Military Medical Ethics

A Review of the Literature and a Call to Arms

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It is noteworthy that the monumental two-volume study of military medical ethics published by the U.S. Army in 2003 paid little attention to military physicians working in detention facilities.[1] Abu Ghraib was still a year away, so instead of focusing on what would ultimately swamp the military medical ethics literature, the army study offers a rich and comprehensive analysis of crucial clinical, political, ethical, and scientific questions. The timing was fortuitous because it allowed lawyers, philosophers, and healthcare professionals to constructively engage questions of bioethics and national security. In the years following Abu Ghraib, however, interest in dual-use technology, humanitarian intervention, weapons development, soldier-patient rights, and resource distribution would receive far less attention than medical conditions at Guantanamo Bay and would remain the purview of a relatively small group of researchers. Now is a good time to rectify this imbalance. As the following review demonstrates, the nascent field of military medical ethics holds no few challenges for enterprising bioethicists. Clinical questions that embrace patient rights in the military, experimentation, investigational drugs, and medically engineered enhancement technologies abound. Interest in battlefield bioethics is growing as U.S. forces in Iraq and Afghanistan struggle to provide medical care to U.S. service personnel, Iraqi allies, enemy insurgents, and local civilians. Nonclinical challenges confront us when medical workers develop weapons that utilize advances in pharmacology, neurophysiology, and genetics. Medicine can also serve peace. No less than law enforcement, impartial courts, schools, and welfare agencies, medical care is crucial for failed states to rebuild. This literature, referred to as medical humanitarianism or ''medicine as a bridge to peace,'' has received scant attention from bioethicists.

Patient Rights and Medical Experimentation

Soldiers, as Sandra Visser points out, do not have the same rights and liberties they are willing to fight and die for. Their autonomy, privacy, right to informed consent, and right to refuse certain treatments are limited.[2] As such, statements of patient rights in military hospitals include the following caveat: ''A patient has the right to refuse treatment to the extent permitted by law and existing government regulations and to be informed of the medical and administrative consequences of his/her refusal.''[3] Administrative consequences can include disciplinary action or a reduction of a serviceperson's ''compensable disability'' if personnel refuse medical treatment that will keep them fit for duty.[4]

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Military necessity and the needs of the armed forces do not repudiate a soldier's rights, but they do restrict them by subordinating individual interests to collective goods. This leads to two important conclusions for military medical ethics. First, national security is not, obviously enough, a medical determination. Nonmedical reasons, therefore, can dictate the infringement of medical rights. Sometimes this authority lies with military officers (as when using investigational drugs, discussed subsequently) and sometimes with medical officers, who may find it necessary to violate confidentiality or withhold information from patients to return them to duty.[5] Second, military necessity only *overrides* patient rights; it does not nullify them. A soldier's rights reassert themselves when military implications are marginal or inconsequential.

Although military necessity colors many dilemmas of military medical ethics, medical experimentation and orders to use investigational drugs have garnered the most attention. Although sometimes confused, the two are different. Medical experimentation relies on human subjects to test unproved hypotheses about an agent's toxicity and effectiveness and do not always offer any therapeutic benefit for the human subjects involved. Investigational drugs or vaccines, on the other hand, offer a therapeutic benefit to those who receive them, but they have never been licensed for human use, or if they are licensed, it is not for the purpose currently intended.[6]

Experiments to test biological agents, radiation, and chemical compounds such as LSD and nerve gas were among the most sensational, as investigators sometimes manipulated information and ignored subjects' right to informed consent.[7] Less controversial are routine experiments to test nonlethal weapons systems (discussed subsequently), equipment and medical procedures under adverse climatic changes, altitude sickness, dehydration rates, and the effectiveness of protective clothing. Strict guidelines demand informed consent, a subject's right to end an experiment, previous animal experiments, and medical supervision.[8]

Nevertheless, soldiers are easily manipulated, and standard informed consent procedures are not always adequate. In 2009, the Israel Medical Association severely castigated military researchers for ignoring the vulnerability of conscripts when they conducted anthrax experiments on hundreds of recruits.[9] Although soldiers sign consent forms, there is evidence to suggest that service personnel do not fully understand the explanations they receive.[10] Further problems arise because the dynamics of rank disparity, fears of offending one's superiors, and/or peer pressure may undermine informed consent when soldiers are asked to participate in medical experiments. Cognizant of these dangers, the U.S. Department of Defense (DoD) forbids the presence of a soldier's superior during the solicitation of research subjects and requires an independent ombudsman to monitor recruitment. Other recommendations include approaching potential subjects privately rather than in groups and requiring a consent form that subjects are asked to explain in their own words.[11] Although informed consent is crucial for military medical experiments, the DoD may waive consent when experimental subjects are victims of trauma. DoD reluctance to do so, however, leads some researchers to fear that the difficulty of obtaining waivers may hamper "potentially lifesaving research in the military." Although informed consent is important, it is not an overriding principle when the "greater good of society" or "the future care of wounded service members" is at stake.[12]

Military authorities may also want to waive consent to treat soldiers with investigational drugs if obtaining consent is not feasible. To protect soldiers against nerve gas and botulism during the First Gulf War, the DoD requested and received a waiver to treat troops with investigational drugs without their consent. This caused considerable controversy that eventually led to guidelines that only allowed the president to approve waivers of informed consent. The issue flared again in 1998, when the U.S. Army wanted to inoculate troops against airborne anthrax using a vaccine that had only been approved for subcutaneous anthrax. Critics maintained that the DoD required a waiver; the DoD argued that the vaccine was standard treatment. The DoD prevailed, leaving dissenting soldiers to resign from the service if they decline treatment.[13]

Although military necessity can override informed consent when soldiers are ordered to take investigational drugs, it cannot override informed consent when soldiers are recruited for experimentation. But consent need not be explicit. Wolfendale and Clarke suggest that enlistees give implicit consent to accept investigational drugs insofar as the drugs confer a military advantage at minimal risk.[14] This is undoubtedly part of the answer. It does not explain, however, why *conscripts* must also accept investigational drugs. Moreover, *experimental* (rather than investigational) drugs or procedures may also offer a military advantage and minimize risk. The difference between the two may not be so much in the level of the risk but in its distribution. The risk of investigational drugs is distributed equally among all service personnel, whereas the risk of experimental drugs falls on a few alone, who, therefore, must give their consent.[15]

Battlefield Bioethics

Dilemmas of battlefield bioethics occur when providing care to compatriot, allied, and enemy soldiers and to local civilians. When resources are scarce and multiple actors make demands, providers require guidelines to administer care. Although military organizations have contingency triage plans to prioritize care, the hard moral cases—having to choose between saving the lives of severely wounded soldiers or returning the moderately wounded to duty—are relatively rare.[16] More common are questions about providing care to local civilians caught in the cross fire or to "host-nation" personnel who fight alongside United States and NATO troops in Iraq and Afghanistan.

To support its soldiers in Iraq, the U.S. Army provided medical care at several levels. The battalion aid station provides first aid and transport and the 20-person forward surgical team offers immediate treatment, surgery, and evacuation to a 248-bed combat support hospital that provides resuscitation, reconstructive surgery, intensive care, and psychiatry. When necessary, the wounded receive sophisticated treatment at a full-service trauma center in Landstuhl, Germany, or in the United States.[17]

Although this system is designed to provide the best possible care for U.S. soldiers, American medical facilities also care for host-nation soldiers and local civilians wounded during American operations. Whereas severe American casualties evacuate to superior medical facilities, local casualties must turn to a poorly functioning local system for further care. This two-tiered system limits care for host-country wounded, who, without access to sophisticated prosthetic devices, for example, will not receive the same reparative surgery U.S. soldiers receive in the field. Pediatric cases and care for

detainees present a special challenge. Alert to the adverse publicity of failing to provide anything less than maximum care for children, U.S. medical facilities often offer extensive and sophisticated care to children.[18] For detainees, the Geneva Conventions mandate a level of care equal to the care that U.S. and Coalition forces receive. Host-nation allies fighting alongside Western forces in Iraq and Afghanistan, on the other hand, are only entitled to the unspecified level of reasonable care that occupation forces must provide the local population. This creates what some feel is an absurd and ethically untenable outcome that, at present, is only resolved when the United States transfers care of detainees to the host nation.[19]

As these descriptions suggest, it is not always possible to treat the wounded strictly on the basis of medical need. Availability of follow-up resources and obligations under international law are clearly a function of national identity, which dictates the care the wounded receive at the onset. Similar cases may not be and, perhaps, should not be treated similarly.[20] This is a prima facie violation of the neutrality provision of the Geneva Conventions, which prioritize care solely on the basis of medical need. Although some commentators view the obligation to preserve neutrality and treat indiscriminately as absolute,[21] situations arise in wartime that temper this assessment. First, the obligation to treat those who can contribute best to the war effort may override the duty to save lives when resources are scarce.[22] Second, medical personnel may apply an ethic of camaraderie or ethic of care and treat their own soldiers first, regardless of the severity of their wounds, because of a special obligation they owe compatriots.[23]

Bioethicists are just beginning to confront these dilemmas. Preserving patient autonomy when resources are very scarce may require soldiers to voluntarily defer their treatment to others and may require military physicians to ''educate individuals about the needs of the many vs. the needs of the one'' in extreme triage situations.[24] Dismantling a two-tiered system demands additional medical resources for host-country care that are not readily available.[25] Additional resources, however, do not resolve the dilemma of camaraderie if physicians and medics remain convinced of their overriding duties to treat their compatriots regardless of their legal obligation to treat the wounded irrespective of nationality. This painful contest between legal and moral obligations is bread-and-butter bioethics, yet the issue remains unaddressed.

Questions about treating terrorists (rather than the effects of mass casualty terror attacks, which are beyond the scope of this review) are also part of battlefield bioethics. Fighting terrorism may dictate military protocols that cause patient harm by delaying patients, ambulances, or medical workers suspected of abetting terrorists.[26] Medical staff may face significant emotional hurdles when asked to treat terrorists. Some may be reluctant to endanger themselves at the site of an attack; others will find it difficult to treat terrorists at all or while terror victims still require care. Here, psychological and emotional support may be necessary.[27] The order of treatment remains an open question. Howe argues, for example, that terrorists are unlawful combatants and so only merit care after compatriot soldiers, prisoners of war, and civilians.[28] This issue, like many just described, remains contentious. Military medical ethics education, which is only in its infancy and lags perilously far behind medical ethics education in general, must confront these questions directly to offer clear guidance for practitioners in the field.[29]

Medical Humanitarianism

Medical humanitarianism presents novel challenges when state armies and nongovernmental organizations (NGOs) provide medical care, hospitals, water and sanitation services, and facilities for medical education to help resolve conflict and facilitate postwar reconstruction. The goals are both medical and political. In the Vietnam War, the U.S. Army Medical Department undertook "medical stability operations" to help support the local government. Care was sporadic, short term, poorly distributed, underfunded, and inattentive to local needs and often put military imperatives above medical concerns.[30] Learning from these mistakes, American military "medical civic action programs" (MEDCAPs) in Cambodia, Thailand, and elsewhere pursue more modest and less political aims.[31] Nevertheless, MEDCAP operations in Iraq and Afghanistan continue to provide "much needed or absent services to the people in the hopes of 'winning the hearts and minds' of the local populace and undermining ideological support for the insurgency, while gaining support for the legitimate Afghan government."[32] Wary of Vietnam-era errors, new programs emphasize sustainable care through partnerships with local NGOs, "collaborative medical engagements," and educational efforts to "enhance host-nation medical infrastructure, increase intraoperability between local assets, and instill confidence within the population."[33] Outside the military, organizations such as the Red Cross or Physicians without Borders work to relieve medical suffering, whereas more ambitious programs fuse medical care with "peace building" to help reconcile warring parties.[34]

Many of these endeavors are fraught with ethical dilemmas. "We must not naively assume," writes Anthony Zwi and his colleagues, "that because we are dealing with 'health' that this is neutral, that it is not contested, that it cannot create conflict."[35] Medical care introduces a scarce and valuable commodity into a violent and fiercely competitive environment and raises a host of questions: Should healthcare workers be impartial and neutral? Should they work with despotic regimes or encourage those fighting despotism? Should NGOs buy off the local militia to ensure delivery of medical supplies and equipment? Should they respect the wishes of local institutions or authorities, knowing these may discriminate against women or members of weaker groups?[36]

Beyond providing care, many organizations hope to use healthcare to build peace by fostering medical projects that will sustain and empower the local population, bring warring sides together in joint projects, and create safe havens where medical personnel can mediate conflict. Accomplishing these goals requires military or nongovernmental organizations to draw in local ownership, use locally available materials, and evaluate the success of projects using "clearly articulated goals" and "quantifiable objectives."[37] In addition to epidemiological metrics, advocates of peace through health offer guidelines for assessing a project's responsiveness to universal principles of social justice and equality, its sensitivity to cultural norms, local patterns of authority and power distribution, and its fulfillment of the special needs of women and girls, child soldiers, the elderly, and the poor and disenfranchised.[38] Joint medical education projects, mobile clinics, and projects dedicated to pediatric health may all cross ethnic and national lines and can facilitate reconciliation and reduce tensions, as, for example, when warring parties accept ceasefires to care for ailing children or provide inoculations.[39]

Peace building through health faces a practical and normative challenge. Practically, organizations must measure their efforts to alleviate distress, prevent or resolve conflict, or facilitate a transition to stable democracy. Collecting epidemiological data while ensuring informed consent, dignity, and confidentiality is confounded by "disrupted social networks, limited resources, multiple public health risks, extensive abuses of human rights and intense competition for aid resources."[40] Assessing efforts to alleviate social and political ills is harder still. Aid workers lack the tools to effectively evaluate programs that strive for equality, empowerment, reconciliation, and, ultimately, peace.[41]

Under these difficult circumstances, critics also raise a normative challenge to peace building through health: is peace (any more than war) the business of medicine? Once medical workers abandon neutrality to pursue peace, they must ask about the unintended and unforeseen consequences of favoring one side or another, of placing themselves in danger to secure nonmedical benefits, and of risking exploitation if a regime seizes on their efforts as signs of reconciliation while ignoring real steps toward peace.[42] There are no simple answers to these questions, and pursuing peace through health may only detract practitioners from their main job of caring for the sick and injured. Contributing to war, no less than contributing to peace, may also distance medical workers from their primary obligations.

Medicine in War: Enhancement, Dual-Use Technologies, and Weapons Development

Drugs, brain-machine interfaces, neural prostheses, genetic engineering, and mechanical cybernetic improvements to enhance the fighting capability of soldiers, keep them alert, help them to survive longer on less food, alleviate pain, and sharpen and strengthen their cognitive and physical capabilities drive the art of enhancement.[43] Enhancements are not necessarily therapeutic: soldiers designated for enhancement are not sick. Rather, commanders seek to improve a soldier's function while reducing risk to life and limb. Dual-use technologies and weapons development make similar claims. They have no therapeutic value but instead hope to enhance a nation's war-fighting capabilities.

Enhancement technologies, some fictional and some within grasp, raise questions about patients' and soldiers' rights and the role of medical science in the military. Soldiers have no right to refuse standard or investigational treatments that keep them fit for duty. But must soldiers consent to enhancement? On one hand, many enhancing agents are not experimental or investigational; for example, there is sufficient evidence that Modafinal reduces fatigue and improves performance. On the other hand, the soldiers who take these drugs are healthy and fit. Enhancement technologies either make them more fit or, in the very least, prevent or reverse military performance degradation. In either case, they are not ill. Enhancement therefore requires consent together with medical supervision to oversee safety and to guarantee that "nonpharmacologic alternatives" have been fully utilized.[44]

Meeting these conditions is problematic. As noted previously, informed consent is difficult to attain in a military hierarchy. The long-term effects of memory-enhancing drugs remain unknown, nor are their immediate effects on other cognitive functions clear.[45] There are legitimate concerns about personality change, lack of moral

responsibility, and *Übermensch* visions of power and grandeur if soldiers use enhancing agents to maximize cognitive prowess by reducing anxiety, eliminating fear, or blocking memories of battlefield events, particularly those memories that may induce posttraumatic stress disorder.[46] Although valid, these concerns must be weighed against their military benefits, a consideration necessarily absent from the general, nonmilitary debate over enhancements. Military service imposes high costs that are acceptable if proportionate to the expected military benefit. Any technology that increases military efficiency and protects soldiers will probably carry the day insofar as war fighters do not use their enhancement to violate humanitarian law.[47]

Enhancement also raises hard questions about dual-use technologies and the obligations of medical science to warfare. Drugs to alleviate insomnia or posttraumatic stress disorder, the search for the genes associated with intelligence or fear, and computer technologies to treat memory loss were first pursued for therapeutic use before being embraced by the military. Other biotechnologies that synthesized, engineered, or rebuilt the polio, smallpox, and Spanish flu viruses raise more fearsome prospects.[48] Armies use medical science for national defense, but terrorists and rogue regimes may adopt cutting-edge research for malevolent purposes and mass murder. This is the dual-use dilemma: should medical scientists restrict their research to prevent nonmedical use or disseminate it freely?

The possibility of retooling enhancement and other technologies for malevolent ends or publishing medical data with potentially harmful consequences if militarized by terrorists or rogue regimes raises questions of protecting, censoring, or limiting access to dual-use technology. Because many researchers believe that excessive restrictions will ultimately stifle scientific research, the challenge remains to institute guidelines to protect dual-use technologies from malevolent use.[49] Most are aware that government censorship is undesirable; thus the debate turns on who will regulate the dissemination of dual-use technology: the scientific community or the government? Advocates of self-regulation, including the American Medical Association (AMA) and the National Research Council, support an advisory board to develop guidelines so scientists unversed in national security issues might recognize potential complications of dual-use technologies and vet prospective papers for possible security threats.[50] This is the purpose of the National Advisory Board for Biosecurity (NSABB), whose guidelines list a range of research subjects that trigger dual-use concern.[51] It is the responsibility of researchers and their institutions to carefully examine their projects and to modify their research or limit dissemination as they feel appropriate. There are no provisions for government regulation, mandatory licensing, or security clearances for research that has dual-use implications.

Other researchers are skeptical about self-regulation, noting that most scientists lack the training to recognize the dual-use implications of their research and have a vested interest in publishing their work. To prevent malevolent agents from appropriating dual-use technology, Seumas Miller and Michael J. Selgelid reject both self-regulation and government control and opt for joint institutional and governmental control combined with an independent oversight authority. This arrangement preserves academic freedom, intellectual inquiry, and freedom of communication while making room for the mandatory licensing of some technology and facilities, security clearances

for some personnel, and mandatory education to recognize dual-use dilemmas without giving undue weight to national security interests or undue discretion to government authorities.[52]

Walking the line between medical and security interests becomes more intense when physicians contribute to weapons development. This is something new. Prior to the twentieth century, the only important questions about a weapon were its accuracy, range, and payload. When attention turned to chemical and biological weapons, however, the central questions focused on potency (how much of a chemical or pathogen is necessary to kill or disable a human being) and delivery (how to introduce a chemical or pathogen into the human body). Only medical science could provide these answers. Today, offensive research is largely prohibited by the Biological Weapons Convention and Chemical Weapons Convention, but *nonlethal* weapons research remains contentious. Nonlethal weapons include calmative agents that depress the central nervous system, electromagnetic technologies that cause pain without tissue damage, and neurological interventions that map or alter brain states.[53]

Nonlethal weapons pose a dilemma for military medicine for several reasons. First, nonlethal weapons research is not defensive but is designed to augment conventional military capabilities. Second, nonlethal weapons cause harm. Electromagnetic and acoustical weapons cause acute transient discomfort and pain. Neurological interventions to detect lying, for example, raise issues regarding dangers of dehumanization, violations of personality, and infringements of "cognitive liberty."[54] Nonlethal weapons may also kill. At least 129 people died when the Russians pumped in a calmative agent before they stormed a Moscow theater in 2002 to rescue hostages from terrorists. Third, *clinical* physicians play a central role in the testing of nonlethal weapons by monitoring subjects' health and by assuming responsibility for informed consent.[55] Fourth, medical research and careful animal experimentation are crucial so nonlethal weapons designers can maximize the difference between a lethal and nonlethal dose of a chemical (an agent's therapeutic index)[56] or exploit the difference between pain and tissue damage.

In response to the role medicine plays in weapons development, many observers, including the World Medical Association (WMA) and British Medical Association (BMA), hold that physicians should be prohibited from any involvement in weapons development. They cite not only a physician's duty to do no harm but other contingent fears: loss of respect, concerns that nonlethal weapons may fall into enemy hands, and fears that nonlethal chemical weapons may upend the international consensus that bans chemical and biological weapons of mass destruction.[57]

One solution is to simply remove medical personnel from direct involvement with weapons development. Placing them in defensive research, which was common during and after World War II, is one answer.[58] Today, defensive research continues at the U.S. Army Medical Research Institute of Chemical Defense and the U.S. Army Medical Research Institute of Infectious Diseases, although not without reservations from some observers.[59] Another suggestion replaces physicians with technicians to administer and interpret brain scans to detainees, for example.[60] However, removing clinical practitioners is not always practical when experimental protocols require medical supervision. Moreover, medical *technology* remains in the service of the military, regardless of who does the grunt work.

Alternatively, physicians may help build weapons because security interests sometimes override their professional obligations.[61] Nonlethal weapons are designed to save noncombatant lives in contemporary warfare when it is impossible to distinguish between combatants and noncombatants. Moreover, the potential harms are overstated: physician integrity is not impaired, government regulation of nonlethal technologies is significantly tighter than the self-regulation many find adequate to prevent malevolent use of dual-use technologies, and evolving legal guidelines should be sufficient to draw a sharp distinction between nonlethal weapons and weapons of mass destruction. As a result, physicians do no harm on balance when they help develop nonlethal weapons; this argument also resonates throughout the entire debate over interrogation.

Interrogation, Torture, and Forced Feeding

Over the last few years, hundreds of articles have exposed the role that physicians play in detention facilities like Guantanamo Bay. Early articles and books by M. Gregg Bloche, Jonathan H. Marks, and Steven H. Miles described how some physicians evaluate and approve detainees for interrogation; provide medical care before, during, and after interrogations; authorize continued interrogation; and provide a "tailored" psychological regimen for interrogating specific detainees based on their psychological profile.[62] In 2010, Physicians for Human Rights documented how healthcare professionals experimented with torture by monitoring interrogations to collect data to improve questioning techniques.[63] In response, the WMA and AMA allow physicians to provide medical care to detainees but prohibit participation in interrogation or their presence when torture is used.[64] Faced with unlawful interrogation, military medical personnel should report abuses and act as "human rights monitors."[65] The medical and bioethics community applauded these developments.[66]

Several aspects of this debate are noteworthy. First, there was little actual debate. As American authorities approved "enhanced" interrogation techniques such as hooding, stress positions, loud music, and sleep deprivation for high-value detainees, the bioethics community responded with vociferous and near-unanimous condemnation. Detractors were disparaged as antiabolitionists or rogue bioethicists.[67] Second, bioethicists addressed a relatively rare phenomenon among the modern armies of democratic states. In the United States, for example, Department of Defense officials reportedly approved 30 detainees for harsh interrogation and 3 for waterboarding.[68] Third, discussions rarely differentiated between the legitimacy of enhanced interrogation and that of physician participation. These are two separate questions. The first asks, Is enhanced interrogation permissible? The second asks, Is it permissible for healthcare professionals to participate in or facilitate interrogation? Most bioethicists run these together. If enhanced interrogation is wrong, then obviously physicians have no place in interrogation facilities.

But this shuts down the discussion prematurely, because the wider, public debate about torture recognizes opinions that defend some measure of enhanced interrogation when many innocent lives are at stake.[69] What then of doctors and other clinicians? *If* some form of harsh interrogation is permissible, should they assume any role whatsoever? For some observers, a doctor's professional duties remain

subordinate to a citizen's civic obligations during war. If a democratic nation should accept the need for enhanced interrogation to ensure national security and save innocent lives, then physicians have the same duty as other citizens to contribute their expertise to the war effort.[70] Alternatively, medical ethics may not matter, because physicians advising interrogation teams are not caregivers but soldiers with a particular technical expertise.[71] This was the position of the DoD in the Bush years. Edmund Howe and his colleagues draw a different line. Acknowledging that military psychologists, for example, may have no "concomitant clinical duties to detainees," they hold that these psychologists nonetheless may act in a way that is morally culpable if they help interrogators to form better relations with detainees in order to increase a detainee's vulnerability. Nevertheless, the possibility of gaining actionable intelligence that will save lives while causing no harm to the detainee may offset a medical worker's culpability.[72] In contrast, Chiara Lepora and Joseph Millum argue that because medical care is so fundamental to any successful interrogation, there is no real difference between providing medical care and facilitating an interrogation. Any physician who fulfills his professional obligation to provide care also participates in wrongful interrogations. Sometimes, then, "the right thing for a doctor to do requires complicity in torture."[73] In this view, torture and enhanced interrogation are wrong, but physician participation can be right.

Forced feeding raises related issues. In its 2006 Tokyo Declaration, the WMA prohibits physicians from participating in torture and from artificially feeding a competent prisoner who refuses nourishment.[74] In the ensuing debate, bioethicists staked out several positions. Some condoned forced feeding to save a striking prisoner from certain death, even if it involves defying a competent person's direct wishes.[75] At best, military physicians who face an "irresolvable ethical conflict between saving detainees' lives and respecting their autonomy" should be allowed to withdraw.[76] Some, more wary about violating a person's autonomy so directly, prefer to wait until a hunger striker loses consciousness before force-feeding the now-incompetent patient. Another nuanced approach tried to preserve autonomy by allowing a hunger striker to convey his wishes to his physician privately, while publically professing his willingness to die for his beliefs. Ultimately, the WMA rejected any stance that left room to force-feed hunger strikers without explicit consent. "Forcible feeding even if intended to benefit," declared the WMA, "is never ethically acceptable."[77]

For bioethicists, the ethics of forced feeding turn entirely on the tension between respect for autonomy and a patient's best interests. It is, therefore, not surprising that the dilemma remains unresolved. National security interests are generally ignored by bioethicists yet remain crucial when striking detainees pose security threats. In these cases, forced feeding violates a detainee's autonomy to protect a threatened third party and thus is not solely intended to save the patient's life. Invoking national security reminds us of the torture debate, except that a physician is saving a detainee's life, not torturing him. If humane, forced feeding a detainee can be permissible if the prospect of safeguarding national interests, by gaining actionable intelligence, for example, is reasonable. Informed consent often falls to military necessity whether the patient is a compatriot soldier or enemy combatant. Military necessity, therefore, adds an additional factor to the cost-benefit analysis and,

like all the dilemmas described in this review, raises the question of dual loyalty.

Dual Loyalty and a Theory of Military Medical Ethics

"Working to enhance national security," writes the BMA, "may not always be compatible with the fundamental tenets of medical ethics."[78] The question, then, is whether this tension might be resolved and, if not, which obligations prevail. Questions about dual loyalty infuse the torture debate but arise when medical personnel participate in any research that has distinct military applications. Hard dilemmas also occur in clinical settings in which basic tenets of medical ethics—confidentiality, informed consent, and autonomy—may run up against national security concerns or, simply, organizational well-being. Consider medical malingering, which is common in armies but little researched by bioethicists. Soldiers often find it extremely easy to fake symptoms to gain a day or two of extra leave. Solutions are not always patient friendly. Anecdotal reports describe how physicians may skirt the common guidelines for using placebos and give them to suspected malingers to return them to duty.[79] Here is a dual-loyalty dilemma in the most quotidian terms: the patient's interests or those of the military system? Similarly, military physicians may find it necessary to shade the truth, withhold information about medications, or otherwise manipulate patients to return them to active duty.[80]

There are no easy solutions to these dilemmas. One asserts the primacy of medical ethics at all times "by adopting a clear doctrine stating that the ethical obligation of the military physician is always to act in the best interests of the patient (with the patient's consent)—military, civilian, and captured enemy alike."[81] Concerned that military physicians subordinate patient interests to military necessity, fail to fully respect informed consent, or refuse to treat all patients equally, Barry S. Sidel and Victor W. Levy argue that physicians should avoid military service altogether and contract their services to the army as part of nonmilitary national service.[82] Extreme as this argument might sound, it might be perfectly logical if military physicians cannot assign ethical priority to their professional obligations when they enlist.

Although one might certainly solve the dual-loyalty dilemma by deferring to patient interests, one can just as easily defer to national security. Utilitarianism alone probably provides sufficient grounds to prefer collective over individual interests during war. Neither solution, however, resolves the conflict that medical practitioners face. To defuse dual loyalty, alternative models embrace the idea of a single actor: the physician-soldier. Rather than clashing, doctoring and soldiering share a similar "collective ethic." Physicians care for individuals with an ultimate concern for society, whereas military officers safeguard society to create a secure environment for the individual.[83] Both professions share a concern for autonomy, dignity, and life that is mutually reinforcing.[84] This fused identity is largely sufficient to respond to questions of dual loyalty. In most cases military physicians serve national security interests as they tend their patients and follow the dictates of medical ethics.

Nonetheless, some circumstances force physicians to carefully evaluate the demands of medical ethics and military necessity. When treating sexual abuse or misbehavior, suicidal tendencies, eating disorders, or drug use, for example, patient rights prevail because national security is not at stake.[85]

In other instances, it may be necessary to circumscribe patient rights or withhold information to conserve manpower or serve a mission.[86] Professional medical obligations emphasizing the priority of patient care fall to collective security.[87] If national security sometimes overrides medical ethics, it is also important to set limits on the actions military necessity can justify. Obvious constraints are nonderogable human rights, just war theory, and international humanitarian law.[88] An ethics tribunal may help military physicians make decisions and integrate the demands of medical ethics, military ethics, and the law.[89]

Concluding Remarks

Writing on dual-use technology, Michael J. Selgelid notes the irony that "bioethicists have had relatively little to say about security in general or about the dual-use dilemma in particular," whereas the "huge number of books on ethics and genetics . . . include little, if any, discussion, of the potential role of genetics in weapons-making."[90] In their edited volume on the ethics of enhancement, Julian Savulescu and Nick Bostrom observe that the U.S. military is actively exploring the potential of enhancement technology. Nevertheless, not one author makes more than a passing reference to this remarkable fact nor to the intense and challenging problems it poses for bioethics.[91] Turhan Canli and his colleagues, too, point to the "unwillingness of the scientific community itself to engage in dialogue with people who work in defense and intelligence agencies out of the belief that working with such individuals promotes a political agenda that is perceived as misguided, wrong or even dangerous."[92]

Bioethicists have to ask themselves if this assessment is accurate and whether it largely explains their overwhelming attention to interrogation and forced feeding to the near exclusion of all else. Concern about the treatment of detainees has left little room to engage national security concerns constructively and has engendered a skeptical and mistrustful intellectual climate that has denied more significant questions a shot at a fruitful and productive discussion. As a result, the very important debate about weapons development continues to gather steam but in an atmosphere overshadowed by fear and suspicion of the military. And, except for the dedication of a few scholars, most of the other issues examined in this review—patient rights for soldiers, enhancement, dual-use technology, medical humanitarianism, distributive justice, and military medical education—are entirely overlooked. This leaves the military to fend for itself, bereft of the rich contribution that bioethics can make.

Unlike medical ethics, military medical ethics can only thrive if the military and the bioethics community cooperate closely. A climate of alienation and mistrust is neither tenable nor useful. Neuroscientists and biologists have, perhaps, been the most vociferous about this. They understand, for example, that the ethical use of science in national defense requires the concerted efforts of experts in science, bioethics, and national security.[93] This challenge runs across the board. Military ethics, medical ethics, and national security are intertwined on innumerable levels.[94] By ignoring the call to lend their expertise to these debates and discussions, bioethicists abdicate their professional responsibilities.

Notes

1. Beam TE, Spracino LR, eds. *Military Medical Ethics*. Falls Church, VA: Office of the Surgeon General; 2003.
2. Visser SL. The soldier and autonomy. In: Beam TE, Spracino LR, eds. *Military Medical*

Ethics. Vol. 1. Falls Church, VA: Office of the Surgeon General; 2003:251–66.
3. US Army Medical Department, US MD Hospital, Fort Worth Texas; available at http://www.usmdfortworth.com/patient-information/patient-rights/ (last accessed 24 Aug 2012).
4. Secretary of the Navy. Unreasonable refusal of medical, dental, or surgical treatment. In: *Navy Disability Evaluation Manual*, instruction 1850.4E, paragraph 3413; 2002:3–28.
5. Howe E. Mixed agency in military medicine: Ethical roles in conflict. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 1. Falls Church, VA: *Office of the Surgeon General*; 2003:331–60; Gibson TM, Coker WJ. Medical confidentiality: The right of a commanding officer to know. *Journal of the Royal Army Medical Corps* 2002;148:130–6.
6. *Medical Management of Biological Casualties Handbook*. Frederick, MD: U.S. Army Medical Research Institute of Infectious Diseases; 2004, at L1.
7. Brown M. Military warfare agent human subjects testing: Part 1—history of six decades of military experiments with chemical warfare agents. *Military Medicine* 2009;174(10):1041–8. Brown M. Military warfare agent human subjects testing: Part 2—long-term health effects among participants of U.S. military chemical warfare agent testing. *Military Medicine* 2009;174(10):1049–54. Moreno J. *Undue Risk: Secret State Experiments on Humans*. New York: Routledge; 2001; Schmidt U. Cold war at Porton Down. *Cambridge Quarterly of Healthcare Ethics* 2006;14(4):366–80; Lederer SE. The cold war and beyond: Covert and deceptive American medical experimentation. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 2. Falls Church, VA: Office of the Surgeon General; 2003:507–31.
8. Mehlmen MJ, Berg JW, Juengst ET, Kodish E. Ethical and legal issues in enhancement research on human subjects. *Cambridge Quarterly of Healthcare Ethics* 2011;20:30–45. Amoroso PJ, Wenger LL. The human volunteer in military research. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 2. Falls Church, VA: Office of the Surgeon General; 2003:563–660; McManus JG, McClinton A, Morgan M. Ethical issues in conduct of research in combat and disaster operations. *American Journal of Disaster Medicine* 2009;4(2):87–93.
9. Melman Y. Medical panel: Anthrax experiments on IDF soldiers were unjustified. *Haaretz* 2009 Mar 23; available at http://www.haaretz.com/news/medical-panel-anthrax-experimentson-idf-soldiers-were-unjustified-1.272877; Physicians for Human Rights, Israel. Experimental anthrax vaccine administered to IDF soldiers; available at http://www.phr.org.il/default.asp?PageID=122&ItemID=709 (last accessed 24 Aug 2012).
10. Pica-Branco D, Hudak RP. U.S. military service members' perceptions of the anthrax vaccine immunization program. *Military Medicine* 2008;173(5):429–33.
11. Spence DL. Ensuring respect for persons when recruiting junior enlisted personnel for research. *Military Medicine* 2007;172(3):250–3.
12. McManus J, Mehta SG, McClinton AR, De Lorenzo RA, Baskin TW. Informed consent and ethical issues in the military medical research. *Academic Emergency Medicine* 2005;12(11):1120–6, at 1124.
13. Katz RD. Friendly fire: The mandatory military anthrax vaccination program. *Duke Law Journal* 2000–1;50:1835–65; Cummings ML. Informed consent and investigational new drug abuses in the U.S. military. *Accountability in Research* 2002;9:93–103; FitzPatrick WJ, Zwangziger LL. Defending against biological warfare: Ethical issues involving the coercive use of investigational drugs and biologics in the military. *Journal of Philosophy, Science and Law* 2003;3:1–16; Miller RK. Informed consent in the military: Fighting a losing battle against the anthrax vaccine. *American Journal of Law and Medicine* 2002;20(2,3):325–45; Pica-Branca D, Hudak RP. US Military service members' perceptions of the anthrax vaccine immunization program. *Military Medicine* 2008;173(5):429–533. For the UK, see Gibson TM. A shot in the arm for the military: Consent to immunization against biological warfare agents. *Medical Law International* 2002;5:161–79.
14. Wolfendale J, Clarke S. Paternalism, consent, and the use of experimental drugs in the military. *Journal of Medicine and Philosophy* 2008;33(4):337–55.
15. Gross ML. *Bioethics and Armed Conflict: Moral Dilemmas of Medicine and War*. Cambridge, MA: MIT Press; 2006, at 108–112.
16. Beam TE. Medical ethics on the battlefield, the crucible of military medical ethics. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 2. Falls Church, VA: Office of the Surgeon General; 2003:369–402; Adams MP. Triage priorities and military physicians. In: Allhoff F, ed. *Physicians at War: The Dual-Loyalties Challenge*. New York: Springer; 2008:215–36.
17. Gawande A. Casualties of war—military care for the wounded from Iraq and Afghanistan. *New England Journal of Medicine* 2004;351(24):2471–5. Nessen S, Lounsbury DE, Hetz SP.

War Surgery in Afghanistan and Iraq, a Series of Cases, 2003–2007. Washington, DC: Office of the Surgeon General, Department of the Army;2008, at 3–6.
18. See note 17, Nessen 2008, 4, 66, 108, 211, 223, 297, 365–72, 385–8, 399–401.
19. Gross ML. The limits of impartial medical treatment during armed conflict. In: Gross ML, Carrick D, eds. *Military Medical Ethics for the 21st Century*. Farnham: Ashgate; 2013.
20. Sokol DK. The medical ethics of the battlefield. *British Medical Journal* 2011;343:d3877; Paix B. Member care versus humanitarian aid: Using the Iraq conflict to examine the role of military medicine in war. *ADF Health* 2006;8:24–7.
21. Sessums LL, Collen JF, O'Malley PG, Jacobson JL, Roy MJ. Ethical practice under fire: Deployed physicians in the global war on terrorism. *Military Medicine* 2009;174(5): 441–7; Baer HU, Baillat JM. Military necessity versus the protection of the wounded and sick: A critical balance. *Military Medicine* 2002;167 Suppl:17–9; Xenakis SN, Ofran Y. Maintaining medical neutrality in conflict zones. *Virtual Mentor* 2007;9(10):681–7.
22. Howe E. Dilemmas in military medical ethics since 9/11. *Kennedy Institute of Ethics Journal* 2003;13(2):175–88.
23. Gross M. Teaching military medical ethics: Another look at dual-loyalty and triage. *Cambridge Quarterly of Healthcare Ethics* 2010;19: 458–63. See also Carter BS. Ethical concerns for physicians deployed to operation Desert Storm. *Military Medicine* 1994;159(1):55–9.
24. Repine TB, Lisagor P, Cohen DJ. The dynamics and ethics of triage: Rationing care in hard times. *Military Medicine* 2005;170(6):505–9, at 507.
25. Enemark C. The ethical challenges for US military medicine in Iraq. *Journal of Medical Ethics* 2008;7(3):186–201.
26. Cole L. Ethics and terror medicine. In: Shapira S, Hammond J, Cole L. *Essentials of Terror Medicine*. Springer; 2009:425–39.
27. Gesundheit B, Ash N, Blazer S, Rivkind AI. Medical care for terrorists—to treat or not to treat? *American Journal of Bioethics* 2009;9(10): 40–2.
28. See note 22, Howe 2003.
29. See note 23, Gross 2010; Kemp KR. Ethics training for military medical trainees: The Brooke Army Medical Center experience. *Military Medicine* 2008;173(10):968–74.
30. See note 23, Gross 2010, at 198–210. Wilensky RJ. *Military Medicine to Win Hearts and Minds: Aid to Civilians in the Vietnam War*. Lubbock: Texas Tech University Press; 2004.
31. Zajtchuk JT. Military medicine in humanitarian missions. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 2. Falls Church, VA: Office of the Surgeon General; 2003: 773–804; Ritchie EC, Mott RL. Military humanitarian assistance: The pitfalls and promise of good intentions. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 2. Falls Church, VA: Office of the Surgeon General; 2003:805–30.
32. Keenan S. Role of medicine in supporting special forces counter-insurgency operations in Southern Afghanistan. *Journal of Special Operations Medicine* 2007;7(1):48–50, at 48.
33. Lesho EP, Jawad NK, Hameed HM. Towards a better approach to medical humanitarian assistance in Iraq and future counterinsurgency operations. *Military Medicine* 2011;176(1):1–3. Malish R, Scott JS, Rasheed BO. Military-civic action: Lessons learned from a brigage-level aid project in the 2003 war with Iraq. *Prehospital and Disaster Medicine* 2006;21(3):135–8. Burkle FM. Military-civic action and the 4th Geneva Convention: Lessons learned or ignored? *Prehospital and Disaster Medicine* 2006;21(3): 129–40. Pueschel M. US special forces medics in Afghanistan look to partner with NGOs in rural health. *Journal of Special Operations Medicine* 2010;10(3):5–9. Alderman S, Christensen J, Crawford I. Medical seminars: A new paradigm for special operations forces counterinsurgency medical programs. *Journal of Special Operations Medicine* 2010;10(1):16–22, at 21.
34. Arya N. Peace through health? In: Webel C, Galtung J, eds. *Handbook of Peace and Conflict Studies*. Routledge: New York; 2007:367–94; Bortolotti RD. *Hope in Hell: Inside the World of Doctors without Borders*. Buffalo, NY: Firefly; 2010.
35. Zwi AB, Bunde-Birouste A, Grove N, Waller E, Ritchie J. *The Health and Peace Building Filter, Companion Manual*. 2006, at iv.
36. Schwartz L. Ethics in humanitarian aid work: Learning from the narratives of humanitarian health workers. *American Journal of Bioethics, Primary Research* 2010;1(3):45–54; Buhmann C, Santa Barbara J, Arya N, Melf K. The roles of the health care sector and health workers before, during and after armed violent conflict. *Medicine Conflict and Survival* 2010;26(1): 4–23.
37. Drifmeyer J, Llewellyn C. Toward more effective humanitarian assistance. *Military Medicine* 2004;169:161–8, at 166.
38. See note 35, Zwi et al. 2006. Chase R, Arya N. Epidemiology as a tool for interdisciplinary peace and health studies. In: Arya N, Santa Barbara J. *Peace Through Health: How Health Professionals Can Work for a Less Violent World*. Sterling, VA: Kumarian Press; 2008:161–72.

39. Arya N. Secondary prevention: Humanitarian ceasefires. In: Arya N, Santa Barbara J. *Peace Through Health: How Health Professionals Can Work for a Less Violent World*. Sterling, VA: Kumarian Press; 2008:193–6.
40. Zwi AB. Placing ethics in the centre: Negotiating new spaces for ethical research in conflict situations. *Global Public Health* 2006; 1(3):264–77, at 264. Banatvala N, Zwi AB. Public health and humanitarian interventions: Developing the evidence base. *British Medical Journal* 2000;321:103; Grove NJ, Zwi AB. Beyond the log frame: A new tool for examining health and peacebuilding. *Development in Practice* 2008;18(1): 66–81.
41. Graeme MacQueen G, Santa Barbara J. Peace building through health initiatives. *British Medical Journal* 2000;321:293–7. See also note 36, Buhmann et al. 2010, at 17. Santa Barbara J. Evaluation of peace through health initiatives. In: Arya N, Santa Barbara J. *Peace Through Health: How Health Professionals Can Work for a Less Violent World*. Sterling, VA: Kumarian Press; 2008: 247–258.
42. Vass A. Peace through health. *British Medical Journal* 2001;323:1020; Jabbour S. Healing and peace making in the Middle East: Challenges for doctors. *Lancet* 2005 Jan 25; available at http://image.thelancet.com/extras/04cmt309web.pdf (last accessed 23 Aug 2012).
43. Moreno J. Mind wars: Brain research and national defense. Dana Press; 2006:114–38; Saniotis A. Present and future developments in cognitive enhancement technologies. *Journal of Future Studies* 2009;14(1):27–38; Wang T. Towards a military medical ethics framework for genetic human enhancement. *Penn Bioethics Journal* 2010;6(1):8–12.
44. Russo MB, Arnett MV, Thomas ML, Caldwell JA. Ethical use of cogniceuticals in the militaries of democratic nations. *American Journal of Bioethics* 2008;8(2):39–41.
45. Annas CL, Annas GJ. Enhancing the fighting force. *Journal of Contemporary Health and Policy* 2009;25:283–308; Schermer M, Bolt I, de Jongh R, Olivier B. The future of psychopharmacological enhancements: Expectations and policies. *Neuroethics* 2009;2:75–87; Gibson TM. The bioethics of enhancing human performance for spaceflight. *Journal of Medical Ethics* 2006;32: 129–32.
46. Henry M, Fishman JR, Youngner SJ. Propranolol and the prevention of post-traumatic stress disorder: Is it wrong to erase the "sting" of bad memories? *American Journal of Bioethics* 2007;7(9):12–20. Wolfendale J. Performance-enhancing technologies and moral responsibility in the military. *American Journal of Bioethics* 2008;8(2):28–38.
47. Caldwell JA. Go pills in combat: Prejudice, propriety and practicality. *Air & Space Power Journal* 2008;97–104. Ashcroft RE. Regulating biomedical enhancements in the military. *American Journal of Bioethics* 2008;8(2):47–8.
48. Selgelid MJ. Governance of dual-use research: An ethical dilemma. *Bulletin of the World Health Organization* 2009;87:720–3.
49. Atlas RM, Dando M. The dual-use dilemma for the life sciences: Perspectives, conundrums and global solutions. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice and Science* 2006;4(3):276–86.
50. U.S. National Research Council. *Biotechnology Research in an Age of Terrorism*. Washington, DC: National Academies Press; 2004; Green SK, Taub S, Morin K, Higginson D, Council for the Ethical and Judicial Affairs of the American Medical Association. Position paper: Guidelines to prevent the malevolent use of biomedical research. *Cambridge Quarterly of Healthcare Ethics* 2006;15:432–9.
51. National Science Advisory Board for Biosecurity. *Proposed Framework for the Oversight of Dual-Use Life Sciences Research: Strategies for Minimizing the Potential Misuse of Research Information*; 2007 June; available at http://oba.od.nih.gov/biosecurity/pdf/Framework%20for%20transmittal%200807_Sept07.pdf (last accessed 23 Aug 2012).
52. Miller S, Selgelid MJ. Ethical and philosophical consideration of the dual-use dilemma in the biological sciences. *Science and Engineering Ethics* 2007;13:523–80. See also Selgelid MJ. A tale of two studies: Ethics, bioterrorism and the censorship of science. *Hastings Center Report* 2007;37(3):35–43; Harris ED. *Controlling Dangerous Pathogens: A Proposed International Biosecurity Oversight System, Uganda National Academy of Sciences, Promoting Biosafety and Biosecurity Within the Life Sciences: An International Workshop for East Africa*. Kampala, Uganda: UNAS Press; 2008; See note 43, Moreno 2006, at 162–84; Schubert C. Bioterror experts split on recommendations for "dual-use" research. *Nature Medicine* 2008;14(9):893.
53. For recent studies, see Davison N. *Nonlethal Weapons*. Houndmills: Palgrave Macmillan; 2009; Koplow D. *Nonlethal Weapons: The Law and Policy of Revolutionary Technologies for the Military and Law Enforcement*. Cambridge: Cambridge University Press; 2006; National Research Council. *An Assessment of Nonlethal Weapons Science and Technology*, Committee for an Assessment of Nonlethal Weapons

Science and Technology Naval Studies Board Division on Engineering and Physical Sciences. Washington, DC: National Academies Press; 2003; National Research Council. *Opportunities in Neuroscience for Future Army Applications*. Washington, DC: National Academies Press; 2009; National Research Council. *Emerging Cognitive Neuroscience and Related Technologies*. Washington, DC: National Academies Press; 2008; Davison N, Lewer N. *Bradford Nonlethal Weapons Research Project, (BNLWRP), Research Report No. 8*. Bradford, UK: University of Bradford, Centre for Conflict Resolution, Department of Peace Studies; 2006 Mar. See note 43, Moreno 2006; Sutherland RG. *Chemical and Biochemical Nonlethal Weapons Political and Technical Aspects SIPRI Policy Paper No. 23*. Stockholm: Stockholm International Peace Research Institute; 2008; Alexander JP. An overview of the future of nonlethal weapons. *Medicine, Conflict and Survival* 2001;17:180–93.

54. Wolpe PR, Foster KR, Daniel D. Emerging neurotechnologies for lie detection: Promise or peril. *American Journal of Bioethics* 2005;5(2):39–49. See also Marks J. A neuroskeptic's guide to neurethics and national security. *American Journal of Bioethics Neuroscience* 2010;1(2):4–12. Langleben DL. Detection of deception with fMRI: Are we there yet? *Legal and Criminological Psychology* 2008;13(1):1–9. Langleben dismisses charges that fMRI can read minds: "Deception is not a thought," he writes, "but a voluntary act. . . . Lie detection demands that there is a lie, i.e. a conscious and voluntary response to a query" (p. 5).
55. Fidler DP. The meaning of Moscow: "Nonlethal" weapons and international law in the early 21st century. *International Review of the Red Cross* 2005;87:525–52.
56. Pearson A. Incapacitating biochemical weapons: Science, technology, and policy for the 21st century. *Nonproliferation Review* 2006;13(2):151–88.
57. BMA Board of Science. *The Use of Drugs as Weapons the Concerns and Responsibilities of Healthcare Professionals*. London: Science & Education Department British Medical Association; 2007; Nathanson V. The case against doctor involvement in weapons design and development. In: Allhoff F, ed. *Physicians at War: The Dual-Loyalties Challenge*. Springer; 2008:167–77; Dando M. Biologists *napping* while work militarized. *Nature* 2009;460:950–1.
58. See note 15, Gross 2006, 282–5.
59. Frisina ME. Medical ethics in military biomedical research. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 2. Falls Church, VA: Office of the Surgeon General; 2003:533–61; Leitenberg M, Leonard J, Spertzel R. Biodefense crossing the line. *Politics Life Science* 2003;22(2):2–3; Ozonoff D. The case against plans for a biodefense research laboratory. In Levy BS, Sidel V. *War and Public Health*. 2nd ed. Oxford: Oxford University Press; 2008:139–40.
60. Rosenberg L, Gehrie E. Against the use of medical technologies for military or national security interests. *American Journal of Bioethics* 2007;7(5):22–4.
61. Gross M. Medicalized weapons and modern war. *Hastings Center Report* 2010;40(1):34–43; and Gross M. Is medicine a pacifist vocation or should physicians help build bombs? In: Allhoff F, ed. *Physicians at War: The Dual-Loyalties Challenge*. Springer; 2008:151–66.
62. Miles SH. *Oath Betrayed, Torture, Medical Complicity, and the War on Terror*. New York: Random House; 2006; Bloche MG, Marks JH. Doctors and interrogators at Guantanamo Bay. *New England Journal of Medicine* 2005;353(1):6–8; Bloche MG, Marks JH. When doctors go to war. *New England Journal of Medicine* 2005; 352(1):3–6. Marks JH. Doctors of interrogation. *Hastings Center Report* 2005;35(4):17–22.
63. Physicians for Human Rights. *Experiments in Torture: Evidence of Human Subject Research and Experimentation in the "Enhanced" Interrogation Program*. Cambridge, MA: Physicians for Human Rights; 2010.
64. American Medical Association, Code of Medical Ethics. *Opinion 2.068—Physician Participation in Interrogation*; 2006; available at http://www.ama-assn.org/ama/pub/physician-resources/medical-ethics/code-medical-ethics/opinion2068.shtml; World Medical Association. *Declaration of Tokyo—Guidelines for Physicians Concerning Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment in Relation to Detention and Imprisonment*; 2006; available at http://www.wma.net/en/30publications/10policies/c18/index.html. For a review, see Bahnassi A. Keeping doctors out of the interrogation room: A new ethical obligation that requires the backing of the law. *Health Matrix* 2009; available at http://www.thefreelibrary.com/Keeping+doctors+out+of+the+interrogation+room%3A+a+new+ethical...-a0212410473 (last accessed 23 Aug 2012).
65. Annas G. *Worst Case Bioethics: Death, Disaster and Public Health*. Oxford: Oxford University Press; 2010, at 52.
66. Marks JH, Bloche MG. The ethics of interrogation—the US military's ongoing use of psychiatrists. *New England Journal of Medicine* 2008;359(11):1090–2.
67. Miles S. Torture: The bioethics perspective. In: *From Birth to Death and Bench to Clinic:*

The Hastings Center Bioethics Briefing Book for Journalists, Policymakers, and Campaigns; available at http://www.thehastingscenter.org/Publications/BriefingBook/Default.aspx (last accessed 23 Aug 2012).

68. CIA director Michael Hayden says coercive and harsh interrogations techniques worked. *Cleveland Plain Dealer* 2009 Jan 15. This number reflects sanctioned and approved instances of enhanced interrogation. It does not reflect reports of prisoner abuse that run into the hundreds. Although some observers argue that enhanced interrogation may lead to prisoner abuse, these are two distinct legal and moral issues. The torture debate focuses on the ethics of sanctioned interrogation under special circumstances. Prisoner abuse, on the other hand, is a criminal offense that U.S. authorities investigate and prosecute. (See, for example, Human Rights Watch, Center for Human Rights and Global Justice. *By the Numbers: Findings of the Detainee Abuse and Accountability Project*; 2006; available at http://www.hrw.org/en/reports/2006/04/25/numbers (last accessed 23 Aug 2012).
69. Dershowitz AM. *Why Terrorism Works: Understanding the Threat and Responding to the Challenge*. New Haven, CT: Yale University Press; 2002. Posner RA. *Not a Suicide Pact: The Constitution in Time of National Emergency*. Oxford: Oxford University Press; 2006. Posner RA. Torture, terrorism, and interrogation. In: Levinson S, ed. *Torture: A Collection*. Oxford: Oxford University Press; 2004:291–8; Allhoff F. *Terrorism, Ticking Time-Bombs and Torture*. Chicago: University of Chicago Press; forthcoming.
70. See note 15, Gross 2006, 211–44.
71. Koch T. Weaponising medicine: Tutti fratelli, no more. *Journal of Medical Ethics* 2006;32:249–52. Allhoff A. Physician involvement in hostile interrogations. In: Allhoff F, ed. *Physicians at War: The Dual-Loyalties Challenge*. Springer; 2008:91–104.
72. Howe EG, Kosaraju A, Laraby PR, Casscells SW. Guantanamo: Ethics, interrogation, and forced feeding. *Military Medicine* 2009;174(1):viii.
73. Lepora C, Millum J. The tortured patient: A medical dilemma. *Hastings Center Report* 2011;41(3):38–47, at 38.
74. See note 64, WMA 2006.
75. For an overview, see Howe E. Further considerations regarding interrogations and forced feeding. In Goodman R, Roseman M. *Interrogations, Forced Feedings, and the Role of Health Professionals: New Perspectives on International Human Rights, Humanitarian Law, and Ethics*. Cambridge, MA: Harvard University Press; 2009:75–102.
76. See note 72, Howe et al. 2009; see also Okie S. Glimpses of Guantanamo—medical ethics and the War on Terror. *New England Journal of Medicine* 2005;353(24):2529–34, at xi; Sherman N. Holding doctors responsible at Guantanamo. *Kennedy Institute for Ethics Journal* 2006;16(2):199–203. Glick S. Unlimited human autonomy—a cultural bias? *New England Journal of Medicine* 1997;336:954–6.
77. WMA Declaration of Malta on Hunger Strikers; 1991 (2006 revised), para. 21. World Medical Association. Declaration of Malta: A background paper on the ethical management of hunger strikers. *World Medical Journal* 2006;52(2):36–43. See also note 65, Annas 2010, 59–74; Annas G. Hunger strikers at Guantanamo—medical ethics and human rights in a ''legal black hole.'' *New England Journal of Medicine* 2006;355:1377–82; Allen SA, Reyes H. Clinical and operational issues in the medical management of hunger strikers. In: Goodman R, Roseman M. *Interrogations, Forced Feedings, and the Role of Health Professionals: New Perspectives on International Human Rights, Humanitarian Law, and Ethics*. Cambridge, MA: Harvard University Press; 2009:189–203. Welsh J. Responding to food refusal: Striking the human rights balance. In: Goodman R, Roseman M. *Interrogations, Forced Feedings, and the Role of Health Professionals: New Perspectives on International Human Rights, Humanitarian Law, and Ethics*. Cambridge, MA: Harvard University Press; 2009:143–72. Rubinstein L, Annas G. Medical ethics at Guantanamo Bay detention centre and in the US military: A time for reform. *Lancet* 2009;374:353–5. Crosby SS, Apovian CM, Grodin MA. Hunger strikes, force-feeding, and physicians' responsibilities. *JAMA* 2007;298:563–6. Zupan D, Solis G, Schoonhoven R. Commentary: Dialysis for a prisoner of war. *Hastings Center Report* 2004;34:11–2.
78. See note 57, BMA 2007, 21. See also Allhoff F. Physicians at war: The dual loyalties challenge. In: Allhoff F, ed. *Physicians at War: The Dual-Loyalties Challenge*. Springer; 2008:3–14.
79. Case study provided by the IDF Medical Corps, personnel communication, 27 May 2010. For placebo guidelines, see Jonsen A, Siegler M, Winslade W. *Clinical Ethics: A Practical Approach to Ethical Decisions in Clinical Medicine*. 7th ed. McGraw-Hill; 2010: section 2.1.8.
80. See note 5, Howe 2003.
81. Annas GJ. Case study: Dialysis for a prisoner of war. *Hastings Center Report* 2004;34(6):12. See

also Annas GJ. Military medical ethics—physician first, last, always. *New England Journal of Medicine* 2008;359(11):1087–90; International Dual-Loyalty Working Group. Dual loyalty and human rights in health professional practice. In: Allhoff F, ed. *Physicians at War: The Dual-Loyalties Challenge*. Springer; 2008:15–38; and note 21, Sessums et al. 2009.
82. Sidel VW, Levy BS. Physician-soldier: A moral dilemma. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 1. Falls Church, VA: Office of the Surgeon General; 2003:293–330.
83. See note 15, Gross 2006, 27–64.
84. Madden W, Carter BS. Physician-soldier—A moral profession. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 1. Falls Church, VA: Office of the Surgeon General; 2003:269–91.
85. Howe EG. Mixed agency in military medicine: Ethical roles in conflict. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 1. Falls Church, VA: Office of the Surgeon General; 2003:331–65; Warner CH, et al. Ethical considerations in military psychiatry. *Psychiatric Clinics of North America* 2009;32:271–81.
86. Howe EG. Point/counterpoint—a response to Drs. Sidel and Levy. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 1. Falls Church, VA: Office of the Surgeon General; 2003:312–20.
87. Beam TE, Howe EG. A proposed ethic for military medicine. In: Beam TE, Spracino LR, eds. *Military Medical Ethics*. Vol. 1. Falls Church, VA: Office of the Surgeon General; 2003:851–65.
88. See note 62, Marks 2005.
89. Benatar SR, Upshur REG. Dual loyalty of physicians in the military and in civilian life. *American Journal of Public Health* 2008;98(12):2161–7.
90. Selgelid M. Governance of dual-use research: An ethical dilemma. *Bulletin of the World Health Organization* 2009;87:720–3, at 722.
91. Savulescu J, Bostrom N, eds. *Human Enhancement*. Oxford: Oxford University Press; 2009.
92. Canli T. Neuroethics and national security. *American Journal of Bioethics* 2007;7(5):3–13, at 10.
93. See note 92, Canli et al. 2007.
94. See Gross ML, Carrick D, eds. *Military Medical Ethics for the 21st Century*. Farnham: Ashgate; 2013.