployment, compared to deployed women who had not seen combat.⁶⁷ Eating disorders in general may require extended medical and psychiatric treatment, and can ultimately be fatal.

Diabetes and its long-term consequences (retinal damage, vascular disease, renal insufficiency, amputations, etc.) have spread rapidly through civilian populations and are

associated with PTSD among veterans. In a study of roughly 44,000 military personnel, baseline PTSD was significantly associated with future risk of self-reported diabetes.⁶⁸ Another study found that male VA diabetes patients with PTSD and depression were vulnerable to weight/lipid problems, and recommended screening of diabetes patients for mental-health comorbidities.⁶⁹

Some issues complicate PTSD diagnosis and treatment. Clinicians often don't agree on how to diagnose PTSD, or how to distinguish it from mild TBI, depression, or other mental conditions. PTSD may also be diagnosed, for example, in cases where veterans may actually suffer from stress or anxiety unrelated to combat trauma. When diagnosed, it is also difficult to classify PTSD (or TBI) as minor vs. major. Regardless of such limitations, prompt treatment will help those who suffer from PTSD. By using a preventive approach, with early intervention to treat PTSD and comorbid illnesses, our society will hopefully improve patient outcomes and avoid a "snowballing effect" on the costs of long-term medical care. Effective prevention strategies remain a focus of research; third-location decompression following deployment is one such promising strategy worthy of more study.²

3.3 PTSD and Traumatic Brain Injury

Traumatic Brain Injury from bomb blasts, which cannot be prevented by life-saving body armor nor even by rapid medical attention,⁷⁰ is being called the "signature wound" of the Iraq war.⁷¹ TBI accounts for roughly 22% of casualties in Afghanistan and Iraq, and was found in 59% of patients exposed to blasts in one study.⁷² Mild TBI can be missed on imaging; ^(ibid) veterans may not show signs of brain damage until years after a blast injury, with symptoms including memory deficit, headaches, vertigo, anxiety and apathy or lethargy.⁷¹ Head injury in young adulthood may correlate with greater risk of Alzheimer's Disease in later life.⁷³

Mild TBI, like PTSD, correlates statistically with increased rates of psychological, physical, and functional problems,^{74,75} and is associated with alcohol abuse disorders.⁷⁶ Among

2525 U.S. Army soldiers deployed to Iraq, those who had experienced mild TBI, based on self-reported prior loss of consciousness (a noted limitation in the study⁷⁷), were more likely to report poor general health, missed workdays, medical visits, and somatic and post-concussive symptoms, compared to soldiers with other injuries.⁷⁵ In a cross-sectional cohort study of 278 TBI patients and 3218 normal controls, mild TBI, even years after the original injury, correlated with increased headaches, sleep problems, and memory difficulties; it could also prolong recovery from comorbid conditions, including PTSD.⁷⁸

As the veterans of Iraq and Afghanistan age, it will be important to continue to develop effective screening instruments for PTSD and TBI, and to evaluate and treat patients proactively. An important but difficult objective is to separate TBI from PTSD, to diagnose when the two conditions co-exist, and avoid attributing health problems to mild TBI if associated PTSD and depression may be the primary problem.⁷⁵ Patients diagnosed with both TBI and PTSD are likely to require collaborative, coordinated support across a broad set of providers with expertise in mental health, neurology, and internal medicine.

4. Conclusion

Improvements in technology and medical care delivery have significantly increased rates of survival from grievous war wounds. While media coverage of the Iraq and Afghanistan conflicts has focused on IED injuries or PTSD, little attention has been given to the impact of current wars on the *long-term* health of these young veterans. Some will face life with PTSD or TBI; others must cope with the challenges of missing limbs or faces. Many will develop comorbid conditions that exacerbate an original illness or injury. Service members with multiple or “polytraumatic” physical injuries will require long-term rehabilitation, job retraining, support for daily life activities, and possibly permanent disability. Long-term care challenges increase with the severity of injury, or multiple injuries. Recognizing these potential challenges now can decrease their future effects. This paper’s goal has been to highlight the medical costs of

war—specifically, the long-term, future costs of health care for our current young veterans—and to suggest some prevention and treatment measures that may mitigate the impact of such costs for our wounded warriors, their families, and support systems, such as VA and TRICare).

Table 3 summarizes some preventive strategies that this paper has offered.

Addressing veterans' mental-health needs via a new paradigm for health care delivery—one that includes outreach, education, early detection, and more accurate postdeployment mental health diagnosis and treatment by skilled providers in primary-care clinics^{52,53,79,80} may improve both mental *and* physical health outcomes and contain costs. One critical step is to ensure that there are enough mental health providers to deliver that care. The Defense Mental Health Task Force Report in 2007⁸¹ identified a significant shortage of mental health providers in the military healthcare system. Measures have been taken to improve staffing and reduce waiting times, but there is more still to do to achieve optimum treatment.

PTSD patients need support to return to active service if possible, and to avoid comorbid health problems. In a 2007 paper on the long-term costs of medical and disability care for veterans of Iraq and Afghanistan, Linda Bilmes cited key recommendations: to allocate more resources for veterans' medical and mental health treatment, including "vet centers," and to improve the processing of veterans' disability claims to reduce bottlenecks.¹¹ The 2010 IOM report² highlighted similar needs, and echoed these and many other related suggestions, while also citing the steps VA is taking to improve these issues^{2, p. 127}. VA has opened more vet centers, and is working to expedite claims processing with several initiatives^{2, p. 127, ibid}. One initiative for mental health and TBI is the Army's protocol to "educate, train, treat and track" soldiers – "...if a troop has been exposed to a potential concussive event, we have a standard set of actions that will intervene, assess, evaluate and track progress," stated Brigadier General (Ret) Loree K. Sutton, MD, Director of the Defense Centers of Excellence for Psychological Health and Traumatic Brain injury.⁸⁰ The Army offers "resiliency programs" to teach service members and their families skills to cope with personal and financial problems.^{80,82} A pilot program at

Massachusetts General Hospital serves veterans and their families whose needs cannot be met within the VA system,⁷⁰ which may help prevent the undesirable extra costs incurred when some under-insured families choose ERs for primary care. In February 2011, VA announced a plan to compensate family members caring for wounded service members in their own homes, which would reduce nursing-home costs.⁸³

The prognosis for severely wounded veterans, especially those with polytrauma, is unclear and depends on future patterns of support and research. Improving assistance to young amputees during the critical period when they are developing coping skills may foster independence and reduce need and cost in the longer term. New technologies may provide similar advantages. A vast array of efforts have been initiated to support wounded veterans, including programs such as the Armed Forces Institute for Regenerative Medicine (AFIRM) which is a US-wide consortium of scientists designing transplant and tissue engineering technologies to help rebuild these wounded warriors' bodies and restore their confidence and physical functioning.⁸⁴ Support for the long-term health care needs of veterans will require much diligence, perseverance, research, innovative thinking and funding as is being applied now to the acute medical issues facing our servicemen and women. The health care system must help veterans adjust not only to their new challenges in the present time, but also to "*...the uncertainties of life after discharge for the remarkably large number of amputees and other wounded combatants.*"⁸⁵ These servicemen and women deserve unwavering support and gratitude from their country for the supreme sacrifices that they have made. Strategizing preventive measures now may improve clinical and social outcomes for these wounded warriors, and mitigate costs as they age.

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Table 1. Numbers and Ratios of Wounded vs. Dead in US Wars During the Past 100 Years.

War	Number Serving	Battle deaths (denominator)	Wounded in action (numerator)	Ratio of Wounded/Dead	Source
OIF/OEF	Not cited in this reference			7 to 15	Stiglitz/Bilmes book ¹
OIF Iraq	2 million OIF+OEF	4,451	32,120	7.22	SIAD ²
OEF OND Afghanistan		1,606	12,002	7.47	SAID ²
Vietnam	8,744,000	47,434	Hosp. Care Req'd: 153,303 No Hospital Care: 150,341 (303,644 total)	3.2 in the cohort who had hospital care required	CRS ³
Korean war	5,720,000	33,739	103,284	3.1	CRS ³
WW II	16,112,566	291,557	670,846	2.3	CRS ³
WW I	4,734,991	53,402	204,002	3.8	CRS ³

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3. Congressional Research Service (CRS) Report, <http://www.fas.org/sgp/crs/natsec/RL32492.pdf> Table 1. Principal Wars in Which the United States Participated: U.S. Military Personnel Serving and Casualties.
Table 6. Comparison of Death, Wounded and Amputation Statistics in American Conflicts

Table 2. Total War-Related Injuries by Type and Characteristic

Type of injury	Incidence by characteristic		TOTAL incidence
Deaths, all	n/a		5,945
Deaths, suicides	n/a		260
Post-Traumatic Stress Disorder (PTSD) ever diagnosed	Deployed	66,935	88,719
	Not deployed	21,784	
Traumatic Brain Injury (TBI) ever diagnosed	Penetrating	3,451	202,281
	Severe	2,124	
	Moderate	34,001	
	Mild	155,623	
	Not classifiable	7,082	
Amputations	Major limb	1,222	1,621
	Partial	399	

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Table 3. Preventive Strategies to Help Mitigate the Medical Costs of War

Factors That Impact Medical Costs of War	Preventive Strategies to Help Mitigate Costs
Length of conflict	<i>Note: Not applicable—not a factor for which preventive strategies can be applied.</i>
Survival rates (higher ratio of wounded:dead)	<i>Note: This is a side effect of actually having better medical care and more soldiers surviving. It is partly attributable to having deployed a healthy force supported by healthy families. It also entails improved equipment, body armor, changes in tactics, etc.</i>
“Young” military (=longer lifetime costs)	<i>Note: Not applicable—often a reflection of the current economy and job market</i>
Severity of injuries sustained; polytrauma	<ul style="list-style-type: none"> • Better preventive /protective equipment, body armor, armored vehicles, etc. • More ways to preventively detect or disarm IEDs.
Short-term acute medical costs following injury: surgery, transportation, medical care, rehabilitation, and prostheses. Also: pre-deployment risk-taking.	<ul style="list-style-type: none"> • Better technology for battlefield treatment or evacuation, and better surgical techniques. • Improved prostheses. • Counseling to reduce service members’ stress and risk-taking before deployment.
Neurological and Psychiatric Care Costs (TBI, PTSD, etc)	<ul style="list-style-type: none"> • Outreach, education, early detection, and treatment in primary-care clinics • Improving processing of veterans’ disability claims to reduce bottlenecks. • Increasing the number of psychiatrists in the Military Health Service ² • The Army’s protocol to “educate, train, treat and track” soldiers for TBI after concussions
Long-term medical costs: Disability and care for comorbid illnesses, when one disease or injury begets or worsens another	<ul style="list-style-type: none"> • Early identification and treatment of the “first” presenting illness, such as PTSD, to reduce the chance of the patient developing comorbidities. • Programs to help soldiers with polytrauma repair or

	<p>regenerate their bodies for better self image, function, cosmesis and return to work and society (AFIRM program)</p> <ul style="list-style-type: none"> • Allocating more resources for veterans’ medical and mental health treatment, including Vet Centers • More programs like the one at Massachusetts General to serve veterans and families whose needs cannot be met within the VA system¹, avoiding the costs of under-insured families who may choose ERs for primary care
<p>Hidden costs: life insurance, at-home care for the wounded, relocation expense or lost job productivity of the wounded or family members caring for them, family and community stress, divorce, and increased administrative and staff costs for caring for wounded veterans short and long term.</p>	<ul style="list-style-type: none"> • Counseling and support groups for families under stress and support for families undergoing temporary lost productivity. • Army “resiliency programs” to teach service members and their families skills to cope with personal and financial problems. • VA completion of plan to compensate family members caring for wounded service members in their homes; reducing nursing-home costs

Source:

1. Kix P. Team Effort: As VA hospitals struggle to meet rising demands, the Red Sox Foundation and Mass General have found a way to shore up care for local vets. Medicine Section, Boston Magazine, July 2010, p. 63-68.

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