



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

ETHICAL ISSUES IN THE RESPONSE TO EBOLA VIRUS DISEASE IN US EMERGENCY DEPARTMENTS: A POSITION PAPER OF THE AMERICAN COLLEGE OF EMERGENCY PHYSICIANS, THE EMERGENCY NURSES ASSOCIATION AND THE SOCIETY FOR ACADEMIC EMERGENCY MEDICINE

Author: Arvind Venkat, MD, FACEP, Lisa Wolf, PhD, RN, CEN, FAEN, Joel M. Geiderman, MD, FACEP, Shellie L. Asher, MD, FACEP, Catherine A. Marco, MD, FACEP, Jolion McGreevy, MD, MBE, MPH, Arthur R. Derse, MD, JD, FACEP, Edward J. Otten, MD, FACMT, FAWM, John E. Jesus, MD, FACEP, Natalie P. Kreitzer, MD, Monica Escalante, MSN, BA, RN, and Adam C. Levine, MD, MPH, FACEP, on behalf of the American College of Emergency Physicians, the Emergency Nurses Association and the Society for Academic Emergency Medicine, Pittsburgh, PA, Des Plaines, IL, Los Angeles, CA, Albany, NY, Dayton, OH, Boston, MA, Milwaukee, WI, Cincinnati, OH, Wilmington, DE, and Providence, RI

The 2014 outbreak of Ebola Virus Disease (EVD) in West Africa has presented a significant public health crisis to the international health community and challenged US emergency departments to prepare for patients with a disease of exceeding rarity in developed nations. With the presentation of patients with Ebola to US acute care facilities, ethical questions have been raised in both the press and medical literature as to how US emergency departments, emergency physicians, emergency nurses and other stakeholders in the healthcare system should approach the current epidemic and its potential for spread in the domestic environment. To address

these concerns, the American College of Emergency Physicians, the Emergency Nurses Association and the Society for Academic Emergency Medicine developed this joint position paper to provide guidance to US emergency physicians, emergency nurses and other stakeholders in the healthcare system on how to approach the ethical dilemmas posed by the outbreak of EVD. This paper will address areas of immediate and potential ethical concern to US emergency departments in how they approach preparation for and management of potential patients with EVD.

Key words: Ethics; Ebola virus disease; Emergency department

Arvind Venkat (ACEP, SAEM), Department of Emergency Medicine, Allegheny Health Network, Pittsburgh, PA.
Lisa Wolf (ENA), Institute of Emergency Nursing Research, Des Plaines, IL.
Joel M. Geiderman (ACEP), Department of Emergency Medicine, Cedars-Sinai Medical Center, Los Angeles, CA.
Shellie L. Asher (SAEM), Department of Emergency Medicine, Albany Medical Center, Albany, NY.
Catherine A. Marco (ACEP), Department of Emergency Medicine, Boonshoft School of Medicine, Wright State University, Dayton, OH.
Jolion McGreevy (SAEM), Department of Emergency Medicine, Boston Medical Center, Boston University School of Medicine, Boston, MA.
Arthur R. Derse (ACEP), Center for Bioethics and Medical Humanities (Institute for Health and Society) and Department of Emergency Medicine, Medical College of Wisconsin, Milwaukee, WI.
Edward J. Otten (SAEM), Department of Emergency Medicine, University of Cincinnati College of Medicine, Cincinnati, OH.

John E. Jesus (ACEP), Department of Emergency Medicine, Christiana Care Health System, Wilmington, DE.
Natalie P. Kreitzer (SAEM), Department of Emergency Medicine, University of Cincinnati College of Medicine, Cincinnati, OH.
Monica Escalante (ENA), Institute for Quality, Safety and Injury Prevention, Des Plaines, IL.
Adam C. Levine (SAEM), Department of Emergency Medicine, Warren Alpert Medical School of Brown University, Providence, RI.
For correspondence, write: Arvind Venkat, MD, FACEP, Department of Emergency Medicine, Allegheny Health Network, 320 East North Avenue, Pittsburgh, PA 15212; E-mail: avenkat@wpahs.org.
J Emerg Nurs 2015;41:e5-16.
0099-1767
Copyright © 2015 Emergency Nurses Association. Published by Elsevier Inc. All rights reserved.
<http://dx.doi.org/10.1016/j.jen.2015.01.012>

Introduction

In March 2014, an outbreak of Ebola Virus Disease (EVD) was confirmed in the West African nation of Guinea with subsequent rapid spread to the neighboring countries of Liberia and Sierra Leone. Given the underdeveloped health infrastructures in the 3 primary affected nations and the high transmission and mortality rate of the disease, domestic and international public health agencies called for aid and personnel to be rapidly deployed to the affected nations to treat infected patients and prevent further spread of the Ebola outbreak. Yet despite significant efforts from the international community, EVD continues to represent a significant challenge in the region. As of January 2015, the Centers for Disease Control and Prevention (CDC) reports that the total case count stands at 21,689 with 8,626 deaths and continues to rise.¹

In the United States, the transfer of Ebola-infected healthcare workers from the outbreak zone to US hospitals raised public awareness and fear of spread of the disease. This fear was heightened after the initial missed diagnosis in a US emergency department of a patient with EVD who later died,² the transmission of Ebola to 2 nurses who cared for this patient³ and a subsequent case of an emergency physician who traveled to West Africa to care for patients with EVD and required hospitalization after returning to the United States.⁴ These cases raised significant concerns that US emergency departments and hospitals were not adequately prepared to diagnose and treat patients with EVD. In addition, the infection of healthcare personnel created the specter of a more widespread outbreak in the general population due to poor infection control guidelines, inadequate training and management protocols in US medical centers and initially absent mechanisms to identify potentially infected individuals arriving through US ports of entry.⁵ A subsequent controversy surrounding a nurse who returned from West Africa without symptoms of EVD and was held in quarantine highlighted concerns about how personal liberty and public health should be appropriately balanced.⁶ In response, both emergency medicine and emergency nursing organizations and federal agencies have issued guidance on the nature of EVD, approaches to identification, isolation and treatment of potential patients and standards for use of personal protective equipment (PPE) by healthcare providers.⁷⁻⁹

While the number of cases in the United States remains low to date (10 total patients, 4 diagnosed in the US and 2 deaths), the outbreak of EVD has raised ethical issues relevant to US emergency departments and hospitals, emergency physicians and emergency nurses. Issues artic-

ulated in the medical literature and by the press include the following: how resources should be used in preparation for the likely rare event of an undiagnosed patient with EVD who presents to a US emergency department,¹⁰ whether there should be a different standard for care of Ebola-infected patients than for other patients with less contagious and lethal diseases¹¹ and whether healthcare providers are obligated to place themselves at a significant degree of risk while caring for these patients due to their professional status.¹² To address these concerns, the American College of Emergency Physicians (ACEP), the Emergency Nurses Association (ENA), and the Society for Academic Emergency Medicine (SAEM) developed this joint position paper to provide guidance to US emergency physicians, emergency nurses and other stakeholders in the healthcare system on how to approach the ethical issues posed by the outbreak of EVD. This paper will address areas of immediate and potential ethical concern to US emergency departments in how they approach preparation for and management of potential patients with EVD.

Characteristics of EVD of Ethical Relevance

Since the outbreak of EVD, numerous articles have been published on the epidemiologic characteristics of this condition and the microbiological details of the causative organism.¹³⁻¹⁶ However, particular characteristics of EVD are worth highlighting to provide the factual basis for addressing the ethical questions raised in this outbreak for US emergency departments. First, it is well recognized that individuals with EVD will often have relatively non-specific symptoms, common to many viral infections, in their initial stages of presentation (eg, fever, headache, myalgias).^{15,17} Such non-specific presentations make unrecognized infection with Ebola a realistic concern. Lack of prompt identification of potential patients by emergency department staff can increase the risk of spread of the disease and mandates a heightened awareness of the risk factors for the disease. Second, the pathophysiology of contagion is related to contact with blood or bodily fluids from an infected individual, with rising viremia in the late stages of disease presenting a particular risk for human-to-human transmission. However, even a low level of viral inoculation can lead to EVD.¹⁸ This recognized pathway of spread aids in evaluating the risk of transmission from patient to healthcare providers or the general public. At the same time, knowledge of how the Ebola virus is transmitted heightens the ethical concerns posed by the potential presentation of highly symptomatic and contagious patient(s) to an emergency department, especially if to a center

without specialized experience in the care of EVD patients. Finally, the lack of specific effective treatment and the high mortality rate posed by EVD exacerbates public fears, may create irrational panic relative to the actual risk and lead to unexpected institutional consequences such as the avoidance of the use of healthcare facilities where EVD patients are being or have been treated.

Characteristics of Emergency Department Practice of Ethical Relevance

The emergency department in the United States, and increasingly worldwide, serves as the primary gateway to the acute healthcare system. It is estimated that 50% of admissions to hospitals in the US are initially assessed and treated in emergency departments.²⁰ The emergency department is also the only access point in the US acute healthcare system available to patients 24 hours per day-7 days per week. In the US there is a legal obligation under EMTALA to provide a medical screening exam for an emergency medical condition and treatment until the emergency medical condition is resolved or stabilized to the extent of that hospital's capability (until appropriate transfer) regardless of insurance status or other socioeconomic factors.^{21,22} Finally, the emergency department is the primary location for the initial evaluation, diagnosis and treatment of the acutely ill undifferentiated patient. These facts together help define the ethical construct of emergency medical practice where access to quality emergency care is a right of all patients in the US. As noted in the ACEP Code of Ethics, "Emergency physicians shall respond promptly and expertly, without prejudice or partiality, to the need for emergency medical care."²³ The ENA Code of Ethics states that "The emergency nurse works to improve public health and secure access to health care for all."²⁴ The Society for Academic Emergency Medicine, through its mission statement "to lead the advancement of emergency care through education and research, advocacy, and professional development in academic emergency medicine,"²⁵ also supports the ethical mandate for all patients in the United States to have access to quality emergency medical care regardless of disease process, ability to pay or other characteristics.

While the above ethical framework emphasizes the critical importance of the availability of emergency care to all, it is clear from both published codes of ethics and the literature on the "duty to treat" that there are rare circumstances in which risk to the individual healthcare provider and institution should be weighed in determining the treatment plan for a patient who poses significant risk to providers or the general public. The ACEP Code of Ethics notes the requirement of the adequacy of in-hospital and

outpatient resources in the provision of emergency care.²³ The American Medical Association Code of Ethics states that "Because of their commitment to care for the sick and injured, individual physicians have an obligation to provide urgent medical care during disasters. This ethical obligation holds even in the face of greater than usual risks to their own safety, health or life. The physician workforce, however, is not an unlimited resource; therefore, when participating in disaster responses, physicians should balance immediate benefits to individual patients with ability to care for patients in the future."²⁶ The American Nurses Association Code of Ethics specifically states, "The nurse owes the same duties to self as to others, including the responsibility to preserve integrity and safety."²⁷ Within the larger ethics literature, explorations of whether there is a duty to treat on the part of healthcare providers at risk to themselves also indicates that codes of ethics, historical references and theoretical analysis do not mandate an absolute obligation. Rather, particular factors of disease process, availability of resources and training, countervailing responsibilities outside of the professional realm, personal viewpoints on the virtues of courage and resilience as well as relational ethics perspectives and obligations imposed by professional status have guided the evaluations of the obligations of healthcare providers in the face of outbreaks of infectious disease.²⁸⁻³¹ For emergency departments, emergency physicians and emergency nurses, there is a need to weigh all of these considerations against the special role played by emergency departments in the US healthcare system and the duties that accompany the professional status of emergency physicians and emergency nurses.

Current and Potential Future Ethical Considerations with the Outbreak of EVD

With this background, we will present an ethical framework that has potential application for emergency departments, emergency physicians and emergency nurses along with other health system stakeholders in the particular response to EVD in the United States. This framework will address questions relevant to US emergency departments and separate consideration of the current situation (few confirmed cases within the United States with a relative abundance of resources to respond) versus 2 potential scenarios (increasing number of potential and confirmed domestic cases of EVD in a variety of locations due to spread in the US and widespread number of potential and confirmed domestic cases that would strain existing resources and creates a necessity of disaster triage response) where appropriate.

WHAT ARE THE ETHICAL OBLIGATIONS OF US EMERGENCY DEPARTMENTS AND HOSPITALS TO SUPPORT OR ENCOURAGE THE VOLUNTEERING OF EMERGENCY PHYSICIANS AND EMERGENCY NURSES TO SERVE AS HEALTHCARE PROVIDERS IN THOSE COUNTRIES MOST AFFECTED BY THE CURRENT OUTBREAK OF EVD?

In the current outbreak of EVD, as of January 1, 2015, there are no extant active cases in the United States. As such, the most immediate issue is how to contain the spread of the disease from its present locus in West Africa and end the current epidemic there. With the underdeveloped nature of the health infrastructure in the primary affected nations and the declaration of a Public Health Emergency of International Concern by the World Health Organization,³² there is widespread recognition that ending the epidemic does and will continue to require the volunteering of healthcare providers to serve in the outbreak zone.

Under the ethical principle of reciprocity, which calls for acting in a manner that one would want others to act in return, there is an obligation to support emergency physicians and nurses who volunteer to serve in the nations primarily affected by the current Ebola epidemic, just as we would welcome support or available expertise in a time of health crisis in the US. Yet as a practical matter, support of volunteerism needs to be weighed against the special logistical concerns faced by most emergency departments, where local staffing levels must be maintained to provide safe patient care. An application of the principle of reciprocity in this outbreak would include support of emergency physician and nurse volunteerism in the current outbreak through the covering of shifts and other professional obligations in the volunteer's absence and acceptance by volunteering emergency physicians nurses of any potential risk of contagion on return to the US and the resultant need for monitoring for signs of the disease and possibly prolonged isolation.

We would propose that in considering the support of volunteerism by emergency physicians and nurses, the specific background, training and education of the provider is a key decision making factor. Education and training are essential components of preparation prior to disaster or disease outbreak response. Medical volunteers should be appropriately trained in disease management, including rendering effective supportive care within the resource constraints in the primary outbreak zone, prior to travel to infected areas. They should ensure to the extent possible that malpractice, health and life insurance are in place to cover potential events, likely with the assistance of the Non-Governmental Organization or other agency sponsoring their volunteer efforts. They should be willing to undertake the risks of volunteerism, including infection or threats to

individual safety and security.^{33–35} Volunteers should be prepared to ensure appropriate infection control practices in their international work and to follow recommended protocols upon return for monitoring for symptoms of EVD and the isolation that might result.^{36–38} Without this preparation, volunteering emergency physicians and nurses may be a liability rather than a benefit to the resource-poor countries primarily affected by the Ebola outbreak and a risk to the domestic population upon their return to the US.

It is appropriate for emergency departments and hospitals to query volunteering staff on their willingness to undergo the necessary training to be effective in the primary outbreak zone. With the continuing spread of the disease in West Africa, those volunteering emergency physicians and nurses with existing experience in Ebola and disaster response should be given priority over those without such training. Specific decisions regarding support for volunteer efforts should also include the number of volunteers and impact on ED staffing and potential impact on public health domestically (i.e., will the loss of experienced providers adversely affect the care of patients in the local area served by the emergency department?). If the current outbreak were to spread significantly within the US, the ethical evaluation of the appropriateness of supporting volunteerism overseas would likely change since this could result in the expertise on the management of EVD being shifted out of the country rather than being available domestically. This emphasizes the importance of supporting present efforts of containing and ending the current epidemic in West Africa, including with the volunteerism of trained emergency physicians and nurses, as the most effective means of preventing the spread of EVD to the US and other countries.

Some emergency departments have supported the volunteerism of emergency physicians in particular through altruistic coverage of shifts to allow staff to travel to the primary outbreak zone.³⁹ In addition, private foundations have provided grant funding to alleviate the financial burden of volunteerism of emergency department staff in the outbreak zone.⁴⁰ While these novel approaches have been largely confined to academic settings, they do suggest that there may be methods for individual centers to address the logistical difficulties that can arise when US emergency department providers volunteer in the primary outbreak zone. The application of these options to individual centers is one that is best judged on a case-by-case basis based on the factors noted above.

Finally, emergency departments, emergency medicine and nursing professional societies, Non-Governmental Organizations and government agencies can aid volunteer efforts by educating health care providers and the lay public using published evidence on the pathophysiology of Ebola

and its transmission to alleviate the stigma that returning volunteer staff may experience after their efforts. At the same time, as noted above, volunteering emergency physicians and nurses have an obligation to adhere to monitoring and isolation protocols upon return to the US as a reciprocal ethical obligation for the support their efforts have received.

WHAT ARE THE ETHICAL OBLIGATIONS OF EMERGENCY DEPARTMENTS AND HOSPITALS TO SUPPORT OTHER CENTERS IN THE DOMESTIC RESPONSE TO EVD?

As of December 2014, 44 medical centers have been designated by the Centers for Disease Control and Prevention as having the necessary capability and equipment to care for patients diagnosed with EVD.⁴¹ It is anticipated that patients with a confirmed EVD diagnosis will be transferred to these hospitals which will have enough PPE and other treatment requirements (isolation rooms, dedicated equipment and designated physicians, nurses and other necessary health care professionals and staff with proper training under CDC guidelines) to manage patients for at least 7 days, after which governmental agencies would assist in acquiring more supplies and expertise if needed.⁴² However, not every state or locality has such a facility, nor is it likely that an undiagnosed patient would necessarily present to one of these centers. Therefore, the CDC has provided guidelines for so-called frontline (any emergency department or acute care facility) and Ebola assessment hospitals, which can safely isolate, treat and transfer patients with suspected or confirmed EVD. To meet these standards, the CDC has called for all emergency departments to have protocols in place for the recognition of potential Ebola patients and training for the proper isolation and assessment of these individuals.⁴²

The hierarchy of treatment facilities for EVD codifies the reciprocity-based obligations that hospitals have to each other in the current state of the outbreak. Such reciprocity should extend to the sharing of PPE, trained staff and other necessary equipment as needed to care for a suspected or confirmed Ebola patient until transfer can be effected to a designated treatment center. Hospitals and emergency departments should consider and develop relevant protocols for rapid credentialing of staff and transfer of equipment to allow resources to be brought to bear should there be additional cases in the US. If the current epidemic were to spread significantly in the US, hospitals should consider whether and how they can upgrade their capabilities to meet the needs of rising numbers of patients, presumably with the assistance of government resources.

Another ethical consideration is the reputational impact upon hospitals caring for Ebola patients. As has been reported in the press, hospitals have expressed concern that the potential costs and risks accrued in treating an Ebola patient along with the public fear generated by the disease may have an adverse impact on volumes and financial results for medical centers. The facility in Dallas that treated a recent case reported that afterward emergency department volumes dropped and still have not returned to their expected level.¹⁹ It is therefore imperative, in the face of a disease such as Ebola that has generated such public scrutiny and at times hysteria, for hospitals to be cognizant of their ethical responsibility to support the efforts of designated treatment centers as well as frontline facilities that might encounter Ebola patients and potentially be perceived adversely by the public. We affirm that the principle of reciprocity extends beyond physical means of support (equipment, personnel) to reputational support in the setting of an outbreak of EVD. Such support could, where appropriate, take the form of publicly confirming the safety and quality of other healthcare facilities with Ebola patients, educating other facilities on effective policies and procedures in caring for EVD patients and avoiding messages that implicitly suggest a competitive advantage from not treating patients with this highly infectious disease. Through such support, hospitals ensure that the public is aware and reassured of the unified response the medical system will take towards both the existing epidemic and the potential for worsening if the outbreak spreads from West Africa. Without such reputational support and cohesion in the healthcare system, should the epidemic worsen, it is conceivable that public doubt and panic may lead to untenable consequences such as facilities avoiding the care of at-risk patients and the public fearing certain hospitals as being sites of contagion rather than medical care.

SHOULD TRAINEES BE ALLOWED TO PARTICIPATE IN THE CARE OF SUSPECTED OR CONFIRMED EVD PATIENTS?

Trainees (nursing students, medical students, residents, and fellows) routinely care for patients with infectious diseases in the ED and should understand and use proper measures to protect themselves while caring for patients with potential or confirmed contagious diseases. Both the Accreditation for Graduate Medical Education program requirements in emergency medicine and guidance on Ebola affirm that trainees should know how to recognize, treat and isolate patients with infectious disease in general and Ebola specifically.^{43,44} The 2013 Model of the Clinical Practice of Emergency Medicine goes further by listing within the domain

of emergency medicine “understand[ing and apply[ing] the principles of disaster and mass casualty management including preparedness, triage, mitigation, response, and recovery.”⁴⁵ Additional content areas in the Model relevant to Ebola response include the following: personal protection (equipment and techniques); universal precautions and exposure management; and emerging infections, pandemics and drug resistance.⁴⁵ Together, these raise the issue of whether the current EVD outbreak should be viewed as an opportunity for trainees in emergency medicine and emergency nursing to care for patients during an international infectious disease epidemic. Few health care professionals in the United States have experience with the diagnosis and treatment of Ebola or the infection control precautions required to safely care for patients with this disease. Yet some such individuals may include trainees either with specific backgrounds in infectious diseases or previous experience with the PPE utilized in caring for such patients.

Historically, the outbreak of an unknown or uncommon infectious disease has led to initial concerns by health providers about risk to self that ultimately give way with time and knowledge to acceptance of an affirmative duty for trainees to learn to treat patients with these conditions. For example, the early fear and stigma surrounding HIV-infected patients in the 1980s gave way to a widely recognized duty to treat these patients and instill the same ethic in trainees.⁴⁶ As knowledge of the pathophysiology and epidemiology of EVD and its implications for healthcare providers become more widely disseminated, a similar evolution may take place. However, based on the current conditions of the Ebola outbreak, it is likely that very few of these professionals will need to be called upon to fulfill this duty.

As long as the Ebola incidence in the United States remains low, each institution can and should manage its burden of suspected Ebola cases with a cadre of nurses and physicians highly trained in Ebola treatment and prioritize infection control. The ethical justification to restrict the number of caregivers who come in contact with Ebola-infected patients is that, given the limited experience with the disease in the United States, unnecessary exposure to infected patients would increase the risk to providers, other patients and the public. It is prudent to limit the potential chain of infection when possible.

Because experienced or specially-trained nurses and attending physicians can effectively manage suspected or confirmed Ebola cases, trainee involvement is not required and would entail unnecessary risks to trainees and their patients. Trainees should, however, be fully prepared in case they find themselves in a position where their duty to treat an individual patient outweighs a duty to the public to limit exposure to the disease.⁴⁴ However, if not trained or equipped

properly, their duty to reasonably protect their own safety should not be superseded.

Non-participation of trainees in the care of Ebola-infected patients is then an instance of exclusion, rather than exemption. Institutions exclude trainees as an infection control strategy; trainees do not opt out. Some trainees may object to these policies, as they may feel ethically compelled to care for Ebola-infected patients as a function of their professional role and view their exclusion as a restriction of their own moral agency and liberty (to fulfill their commitment to treat the sick).³⁹ However, this restriction is justified by the greater good of protecting public health. Ensuring trainee well-being and availability to care for other ED patients as well as limiting contagion are ethically justifiable reasons to exclude trainees. Exclusion of trainees from the care of Ebola-infected patients is not simply paternalistic because the primary aim is to protect patients and the public and represents a proportional response relative to the professionalism and moral agency consideration of trainees.⁴⁷

At the same time, a blanket exclusion of trainees from the care of Ebola patients in the primary outbreak zone may be ethically inappropriate. If the trainee has the relevant experience and is able to meet the other requirements outlined above for volunteerism in the countries most affected by Ebola currently, a case-by-case evaluation would seem appropriate for supporting the participation of volunteering trainees in the international response where there is a desperate need for available healthcare providers.³⁹ Such support would have the added benefit of growing the cadre of individuals with the relevant expertise in caring for patients with EVD should the current outbreak spread to the US. However, it is worthy of consideration whether academic medical centers can appropriately manage the risk to their trainees in the conditions posed by the outbreak in West Africa. There are additional reputational risks should a trainee contract Ebola or the public adversely view institutions where a large cadre of providers, including trainees, have traveled to care for patients in the primary affected countries.³⁹

As such, we affirm the ethical appropriateness of academic medical centers to consider on an individual provider basis whether a trainee should be supported in volunteering to travel to Africa rather than endorsing a policy of automatic exclusion or support of providers in this regard. Such individualized evaluations should take specific account of the level of training, previous background, experience with Ebola and the PPE required to care for patients with this disease, the ability to undergo the necessary preparation for functioning effectively in the primary outbreak zone and the willingness to comply with monitoring and isolation protocols upon return to the US.

IS IT ETHICALLY APPROPRIATE FOR EMERGENCY PHYSICIANS OR EMERGENCY NURSES TO OPT OUT OF THE CARE OF PATIENTS WITH EVD?

Under the current state of the Ebola outbreak, it is anticipated that cases in the US would be scattered and readily managed at designated treatment centers.⁴¹ At the same time, it is recognized that suspected patients may present to frontline emergency departments without specialized expertise in the management of EVD,⁴² and, as seen in the case of the patient in Dallas, this may pose a risk to health care providers, including emergency physicians and emergency nurses.³ As a result, various health care providers have expressed reluctance to care for patients with Ebola.^{48–51} Historically, such provider reluctance has often arisen with the emergence of unknown infectious diseases.²⁹ A 2008 survey of thousands of healthcare workers in New York found that half would hesitate or refuse to report to work during a Severe Acute Respiratory Syndrome (SARS) outbreak (though 84% would report to work during a mass casualty situation). Most cited concern for family, followed by concern for self, as reasons not to report to work during a SARS epidemic.⁵² Individual conscience then, rather than professional tradition, seems to be the main force that compels nurses and physicians to risk their lives in service of patients.^{29,46}

With this background, it is fair to ask whether there are circumstances under which emergency department providers could opt out of the care of Ebola patients. Under US law, nurses and physicians have a legal duty to treat patients with whom they have entered into a therapeutic relationship. Once undertaken, the duty continues until the patient and professional mutually agree to end the relationship or the care is transferred to another professional.⁵³ Nurses and physicians have special duties in service of the sick, and since this obligation holds even in face of greater than usual risks to one's own safety, healthcare professionals consequently accept greater risks than ordinary, balancing immediate benefits to individual patients with the professional's own health and ability to treat future patients.⁵⁴ But there is no consensus on the specific limits of this duty.^{30,55}

Emergency nurses and physicians are front line in an outbreak and, implicit in their specialty choice, accept additional risk beyond what is typical for many of their colleagues. As noted above, this is acknowledged in professional codes of ethics and statutory mandates (e.g., EMTALA).^{21–24,26} There are potential additional penalties for those health care professionals who refuse to work or treat patients during a pandemic, including reduction in pay, termination and, in some states that have adopted variations of the Model State Emergency Health Powers Act (MHEHPA), the possibilities of licensure actions, fines or imprisonment.^{56,57}

Though the legal foundations of the duty to treat and its consequences are significant, the most compelling ground for these obligations is that health care is a moral enterprise.^{29,58} “All its efforts converge ultimately on decisions and actions which are presumed to be good for some person in need of help and healing.”⁵⁸ Nurses and physicians have a professional commitment to heal the sick. They are morally accountable to this commitment and are expected to demonstrate the virtues that it entails—such as courage, compassion and fidelity.^{29,59} This virtue-based ethic is independent of the patient's right to access to healthcare and the contract between the patient and physician. Rights-based and contract-based accounts of the duty to treat would allow nurses and physicians to opt out of caring for patients in an epidemic as long as others were willing to take their place.²⁸ But nurses and physicians who opt out in such cases still fall short of their moral commitment.²⁹

Emergency nurses and physicians, therefore, have a duty to care for Ebola-infected patients and, in most instances, accept the associated risks.^{30,60} But the duty is not unlimited. An “abstract limitless duty” obscures the discussion about reasonable risk acceptance among nurses and physicians.⁶⁰ Allowing for reasonable and practical limits to the duty to treat—applied equitably to all clinicians—may increase the likelihood that nurses and physicians will live up to their individual obligations during an outbreak.³⁰

The limit is illustrated by an account of a physician who, during the 1995 Ebola outbreak in the Democratic Republic of the Congo, “found 30 dying patients in an abandoned hospital, left to care for themselves amid rotting corpses, sometimes in the same bed.”³⁰ A nurse or physician should not be expected to treat patients in a context where the risks are extraordinarily high and the potential benefit to patients extremely low.³⁰ Indeed, the first duty of emergency nurses and physicians in the current Ebola outbreak or other emerging infectious disease is to protect themselves in the care of patients, if for no other reason than to ensure their availability to treat subsequent patients.⁶¹ By contrast, care of Ebola-infected patients in a US hospital with the proper PPE and training would fall well within the duty to treat.¹⁵

In the current state of the Ebola outbreak, establishing cadres of highly trained clinicians at well-resourced institutions may be the best way to deliver uniform care under a duty to treat and limit potential spread of infection in the US.⁴² Under the above noted virtue and professionalism-based ethical framework,^{23,24,26,58,59} emergency nurses and physicians may also volunteer in place of colleagues who they see experiencing exceptional moral or emotional distress over caring for Ebola-infected patients—

for example, as a result of unusually severe consequences for loved ones should they become ill. But as the burden of Ebola-infected patients rises, the duty to treat is a responsibility of all emergency nurses and physicians who have the necessary training, skills and experience.

While the duty to treat is intrinsic to health care professionals, institutions may also hold emergency nurses and physicians accountable to this standard. However, institutions may not invoke the duty to treat to coerce hospital employees into accepting unnecessarily dangerous conditions: for example, to expect them to deliver care to Ebola-infected patients without proper PPE or training. Institutional leaders have an ethical responsibility to prepare for outbreaks, ensure that the providers who risk their lives in the service of patients do so with as much protection and support as possible and make available appropriate channels for emergency physicians and nurses to communicate concerns about the adequacy of the training and preparation they receive. Preparation includes, but is not limited to, making high quality PPE readily available, ensuring that all relevant staff are educated and trained to use it properly (especially proper donning and doffing) and limiting exposure to only those individuals needed to care for patients and prevent the spread of infection.

Experience with the 2003 SARS epidemic in Canada suggests that hospital leaders owe even more than merely providing equipment and training to nurses and physicians who fulfill their duty to treat under hazardous conditions. Some healthcare workers died from SARS, and some spread the disease to their families.⁵⁵ Healthcare workers have moral obligations to their families, and institutions should make it possible for them to care for patients without abandoning their responsibility to their families or risking their families' lives. Institutions should, for example, assist with child care and provide temporary living quarters to reduce the risk of disease transmission to family members and the associated anxiety and moral distress.⁶² Institutions, as well as public health agencies, may also consider additional acts of reciprocity toward healthcare workers who fulfill their duty to treat, such as insurance to protect them and their families should they become ill or die as a result of caring for Ebola-infected patients. Ultimately, however emergency nurses and physicians care for the sick primarily out of personal moral obligation; financial incentives alone are not likely to increase the likelihood that they will discharge their duty under epidemic conditions.⁶³

The protections that institutions and society provide healthcare workers—for themselves and their families—are ethically required. Just as emergency nurses and physicians may not generally opt out of caring for the sick, institutions and communities may not opt out of caring for healthcare

professionals and their families. In sum, the duty to treat patients with infectious diseases, including Ebola, is both a legal responsibility and an ethical obligation of the healthcare professions. The duty should be borne equitably by professionals, who in turn, should be adequately supported by institutions and society as a whole.

Given the expected low number of US cases, there is a role for institutions to ask healthcare providers to volunteer to serve on treatment teams for suspected Ebola patients as a means of limiting training efforts, time and expenditures (eg, credentialing of the ability to perform invasive procedures with PPE), reducing the potential risk of infection and ensuring relevant personnel and expertise are available to provide care. However, such volunteer-based plans do not address the special role of emergency departments where patients may present in an undifferentiated manner and potentially in acute distress, and where alternative providers may simply not be available. For emergency physicians and nurses, who through their choice of profession knowingly accept the above circumstances of patient care,^{23,24} the current state of the Ebola outbreak does not justify opting out of the care of suspected or confirmed Ebola patients who may present to the emergency department, but this obligation is contingent upon institutional and governmental resources that provide adequate training and equipment to fulfill this duty. There also needs to be a recognition by healthcare personnel, hospitals and other public health and legal authorities as well as patients that the duty of emergency physicians and nurses to treat must be absolutely contingent on first ensuring personal safety through the proper use of PPE.^{61,64} Should Ebola rise in prevalence in the US, contingency planning to meet the duty to treat should move beyond training and equipment to mechanisms to support the weighty obligations of emergency physicians and nurses to protect themselves and their families while caring for affected patients.

ARE THE GOALS OF CARE DIFFERENT IN PATIENTS CRITICALLY ILL WITH EVD?

With the high mortality rate, lack of specific treatment and need for specialized PPE in order to prevent transmission, there have been legitimate questions whether the goals of care should change in patients critically ill with EVD. Specifically, in the circumstance where a patient requires procedural interventions (central venous access, intubation, dialysis, etc) to provide intensive care level support, is the risk posed to providers too high compared to the low potential of benefit, if any, to a patient whose illness may have progressed to a point where such interventions are unlikely to be successful? Furthermore, given the time

needed to don PPE—an absolute requirement prior to any procedural intervention on an EVD patient—should cardiopulmonary resuscitation during an arrest event be considered futile due to the potential delay in its initiation and again the likely prognosis of the patient?^{11,64,65}

Since the initial posing of these concerns about the risk versus benefit posed by critical care and resuscitation interventions in patients with EVD, case reports have appeared showing that aggressive, intensive care level interventions, including intubation, central venous access, large volume and blood resuscitation and dialysis, can be successful in treating critically ill individuals with this disease and do not pose an automatic risk to providers if PPE is properly used.^{66,67} While anecdotal and representative more of what is possible in idealized circumstances (specialized care units with previous expertise and training in care of EVD patients and a high number of dedicated providers), these cases imply that utilizing the full panoply of critical care resources for this patient population may be appropriate treatment. However, the highly contagious nature of EVD and the need for specialized PPE, along with the experience in Africa of rapid transmission to family members caring for ill patients, makes it appropriate for hospitals to not allow family presence during such procedures as is allowed in other critical care or resuscitation circumstances.

With respect to cardiopulmonary resuscitation, to our knowledge, no published report has indicated the successful or unsuccessful use of cardiopulmonary resuscitation in an arrest event in an Ebola patient, though resuscitation success in a US healthcare facility may be similar to other infectious diseases at similar stages, from initial manifestations to overwhelming sepsis. At this time, consideration of do-not-resuscitate status in a late-stage EVD patient is best determined on a case-by-case basis, taking into account potential benefit to the patient, any limitations of interventions imposed by the disease and the potential risks to the treatment team.

However, the circumstances described for the above patients are not typical of that seen in most emergency departments in the US. While the current state of the outbreak would likely lead to a typical ED encountering a patient early in their EVD process, if at all, and being able to isolate such an individual until transfer to a higher level of care, should the number of cases rise due to spread of the disease, it is conceivable that emergency departments could encounter patients in a variety of stages of Ebola with the risk-benefit calculation on procedural interventions being highly relevant. Unlike the above cases, should the current outbreak spread, emergency departments would encounter patients with fewer resources (less isolation facilities, lower ratios of providers to patient) than those expended in the

above reported cases and having to simultaneously care for other patients with a variety of conditions. Here there is need to refer to the special role played by emergency physicians and nurses in the healthcare system. The assumptions that accompany the choice of these professional roles (exposure to acutely ill, undifferentiated patients) and the specialized training and skills that emergency physicians and nurses possess impose a higher obligation than other medical professionals to be prepared to treat an acutely ill Ebola patient in the emergency department setting.^{23,24}

At the same time, as we note above, the duty to treat is not absolute. There is no obligation for an emergency physician or nurse to implement treatment measures in an acutely ill Ebola patient without training in the use of PPE, the availability of such supplies and, at a minimum, simulated experience with performing critical care procedures while utilizing PPE.^{15,28,61} Without such minimum standards, the social contract that accompanies the professional standing and obligations of emergency physicians and nurses breaks down. This social contract calls for a rational person to expect an emergency physician or nurse to apply their skills to aid an acutely ill patient but at the same time for those professionals to have the requisite training and equipment to provide such aid in an appropriate manner.⁶⁸

All emergency departments and hospitals should therefore consider that protocols for PPE training and isolating suspect patients, as called for in the current interim CDC guidelines,⁴² are likely inadequate should the current epidemic spread more prominently to the US. To fulfill the ethical obligations imposed by the duty to treat should the current outbreak become more prevalent domestically, more robust training with PPE and the performance of procedures with such equipment will be necessary for a wider cadre of emergency physicians and nurses to appropriately treat acutely ill Ebola patients in intermediate or late stages of the disease while ensuring the maximum feasible protection of the healthcare provider. Weighing when such expanded training may be warranted should take into account the continued status of the outbreak, the cost of such preparation and the availability of appropriate resources to be effective.

In the unexpected scenario where the number of patients with EVD overwhelms existing resources, more traditional disaster triage protocols would be applicable. Such protocols attempt to apply resources in a manner to benefit the largest number of patients. In the case of Ebola, where the evidence to date is that an overwhelming amount of critical care resources are required to effectively treat a late-stage patient, disaster triage protocols would need to weigh at what point in the treatment spectrum such resource expenditure would become untenable. Such

protocols, to be ethically appropriate, would need to be transparent, proportionate and accountable to oversight along with having a legal imprimatur to be effective in the emergency department and acute care setting.⁶⁹ To avoid such a crisis situation, the devotion of resources now to end the epidemic in the primary outbreak zone in Africa is vital.

Future Considerations

The outbreak of EVD in West Africa has presented a significant challenge to the health systems of the primary affected nations and, even with a low case count, raised concerns about the preparedness of the US healthcare system to respond to uncommon infectious diseases. In some ways, Ebola is a unique test for US emergency departments, emergency physicians, emergency nurses and other stakeholders given its rarity in the US, high mortality rate, high risk of transmission to healthcare staff and non-specific presenting symptoms that can make initial diagnosis more difficult. However, as shown with other unanticipated infectious disease outbreaks (HIV, SARS, MERS), emergency departments will almost certainly be a key location for patient identification and treatment. The ethical concepts applied in this paper are relevant, especially reciprocity, duty to treat and grounding in the specific facts of the disease process in question, when considering how acute care facilities should prepare for likely future outbreaks of infectious disease. We propose that preparation for future emergency department responses to unanticipated infectious disease outbreaks should include ethical as well as logistical and medical factors.⁶⁹ Given the multiple stakeholders represented in emergency department practice, the model shown here of multi-disciplinary and organizational consideration of the ethical issues involved would likely have application when considering the approach to future infectious disease challenges.

Conclusion

The outbreak of EVD in West Africa and the presentation of patients to US acute care facilities has raised a series of intertwined logistical and ethical issues of relevance to US emergency departments, emergency physicians and emergency nurses. While the current state of the epidemic has not led to a large number of EVD patients presenting to US facilities, consideration of ethical questions that are relevant now and of potential relevance in the future will allow emergency physicians, emergency nurses and other stakeholders to prepare appropriately for the challenges posed by Ebola and consider its implications for future epidemic infectious disease

events. An emphasis on the principle of reciprocity, the obligations imposed by and underlying assumptions of the duty to treat and the specific characteristics of the disease process will aid in addressing the ethical challenges posed in the current outbreak of EVD.

Acknowledgments

The drafting authors wish to thank the ACEP Ebola Expert Panel and SAEM Global Academy of Emergency Medicine for their critical review of the manuscript during preparation and the leadership of ACEP, ENA and SAEM for their sponsorship of this effort.

REFERENCES

- Centers for Disease Control and Prevention. Ebola outbreak in West Africa—case counts. <http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/case-counts.html>. Updated February 4, 2015. Accessed February 5, 2015.
- Dunklin R, Thompson S. ER doctor discusses role in Ebola patient's initial misdiagnosis. : Dallas Morning News; 2014. <http://www.dallasnews.com/ebola/headlines/20141206-er-doctor-discusses-role-in-ebola-patients-initial-misdiagnosis.ece>, Accessed February 5, 2015.
- Botelho G, Hanna J, Fantz A. Nurse's discharge leaves one Ebola case in U.S., though larger battle continues. CNN Web site. <http://www.cnn.com/2014/10/28/health/us-ebola/>. Accessed February 5, 2015.
- Hartocollis A, Santora M. Plenty of hugs as Craig Spencer, recovered New York Ebola patient, goes home. *N Y Times*. 2014. http://www.nytimes.com/2014/11/12/nyregion/craig-spencer-new-york-ebola-patient-bellevue.html?_r=0, Accessed February 5, 2015.
- Moskowitz C. Are U.S. Hospitals Prepared for the Next Ebola Case? *Sci Am*. 2014. Available from: <http://www.scientificamerican.com/article/are-us-hospitals-prepared-for-the-next-ebola-case/>, Accessed February 5, 2015.
- Soergel A. Ebola quarantine questioned. : US News and World Report; 2014. <http://www.usnews.com/news/newsgram/articles/2014/10/27/ebola-ethics-quarantine-questioned>, Accessed February 5, 2015.
- American College of Emergency Physicians. Healthcare resources for suspected Ebola cases. <http://www.acep.org/ebola/>. Published 2014, Accessed February 5, 2015.
- Emergency Nurses Association. ENA topic brief: Ebola virus disease. <http://www.ena.org/practice-research/Practice/Documents/EbolaTopicBrief.pdf>. Accessed February 5, 2015.
- Centers for Disease Control and Prevention. Ebola (Ebola virus disease). <http://www.cdc.gov/vhf/ebola/>. Updated February 4, 2015, Accessed February 5, 2015.
- Perl R. Ebola response reveals double standard in U.S. health care. *Forbes*. 2014. <http://www.forbes.com/sites/robertpearl/2014/12/11/ebola-double-standard/>, Accessed February 5, 2015.
- Altman L. Ethicist calls CPR too risky in Ebola. *N Y Times*. 2014. <http://www.nytimes.com/2014/10/21/health/-ethicist-calls-cpr-too-risky-in-ebola.html>, Accessed February 5, 2015.

12. Kass N. Ebola, ethics, and public health: what next? *Ann Intern Med.* 2014;161(10):744-745.
13. Toner E, Adalja A, Inglesby T. A primer on Ebola for clinicians published online ahead of print October 17, 2014. *Disaster Med Public Health Prep.*
14. Donovan G. Ebola, epidemics, and ethics—what we have learned. *Philos Ethics Humanit Med.* 2014;9:15.
15. Koenig K, Majestic C, Burns M. Ebola virus disease: essential public health principles for clinicians. *West J Emerg Med.* 2014;15(7):728-731.
16. Meyers L, Frawley T, Goss S, et al. Ebola virus outbreak 2014: clinical review for emergency physicians. *Ann Emerg Med.* 2015;65(1):101-108.
17. Feldmann H, Geisbert T. Ebola haemorrhagic fever. *Lancet.* 2011;377(9768):849-862.
18. Centers for Disease Control and Prevention. Review of human-to-human transmission of Ebola virus. <http://www.cdc.gov/vhf/ebola/transmission/human-transmission.html>. Updated October 29, 2014, Accessed February 5, 2015.
19. Sun L, Dennis B. U.S. hospitals wary of caring for Ebola patients because of cost and stigma, : The Washington Post; 2014. http://www.washingtonpost.com/national/health-science/us-hospitals-wary-of-caring-for-ebola-patients-because-of-cost-and-stigma/2014/11/28/928aa2bc-71cc-11e4-893f-86bd390a3340_story.html, Accessed February 5, 2015.
20. Pines J, Mutter R, Zocchi M. Variation in emergency department admission rates across the United States. *Med Care Res Rev.* 2013;70:218-231.
21. Emergency Treatment and Active Labor Act (EMTALA), 42 USC §1395dd.
22. Center for Clinical Standards and Quality/Survey and Certification Group. Center for Medicare and Medicaid Services. Emergency Medical Treatment and Labor Act (EMTALA) requirements and implications related to Ebola virus disease (Ebola). <http://www.aha.org/content/14/141121-sc15-10emtala-ebola.pdf>. Published November 21, 2014, Accessed February 5, 2015.
23. American College of Emergency Physicians. Code of ethics for emergency physicians. <http://www.acep.org/Clinical—Practice-Management/Code-of-Ethics-for-Emergency-Physicians/>. Accessed February 5, 2015.
24. Emergency Nurses Association. ENA code of ethics. <http://www.ena.org/about/ethics/Pages/Default.aspx>. Accessed February 5, 2015.
25. Society for Academic Emergency Medicine. SAEM mission statement. <http://www.saem.org/about-saem/mission>. Accessed February 5, 2015.
26. American Medical Association. Opinion 9.067—Physician obligation in disaster preparedness and response. <http://www.ama-assn.org/ama/pub/physician-resources/medical-ethics/code-medical-ethics/opinion9067.page>. Accessed February 5, 2015.
27. American Nurses Association. Code of ethics for nurses. <http://www.nursingworld.org/codeofethics>. Accessed February 5, 2015.
28. Malm H, May T, Francis L, et al. Ethics, pandemics, and the duty to treat. *Am J Bioeth.* 2008;8(8):4-19.
29. Zuger A, Miles S. Physicians, AIDS, and occupational risk: historic traditions and ethical obligations. *JAMA.* 1987;258(14):1924-1928.
30. Sokol D. Virulent epidemics and scope of healthcare workers' duty of care. *Emerg Infect Dis.* 2006;12(8):1238-1241.
31. Austin W. Ethics in a time of contagion: a relational perspective. *Can J Nurs Res.* 2008;40(4):10-24.
32. World Health Organization. Statement on the 1st meeting of the IHR Emergency Committee on the 2014 Ebola outbreak in West Africa. <http://www.who.int/mediacentre/news/statements/2014/ebola-20140808/en/>. Published August 8, 2014, Accessed February 5, 2015.
33. Wildes R, Kayden S, Goralnick E, et al. Sign me up: rules of the road for humanitarian volunteers during the Ebola outbreak published online ahead of print October 24, 2014. *Disaster Med Public Health Prep.*
34. Weiner E. The nursing curriculum for emergency preparedness. <http://www.nursing.vanderbilt.edu/advantage/emergency.html>. Accessed February 5, 2015.
35. George Washington University School of Nursing. The National Nurse Emergency Preparedness Initiative (NNEPI). <http://nnepi.gwnursing.org/>. Accessed February 5, 2015.
36. Centers for Disease Control and Prevention. For general healthcare settings in West Africa: four keys to infection control. <http://www.cdc.gov/vhf/ebola/hcp/international/keys-to-infection-control.html>. Updated December 19, 2014, Accessed February 5, 2015.
37. McCarthy M. CDC rejects mandatory quarantine for travelers arriving from Ebola stricken nations. *BMJ.* 2014;349:g6499.
38. ACEP Ebola Expert Panel. Consensus statement on restrictive movement including quarantine of health care workers. <http://www.acep.org/uploadedFiles/ACEP/practiceResources/issuesByCategory/publichealth/ACEP%20Ebola%20Expert%20Panel%20Consensus%20Statement.111314.pdf>. Published November 13, 2014, Accessed February 5, 2015.
39. Rosenbaum L. License to Serve — U.S. Trainees and the Ebola Epidemic. *New England Journal of Medicine.* 2015;372(6):504-506.
40. Academic Consortium Combating Ebola in Liberia. <http://accel.mit.edu/>. Accessed December 30, 2014.
41. Centers for Disease Control and Prevention. Current Ebola Treatment Centers. <http://www.cdc.gov/vhf/ebola/hcp/current-treatment-centers.html>. Accessed December 22, 2014.
42. Centers for Disease Control and Prevention. Interim guidance for U.S. hospital preparedness for patients under investigation (PUIs) or with confirmed Ebola virus disease (EVD): a framework for a tiered approach. <http://www.cdc.gov/vhf/ebola/hcp/us-hospital-preparedness.html>. Updated January 22, 2015, Accessed February 5, 2015.
43. Accreditation Council for Graduate Medical Education. ACGME program requirements for graduate medical education in emergency medicine. https://www.acgme.org/acgme/PDFs/Portals/0/PFAssets/2013-PR-FAQ-PIF/110_emergency_medicine_07012013.pdf. Published July 1, 2013, Accessed February 5, 2015.
44. Accreditation Council for Graduate Medical Education. ACGME guidance statement on Ebola virus infection and resident/fellow training in the United States. <https://www.acgme.org/acgme/PDFs/Portals/0/PDFs/Nasca-Community/ACGME-GME-Ebola-Final1.pdf>. Published October 2014, Accessed February 5, 2015.
45. Counselman FL, Borenstein MA, Chisholm CD, et al. The 2013 model of the clinical practice of emergency medicine. *Acad Emerg Med.* 2014;21(5):574-598.
46. Bayer R, Oppenheimer GM. AIDS Doctors: Voices From the Epidemic: An Oral History, Oxford, UK: Oxford University Press; 2002.

47. Childress JF, Faden RR, Gaare RD, et al. Public health ethics: mapping the terrain. *J Law Med Ethics*. 2002;30(2):170-178.
48. BBC News. Ebola: When health workers' duty to treat is trumped. <http://www.bbc.com/news/health-29573993>. Published October 29, 2014, Accessed February 5, 2015.
49. Gruson L. Montana nurses concerned about Ebola. *Great Falls Tribune*. 2014. <http://www.greatfallstribune.com/story/news/local/2014/10/15/montana-nurses-concerned-ebola/17340921/>, Accessed February 5, 2015.
50. Schram J, Celona L. Bellevue staffers call in "sick" after Ebola arrives, : New York Post; 2014. <http://nypost.com/2014/10/25/many-bellevue-staffers-take-sick-day-in-ebola-panic/>, Accessed February 5, 2015.
51. Fox News. Hospital staffers reportedly take sick day rather than treat New York's first Ebola patient. <http://www.foxnews.com/health/2014/10/25/hospital-staffers-reportedly-take-sick-day-rather-than-treat-new-yorks-first/>. Published October 25, 2014, Accessed February 5, 2015.
52. Qureshi K. Health care workers' ability and willingness to report to duty during catastrophic disasters. *J Urban Health*. 2005;82(3):378-388.
53. *Payton v. Weaver*, 131 Cal App 3d 38, 182 Cal Rptr 225 (Cal App 1 Dist 1982).
54. Morin K, Higginson D, Goldrich M. for the Council on Ethical and Judicial Affairs of the American Medical Association. Physician obligation in disaster preparedness and response. *Camb Q Healthc Ethics*. 2006;15:417-421.
55. Singer P, Benatar S, Bernstein M, et al. Ethics and SARS: lessons from Toronto. *BMJ*. 2003;327(7427):1342.
56. Center for Law and the Public's Health. Model State Emergency Health Powers Act. <http://www.publichealthlaw.net/MSEHPA/MSEHPA.pdf>. Accessed February 5, 2015.
57. Coleman C, Reis A. Potential penalties for health care professionals who refuse to work during a pandemic. *JAMA*. 2008;299:1471-1473.
58. Pellegrino E. Ethics and the moral center of the medical enterprise. *Bull N Y Acad Med*. 1978;54(7):625.
59. Pellegrino E. Toward a virtue-based normative ethics for the health professions. *Kennedy Inst Ethics J*. 1995;5(3):253-277.
60. Meerschaert M. Physicians' duty to participate in pandemic care. *JAMA*. 2008;300(3):284.
61. Koenig K. Ebola triage screening and public health: the new "vital sign zero" published online ahead of print October 29, 2014. *Disaster Med Public Health Prep*.
62. Hawryluck L, Lapinsky S, Stewart T. Clinical review: SARS—lessons in disaster management. *Crit Care*. 2005;9(4):384.
63. Irvin C, Cindrich L, Patterson W, et al. Survey of hospital healthcare personnel response during a potential avian influenza pandemic: will they come to work? *Prehosp Disaster Med*. 2008;23:328-335.
64. American Society of Anesthesiology. Recommendations from the ASA Ebola Workgroup. <http://www.asahq.org/For-Members/Clinical-Information/Ebola-Information/Ebola-Guidelines-from-COH.aspx>. Accessed February 5, 2015.
65. Fins J. Responding to Ebola: questions about resuscitation. <http://www.thehastingscenter.org/Bioethicsforum/Post.aspx?id=7135&blogid=140>. Published October 10, 2014, Accessed February 5, 2015.
66. Kreuels B, Wichmann D, Emmerich P, et al. A case of severe Ebola virus infection complicated by gram-negative septicemia. *N Engl J Med*. 2014;37:2394-2401.
67. Lyon G, Mehta A, Varkey J, et al. Clinical care of two patients with Ebola virus disease in the United States. *N Engl J Med*. 2014;371:2402-2409.
68. Rachels J, Rachels S. *The Idea of a Social Contract: The Elements of Moral Philosophy*. 6th ed., Boston, MA: McGraw-Hill; 2010.
69. Institute of Medicine. *Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response*, Washington, DC: National Academies of Science; 2012.