

ANALYZING VARIABILITY IN EBOLA-RELATED CONTROLS APPLIED TO RETURNED TRAVELERS IN THE UNITED STATES

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Public health authorities have adopted entry screening and subsequent restrictions on travelers from Ebola-affected West African countries as a strategy to prevent importation of Ebola virus disease (EVD) cases. We analyzed international, federal, and state policies—principally based on the policy documents themselves and media reports—to evaluate policy variability. We employed means-ends fit analysis to elucidate policy objectives. We found substantial variation in the specific approaches favored by WHO, CDC, and various American states. Several US states impose compulsory quarantine on a broader range of travelers or require more extensive monitoring than recommended by CDC or WHO. Observed differences likely partially resulted from different actors having different policy goals—particularly the federal government having to balance foreign policy objectives less salient to states. Further, some state-level variation appears to be motivated by short-term political goals. We propose recommendations to improve future policies, which include the following: (1) actors should explicitly clarify their objectives, (2) legal authority should be modernized and clarified, and (3) the federal government should consider preempting state approaches that imperil its goals.

THE WEST AFRICAN EBOLA EPIDEMIC gained both wide public attention and political importance in the United States in early August 2014, spurred principally by 2 events: (1) the infection of 2 US healthcare workers in Liberia and their subsequent repatriation to the United States, and (2) an outbreak in Nigeria that had an American citizen of Liberian origin as its index case.¹ This salience deepened when the World Health Organization (WHO) declared the West African Ebola epidemic a public health emergency of international concern (PHEIC) under the International Health Regulations on August 8, 2014.² Public fears increased in the United States in late September when a Liberian man contracted the virus while coming to the aid of a sick neighbor in Monrovia, developed Ebola virus disease (EVD) a week later after traveling to Texas, and subsequently transmitted the infection to American healthcare workers.³

In October 2014, the Centers for Disease Control and Prevention (CDC) and Customs and Border Patrol (CBP) initiated enhanced screening and management of individuals entering the United States who had recently traveled in Ebola-affected countries. In broad strokes, this meant working with airlines to restrict US entrants to 5 airports with enhanced screening services and an exposure-based approach to risk assessment.^{4,5} In late October, CDC revised its guidance to adopt risk tiers with corresponding restrictions.⁶ CDC guidance recommended that asymptomatic people with no known exposures—including healthcare providers who consistently wore appropriate personal protective equipment (PPE) while treating patients—be actively monitored for fever and other Ebola symptoms but that their movement did not need to be restricted. Tiered controls for those with higher-magnitude exposure risks and isolation of

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symptomatic individuals were also recommended.⁷ By March 8, 2015, every US state, 2 territories, New York City, and the District of Columbia had monitored at least 1 returned traveler. More than 10,000 travelers were monitored in total.⁸

Many states, however, diverged from CDC guidance, requiring more frequent or intrusive testing or greater restrictions on movement, such as quarantine of returned health workers.⁹ (An up-to-date map of state policies can be found at <http://www.cdc.gov/phlp/publications/topic/ebola.html>.) From a health systems improvement perspective, varying interventions may be appropriate if they reflect different programmatic goals, or when program contexts require unique intervention approaches. (For example, a jurisdiction with very limited surveillance and response capability might be more risk averse about potentially infected entrants.) However, unexplained variability often suggests suboptimal interventions or implementation¹⁰⁻¹³ and can challenge effective communication of risks to the public and stakeholders.¹⁴

Because the epidemiologic context of Ebola was essentially invariant across US states, policy variability might reflect state innovation that attempted to improve on CDC guidance. Alternatively, it might signal that states sought different goals from CDC—whether they be public health or political ones. Additionally, different approaches could reflect public health system capacities and capabilities, including variation in states' public health laws.¹⁵ However, one would not expect substantially different public health capacities and capabilities across states because the number of cases—either actual or expected—was insufficient to overtax state public health systems, and because, although Ebola has an unusually high case-fatality rate, basic Ebola control measures (ie, surveillance, contact tracing, and quarantine) are not dissimilar from other infectious disease public health activities.

This analysis aims to explain observed variation in US Ebola entry screening and controls in order to inform recommendations that may improve responses to future public health emergencies. To do so, we analyzed several sources of information. Our analysis began with states' policies themselves—drawing from CDC's recent compilation of Ebola screening and restriction policies⁹ and supplementing these data with additional official policy documents. We further contextualized policy by examining official government statements and news reports that accompanied or explained policy decisions. Finally, information about certain jurisdictions' approaches—federal, District of Columbia, Florida, and Massachusetts—was obtained by the authors' firsthand interaction during their own screening and monitoring experiences. We sought to understand the variability in approaches by examining their fit with stated policy goals. If the fit was poor, we sought to explain the approach by reference to unstated or alternative goals or contextual differences between jurisdictions.

VARIABILITY IN ENTRY SCREENING AND TRAVELER CONTROLS

This section considers recommendations or requirements made at 3 political levels: global, through WHO; national, principally through CDC; and US states. Others have assessed the potential effectiveness of exit screening, entry screening, and movement restrictions in the context of Ebola and other infectious diseases (though no studies have directly assessed the repeated symptom monitoring and tiered controls approach recommended by CDC),¹⁶⁻²⁵ and our purpose is not to reassess the overall value of the control measures employed by various jurisdictions. Rather, we seek to characterize and explain variability in approaches taken in order to identify challenges that are likely to recur during future public health emergencies.

World Health Organization

Pursuant to the International Health Regulations (IHR), WHO provides guidance to member states regarding appropriate measures in response to PHEICs. Throughout the West African Ebola epidemic, WHO has favored exit screening and travel restrictions by affected countries over entry screening by unaffected countries, and it has recommended that exit restrictions be limited to people with symptoms consistent with Ebola or who have had contact with a case.²⁶ It has not recommended entry screening,²⁷ and it has signaled that “entry screening may have a limited effect in reducing international spread when added to exit screening.”²⁸ At the same time, WHO has called for states that have implemented entry screening to “share their experiences and lessons learned,” and it has provided technical guidance on how to conduct entry screening with minimal collateral harm to trade, travel, or individual liberties.^{27,28} While specifying that Ebola contacts and cases should not be permitted to travel, WHO does not recommend travel restrictions for healthcare workers who used appropriate PPE and without other exposures.^{26,29}

US Federal Government

Federal policy in the United States has evolved over the course of the West African Ebola outbreak. CDC did not recommend extensive entry screening and controls of asymptomatic people during the epidemic's early stages. Although there was political pressure to limit travel after a man with Ebola symptoms was permitted to board a flight from Monrovia to Lagos in August,³⁰ CDC and the State Department recommended only against nonessential travel to affected countries.^{31,32} Around the same time, US Ebola policy was principally focused on supporting affected countries' responses—including by providing support to exit screening.³³ Active airport screening began in October 2014, at the same time that the US government barred travelers from affected countries from entering except

through 5 designated airports.^{4,34} Passengers with Ebola signs or symptoms or high-risk exposures would not be permitted further travel until assessed and cleared.³⁵ Initially, healthcare workers who used appropriate PPE while treating patients were generally assessed as low risk. However, in late October, after healthcare workers caring for a patient in Dallas were infected and an American physician returned to

the United States from Guinea and developed EVD, healthcare workers who used PPE in West Africa—but not in the United States—were reclassified as “some risk.”^{7,36}

Since late October 2014, CDC has recommended movement restrictions for asymptomatic entrants based on a tiered-risk system. (See Figure 1 for risk tiers and CDC’s recommended restrictions. Up-to-date information on

Figure 1. CDC’s Exposure Categories and Recommended Actions for Asymptomatic Individuals

<i>Exposure Category</i>	<i>Who Is Included</i>	<i>Recommended Actions</i>
High risk	<ul style="list-style-type: none"> • People with direct blood or body fluid exposure from a symptomatic person with Ebola without appropriate PPE • People with direct contact with a dead body without appropriate PPE in a country with widespread transmission and uncertain control measures • People who lived in the household of a symptomatic Ebola case and provided direct care 	<ul style="list-style-type: none"> • Direct active monitoring^a • Compulsory travel restrictions, including being barred from public mass transport and flights • Compulsory exclusion from congregate settings and workplaces, though public activities with a 3-foot separation from other people may be permitted
Some risk	<ul style="list-style-type: none"> • People who had direct contact with a symptomatic Ebola patient while wearing appropriate PPE in a country with widespread transmission and uncertain control measures • People who provided any direct patient care in a country with widespread Ebola transmission and uncertain control measures • Close contact with a symptomatic Ebola patient without appropriate PPE 	<ul style="list-style-type: none"> • Direct active monitoring^a • Possible travel restrictions, including being barred from public mass transport and flights, depending on a specific assessment by public health authorities • Possible exclusion from congregate settings and workplaces, depending on a specific assessment by public health authorities; public activities with a 3-foot separation may be permitted
Low (but not zero) risk	<ul style="list-style-type: none"> • People who were in a country with widespread transmission and uncertain control measures with no known exposures • People with brief direct contact or brief proximity with a symptomatic Ebola patient without appropriate PPE • People with direct contact while wearing PPE in a country without widespread transmission or uncertain control measures • Travelers on the same plane as a symptomatic Ebola patient 	<ul style="list-style-type: none"> • Direct active monitoring^a for US-based healthcare workers who treated patients while wearing PPE and travelers seated within 3 feet of an Ebola patient • Active monitoring^b for everyone else • No additional restrictions
No identifiable risk	<ul style="list-style-type: none"> • People with contact with an asymptomatic patient or their contacts • Travelers for whom at least 21 days have elapsed • Travelers from countries with only sporadic Ebola cases • Travelers whose flight or ship stopped in a country with widespread transmission but they remained in the immediate vicinity of their conveyance 	<ul style="list-style-type: none"> • No restrictions

^aDirect active monitoring is daily fever and symptom monitoring through direct observation. By CDC recommendation, body temperature and symptoms should be assessed twice daily, and in-person observation should occur at least once daily.

^bActive monitoring is daily fever and symptom reporting without direct observation.

current risk tiers can be found at <http://www.cdc.gov/vhf/ebola/exposure/monitoring-and-movement-of-persons-with-exposure.html>.) No restrictions beyond daily active monitoring (required temperature reporting by the entrant) are required for most people in the low-but-not-zero risk category. (US-based healthcare providers who cared for an Ebola patient or people who sat within 3 feet of an Ebola patient on an airplane are to have direct active monitoring, in which a public health official “directly observes the individual at least once daily.”⁷) Those in the “some risk” category, which includes healthcare workers who treated patients in West Africa while wearing appropriate PPE, are to have direct active monitoring. CDC also advises state and local health departments to individually assess the entrant and decide the appropriateness of exclusion from congregate settings; travel by bus, aircraft, or subway; public places; or workplaces. CDC is clear, however, that this should not cause home quarantine and that noncongregate activities in public settings (for which CDC’s example is jogging in a public park) may be permitted. Further, CDC recommends that asymptomatic entrants in the “some risk” category should be allowed to travel by air from their US port of entry to their final destination before flight restrictions are imposed.⁷ CDC recommends that asymptomatic high-risk entrants be, at minimum, excluded from public means of transport, public places and congregate gatherings, and workplaces, though they too may be permitted to maintain noncongregate public activities. High-risk asymptomatic entrants are not permitted to travel on commercial flights.⁷

US States

In the United States, states have broad public health powers³⁷ and can impose restrictions that exceed federal policy, except in certain instances where state policies conflict with federal authority and are preempted by federal law and the Constitution’s Supremacy Clause.³⁸ To a large degree, this reflects the historical primacy states have had in controlling public health threats.³⁹⁻⁴¹ As of March 2015, 19 states have stricter Ebola policies than CDC guidance. Several deviations from CDC guidance are particularly notable.

Only 5 states—Georgia, Illinois, New Jersey, New York, and Virginia—have airports through which travelers from affected countries are permitted to enter the United States by air. Consistent with CDC guidance, Georgia, Illinois, and Virginia permit healthcare workers who treated patients in West Africa while wearing PPE to continue to their final destinations.^{9,42} New Jersey does not permit asymptomatic healthcare workers who treated patients in West Africa—even if they wore appropriate PPE—to continue air travel to their final destination.^{43,44} For a short period in October, New York appears to have established the same policy,⁴⁵⁻⁴⁷ though it does not appear to have been implemented before being reversed.⁴⁸⁻⁵⁰

Several jurisdictions, including the District of Columbia,⁵¹ Florida,⁵² Iowa,^{53,54} Maine,^{55,56} New Jersey,⁴³ New York,^{48,57} and Ohio,^{58,59} compel the quarantine of healthcare workers who cared for Ebola patients in West Africa even if they used appropriate PPE and had no known unprotected exposures.⁹ Kansas requires quarantine of healthcare workers unless they used “tier 1” PPE, which includes a powered air purifying respirator (PAPR)—a device rarely used in West Africa.⁶⁰ New Hampshire policy also calls for voluntary quarantine. It reserves the right to impose mandatory quarantine, but also states that compulsory quarantine would not normally be used.⁶¹ Each of these states permit quarantine in a person’s own home instead of confinement in a medical facility, except for travelers detained in New Jersey before reaching their home states.⁴³

Maine’s policy also authorizes quarantine of people who “treat[ed] Ebola-positive individuals,” including those who wore appropriate PPE.⁵⁵ However, a state trial court judge struck down quarantine of a nonsymptomatic, potentially exposed nurse as inconsistent with state law because quarantine was more restrictive than necessary to protect the public’s health.^{62,63} Although it was not at issue in that court case, Maine’s communicable disease laws are written ambiguously. While Maine’s health department issued regulations that authorize quarantine of exposed individuals,⁶⁴ it is not clear it has this statutory authority. State code authorizes detention to address a “public health threat,” but it then defines legal terms of art in a way that appears only to authorize the detention of people actually diagnosed with an infection—not those who are merely exposed—unless the state declares a public health emergency (see explanatory web supplement at www.liebertonline.com/hs).⁶⁵⁻⁶⁷ When a public health emergency has been declared, the state has clear statutory quarantine authority, but Maine did not declare a public health emergency.⁶⁷⁻⁶⁹

Louisiana’s quarantine policy is also unclear.⁷⁰ It applies to all people who have been in an affected country within the past 21 days (including, but not limited to, healthcare workers), and, on its face, it calls only for “voluntary quarantine” or “self-quarantine.” However, elsewhere in the policy, the state references its authority to enforce its powers by public health order, and, in at least one instance, travelers from affected countries to a tropical medicine conference were informed “that we see no utility in you traveling to New Orleans to simply be confined to your [hotel] room.”^{71,72} It is unclear whether the state has or would seek legal enforcement if someone refused voluntary quarantine.

Connecticut’s official policy matches CDC’s recommendations and risk tiers, but its implementation of that policy appears to have exceeded them.^{9,73} In early October, Connecticut’s governor declared a public health emergency to allow broader Ebola powers.^{74,75} In the absence of a state emergency declaration, only local health departments—not the state—would have quarantine authority.⁷⁶⁻⁷⁸ In at least

one case, a Yale student who returned from Liberia was quarantined after developing a fever and subsequently testing negative for Ebola. Other travelers were quarantined without a history of exposure.⁷⁹

Multiple states require more intrusive daily monitoring for people in the “low (but not zero)” tier than CDC recommends.⁹ Florida requires the standard twice-daily temperature and symptom checks to be conducted in the presence of a public health worker.⁵² Texas’s policy is unclear and in one formulation appears to require observed temperature readings,⁸⁰ but not in another.⁸¹ New Mexico initially required low-but-not-zero risk individuals to be available for in-person monitoring but stopped short of requiring in-person monitoring per se;⁹ its policy was amended to match CDC guidance in February 2015.⁸² Ohio requires 1 in-person and 1 phone check-in each day.⁵⁹ Indiana requires video monitoring of temperature twice per day regardless of risk tier.^{83,84}

GOALS

One reason for the variability in entry screening and subsequent controls may be that different jurisdictions sought to achieve different goals. Indeed, if public health goals varied, it would be concerning not to see different approaches.^{10,12,13} Similarly, different actors might choose different approaches to achieving the same objective if they encounter different programmatic contexts or if their public health systems have different capacities and capabilities.^{85,86} However, in the United States the epidemiologic context was essentially constant across states, and the expected number of cases was insufficient to likely overtax state public health capabilities.^{18,87} Finally, variability—particularly when there is a poor fit between stated ends and chosen means—may signal that actors have unstated goals at which a policy solution is aimed.⁸⁸⁻⁹⁰

World Health Organization

When WHO recommends disease control measures during a PHEIC, it is explicitly guided by the goals of the IHR. The IHR seek to balance 2 objectives: “to prevent, protect against, control, and provide a public health response to the international spread of disease,” and to “avoid unnecessary interference with international traffic and trade.”⁹¹ Not surprisingly, WHO member states would be wary of granting WHO emergency declaration and control measure recommendation authority if WHO did not take reasonable care to avoid harming their economic interests.⁹²⁻⁹⁴

WHO’s guidance is broadly consistent with these dual objectives and with the significant deference it tends to give member states. Throughout the epidemic, WHO has recommended against international trade and travel restrictions^{28,29,95,96}—even while broadly approving of subnational *cordon sanitaire* within affected countries (de-

spite a lack of evidence to support them).^{97,98} More specifically, WHO has unequivocally favored exit screening from affected countries,²⁹ while it has been much more ambivalent about entry screening,²⁸ and it has consistently opposed entry bans or quarantines of asymptomatic travelers without known Ebola exposure, which it condemned for “impeding the recruitment and return of international responders ... and ... disrupting livelihoods and economies.”⁹⁶ Though it never expressed it explicitly, WHO may have adopted this policy because it expected fewer unnecessary interruptions would occur by placing primary authority for traveler restrictions in the hands of affected countries and because exit screening can be targeted to fewer flights.^{18,20,99}

US Federal Government

The US government, while primarily focused on domestic health and security, also has to balance international obligations (including under the IHR),⁹¹ commitments to allies (including those made to Liberia and other affected countries),^{100,101} and broader international relations goals. Further, federal public health officials repeatedly stated that, in their estimation, the most effective way to prevent imported cases was to expeditiously end the West African outbreak.¹⁰² In line with these goals, prior to the importation of an Ebola case to Dallas, US policy remained principally focused on aiding the affected countries to respond and protecting against cases among entrants by supporting exit screening in West Africa.³³

The situation changed dramatically in October after a traveler from Liberia became ill with EVD in Texas and additional cases were diagnosed among nurses who cared for him. Though epidemiologists had expected sporadic imported cases due to Ebola’s long incubation period, health officials had emphasized that the United States could rapidly and fully contain subsequent transmission, using language that, while epidemiologically correct, led some to believe that there would be no instances of domestic transmission.¹⁰³ The Texas cases fundamentally changed the public conversation in 2 ways. First, expectation of imported cases was converted from theoretical to actual. Second, the infection of 2 nurses who provided clinical care for the Dallas index case undermined confidence in CDC’s ability to contain further transmission.¹⁰⁴ This, along with election-year politics, led to renewed calls to ban travelers arriving in or returning to the United States from affected West African countries.¹⁰⁴⁻¹⁰⁷

Against this backdrop, the Obama administration had to balance its multiple Ebola-related goals. The administration believed a travel ban would reduce the ability of responders to deploy to Liberia, Sierra Leone, and Guinea, which it believed would result in an exacerbated West African epidemic and increase the likelihood of imported cases.^{108,109} Further, it believed an entry ban would make travelers less likely to truthfully disclose whether they had

been in an affected country, making surveillance more difficult.¹⁰⁷ Thus, the October policy changes to restrict entrants to 5 airports and subsequent production of a tiered screening and monitoring strategy is best interpreted as a way for the administration to balance its foreign policy goals with the risk of congressional action to impose severe restrictions on travel from West Africa.

US States

Unlike the federal government, states do not explicitly create foreign policy and therefore have few political incentives to avoid complicating competing federal foreign policy goals if they perceive a conflict with state-level priorities.^{110,111} At a macroscopic level, then, one would expect states to be more likely to impose stricter controls than the federal government. Not surprisingly, one-third of US states did, in fact, impose stricter controls than CDC recommended.⁹

Yet, a different balance between globally and locally oriented public health priorities does not explain several deviations from federal policy. While every state justified its deviation from federal policy by claiming an interest in preventing transmission of Ebola and protecting the public health, at least 2 states, New York and New Jersey, adopted airport quarantine policies without evidence of public health benefit.

When New Jersey and, briefly, New York decided to quarantine asymptomatic healthcare workers at Newark and JFK Airports—many of whom would be traveling elsewhere—protection of their states could not have justifiably been the overriding public policy goal. After all, a currently asymptomatic person could not transmit disease, and the likelihood of a person becoming infectious after entry screening but while still in the airport is vanishingly small. The lack of fit between New Jersey and New York's stated ends and their chosen means suggest there existed a latent objective.⁸⁸⁻⁹⁰

A leading hypothesis proposed for that objective is non-public-health-oriented: electoral politics.¹¹² The policy adopted in New York and New Jersey was announced a few days after a physician who had returned from Guinea was diagnosed with Ebola and 11 days before November gubernatorial elections. Language that accompanied the policy announcement from the office of New York Governor Andrew Cuomo, who was running for reelection, signals the issue's electoral salience: "For four years, I have erred on the side of caution whenever it has come to dealing with a crisis, and that has served the state well."¹¹³ New Jersey Governor Chris Christie, a likely presidential candidate, meanwhile characterized White House policy on Ebola as "seven minute lectures from the South Lawn."¹¹⁴

Similarly, language sometimes used in policies requiring quarantine of healthcare providers who had worn appropriate PPE signals that damping public fears, more than Ebola transmission risk, was at play. Louisiana policy, for

example, includes the statement, "There is a large body of scientific literature confirming that asymptomatic individuals are not infectious. . . . Therefore there is no scientific rationale [sic] for putting an asymptomatic person under quarantine. However this practice is done under the guise of 'abundance of caution.'"⁷⁰ While it is unclear whether Louisiana would use compulsory quarantine if a healthcare worker refused voluntary restrictions, its determination of "no scientific rationale" would apply equally to voluntary quarantine. Maine defends its policy as taking "further measures, out of an abundance of caution, to ensure public safety."⁵⁵ While such statements may reflect extreme risk aversion, the most natural explanation is that they reflect a desire by state officials to communicate to the public that Ebola was being handled—that is, that they prioritized mitigation of public fear over disease control objectives—which can yield short-term electoral benefit.

Mitigating fear is, of course, a laudable public objective, so long as it does not lead to unacceptable intrusions on individual liberties or confound public health initiatives to control disease spread. By October 2014, when many states were constructing their policies, public fear had reached exceptional levels, with almost one-fourth of Americans reporting being worried about being infected. Simultaneously, more than a third of Americans reported a lack of confidence that the federal government could manage Ebola.¹¹⁵ There are many likely reasons for this fear, including Ebola's exoticness and confusion of high lethality with easy transmissibility.¹¹⁶ However, in some instances, risk communication by federal officials and other experts likely increased public perceptions that federally recommended control measures were inadequate. These included inopportune statements by CDC Director Thomas Frieden that "essentially any hospital in the country can safely take care of Ebola."¹⁰³ Similarly, speculation about the possibility of mutations to enable respiratory transmission of Ebola increased public fear¹¹⁷⁻¹²⁰ and may have contributed to states imposing greater-than-necessary controls on healthcare workers who wore adequate PPE, such as Kansas's quarantine of healthcare workers whose PPE did not include PAPRs.

RECOMMENDATIONS

Policy Goals Should Be Clear

Observed variability in international, federal, and state policies are at least partially attributable to varying policy goals. With respect to public health objectives, policymakers likely sought both to prevent individuals infected with Ebola from entering the United States and to minimize morbidity and mortality in the United States. For state policymakers, responding to different incentives, both of these goals could be met by stringent controls. Federal policymakers, though, were concerned that stringent

controls would exacerbate the West African epidemic, and so, even if stricter controls reduced the proportion of infected travelers who entered the United States, it might increase the absolute number. Additionally, federal policymakers had to balance additional foreign policy goals, such as being perceived as reliable allies.

In some instances, state policymakers' objectives remained obscured, which is problematic for both practical and principled reasons. Because public health measures—particularly coercive measures that intrude on individual liberties—can only be justified to the extent they are able to achieve an important public goal,¹²¹ it is important that officials are clear about the objective of a control measure when implementing it. Failing to do so increases the likelihood that policy will impose public burdens without obtaining public benefits.¹²²

Unspecified goals are also problematic as a matter of principle. Democratic theory requires the possibility of public deliberation about both the ends and means of policy.¹²³ This, of course, does not mean that public preferences prevail when in conflict with scientific principles. However, undisclosed objectives make rational public deliberation impossible.¹²⁴ Without the possibility of public deliberation, the legitimacy that attaches to democratically constructed or reviewed policy is lost.¹²³

Related to this, while public health is inherently political,¹²⁵ its objectives ought not be mere politics. Coercive public health measures require publicly oriented justifications.³⁷ Electoral political gain is insufficient to sustain political measures that intrude on individual liberties—including compulsory screening and quarantine. As a result, it is incumbent on political actors to base Ebola control measures on valid public health grounds and to state these grounds openly so that they can be publicly debated.

Clarify Legal Authority

In at least 2 instances, unclear alignment between legal authority and Ebola policy increased uncertainty about state policy. In Maine, communicable disease statutes were construed by a trial court judge to preclude quarantine of asymptomatic Ebola contacts as more extensive than necessary.⁶² Further, as noted above, Maine law seems to limit quarantine only to people who are actually known to be infected—not merely exposed—to an infectious disease,⁶⁵ unless a public health emergency has been declared.⁶⁷ This uncertainty is problematic because, on one hand, it increases the likelihood that public health agencies will be unable to exercise appropriate authority. On the other hand, it also increases the likelihood that public health departments will overreach by trying to fit poorly crafted public health laws to what they perceive to be an urgent situation.^{126,127}

Louisiana may have the opposite problem. Its public health laws clearly authorize the quarantine of exposed,

asymptomatic individuals.¹²⁸ However, Louisiana's Ebola policy drafters openly stated that quarantine is not justified with respect to asymptomatic contacts, and they refer to the state's policy as "voluntary quarantine," although Louisiana also advised travelers to avoid the state lest they be "confined to [their] room."⁷¹ If this is intended to signal a state policy authorizing compulsory quarantine—and other parts of Louisiana's policy do appear to envision the use of public health orders⁷⁰—the law would likely not survive judicial review. To be constitutional, quarantine must be justified by a compelling government interest,^{37,129} and Louisiana has itself stated that no such interest exists. If states seek to use coercive powers, they must be able to justify their use—not merely under statutory authority but also under actual necessity.

These issues can be resolved through better use of public health law. For states that have not done so recently, it is important that legal authority for measures to control infectious diseases be reviewed to make sure that the law permits the range of evidence-based, appropriate control measures the state may wish to use, which would resolve Maine's potential problem.^{126,127} Likewise, it is important that decision makers understand both statutory and constitutional limitations on state authority—which would have prevented the potential constitutional problem with Louisiana's policy—and when a public health emergency declaration is needed for the state to legally exercise authority. Each of these will often require early inclusion of states' legal counsel.

Federal Preemption Can Resolve Conflicting Goals

Public health advocates tend to disfavor federal preemption of state public health laws because states often enact more rigorous health and safety protections.¹³⁰ In areas ranging from injury prevention¹³¹ to drug safety¹³² and menu labeling,¹³³ preemption has been blamed for undermining state public health policies. However, in narrow circumstances when states' public policy goals conflict with federal objectives, preemption may be appropriate. This is particularly the case when the federal government's approach seeks to balance domestic with global public health goals, while states have no incentive to promote global health and, therefore, take steps that may undermine federal efforts to achieve it.

At least one policy—quarantine of in-transit healthcare workers returning from treating Ebola patients in West Africa—conflicted with expressed federal objectives to balance domestic disease prevention with the need to control the epidemic overseas, which the administration believed necessary to prevent the introduction of cases into the United States. Quarantine significantly increases burdens on returning healthcare workers and, therefore, would be expected to cause fewer to volunteer to serve overseas,

impeding disease control in West Africa, a point the Obama administration raised several times.^{33,108} This was doubly true when states sought to quarantine in-transit passengers who had not yet arrived home, which undermined the federal entry screening and control scheme. Had all 5 states with airports that handled travelers returning from Ebola-affected countries adopted New Jersey's approach, federal policy would have been defeated.

In general, Congress has restricted federal authority to preempt state quarantine policies. However, when the Department of Health and Human Services acts under federal quarantine laws,³⁸ it is authorized by Congress to supersede state policies that conflict. In fact, case law dating back to the 19th century recognizes federal authority to create quarantine rules for people entering the United States or moving between states and to preempt state policies when they conflict.³⁹ During the height of the Ebola epidemic in West Africa, the administration could have considered preempting state airport quarantine rules.

Of course, preempting state airport quarantine rules would have raised significant federalism issues and been politically contentious, and it should be used cautiously. Whereas the federal government has historical control over ports of entry, states have long had primary authority for public health. There exist constitutional presumptions that states not be preempted in the use of their historical powers unless the federal government makes its preemptive intent clear.^{134,135} Similarly, under the federal Public Health Service Act, preemption would have likely required a formal regulatory determination that federal traveler screening and controls were necessary to prevent the "introduction, transmission, or spread" of Ebola and that state approaches conflicted with those objectives.³⁸

Federal preemption of state public health measures should be undertaken cautiously. While the federal government has broader disease control measures during declared public health emergencies¹³⁶ and when a state fails to adequately control an outbreak that threatens to spread between states,¹³⁷ these powers can almost always be exercised cooperatively with state governments.^{69,138} Preemption should be reserved for situations in which state decisions threaten to render federal policymaking ineffective, such as when state policies complicate federal entry screening and subsequent public health measures.

CONCLUSION

An analysis of international, federal, and state screening and restriction policies for travelers returning from Ebola-affected West African countries finds substantial variation between and within international, federal, and state policies. Some of the variation appears to result from different actors having different public health goals, especially variation in the balance between global and domestic objectives. Other variation, however, appears to result from non-

public health goals, which is concerning when coercive public health measures are employed and doubly so when goals are not made transparent for public debate. In order to strengthen responses to future, similar disease emergencies, health authorities should clarify their goals and confirm their legal authority for control measures before emergencies. Finally, in rare instances when state policies threaten to undermine federal public health objectives, the federal government should be cautiously willing to supersede wayward state policies.

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