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MANAGING OUR MICROBIAL MARK: WHAT WE CAN LEARN ABOUT PAY FOR PERFORMANCE FROM EBOLA'S ARRIVAL AT OUR SHORES

Ann Marie Marciarille[†]

The narrative of Ebola's arrival in the United States has been overwhelmed by our fear of a West African-style epidemic. The real story of Ebola's arrival is about our healthcare system's failure to identify, treat, and contain healthcare associated infections. Having long been willfully ignorant of the path of fatal infectious diseases through our healthcare facilities, this paper considers why our reimbursement and quality reporting systems made it easy for this to be so. West Africa's challenges in controlling Ebola resonate with our own struggles to standardize, centralize, and enforce infection control procedures in American healthcare facilities.

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I. INTRODUCTION

The ebbing of the Ebola virus outbreak in West Africa is very good news. The incidence of new reported cases is greatly reduced,¹ and, unlike under-reported incidence numbers that have been seen in other epidemics, public health officials appear to have confidence in these reported numbers.² It is still difficult to say exactly which combination of domestic, international, and community efforts did the most to reduce the number of new cases. In some places, habits and customs changed faster than in others.³ The speed at which countries were able to improve both health and sanitation, as well as education regarding both those issues, corresponded to a faster reduction in Ebola cases.⁴ Those countries able to faster track both incidence and transmission from the healthcare context to the community context were able to rapidly target transmission on all fronts.⁵

This Article focuses on what is, in the big picture, a side issue: what the developed world can learn from the control of Ebola. What is true, at least in part, about control of Ebola may also apply to the epidemics the developed world faces, specifically the ongoing epidemic of healthcare-associated infections. Thus, the lessons of Ebola should be writ large on the American healthcare landscape, for example:

- that hand washing matters in disease incidence and transfer;
- that communal pressure to improve things like hand hygiene can actually make a difference, even among the less aware and less motivated;
- that Ebola needed to be brought out of the shadows before incidence and transfer could be fully addressed; and
- that reporting and reducing infectious disease incidence and transmission are intimately intertwined even while false reporting or systematic underreporting may be the norm.

¹ See WORLD HEALTH ORG., EBOLA SITUATION REPORT – 21 OCTOBER 2015 (2016), <http://apps.who.int/ebola/current-situation/ebola-situation-report-21-october-2015> [<http://perma.cc/NHH6-YU4P>] [hereinafter EBOLA SITUATION REPORT].

² Cf. Tolu Ogunlesi, *The Truth About Ebola: Battle Starts with Accurate Information*, GUARDIAN (Aug. 7, 2014, 7:55 AM), <http://www.theguardian.com/world/2014/aug/07/truth-about-ebola-accurate-information> [<http://perma.cc/HP87-CWEA>] (discussing confusion regarding the incidence of Ebola in 2014).

³ See Laura Kurtzman, *Understanding Ebola*, UCSF NEWS CENTER (Oct. 23, 2014), <http://www.ucsf.edu/news/2014/10/120016/understanding-ebola> [<http://perma.cc/Y3RW-UFUD>].

⁴ *Id.* (observing that at Emory University Hospital, for example, proper use of personal protective equipment prevented secondary Ebola infections).

⁵ See EBOLA SITUATION REPORT, *supra* note 1.

This Article examines what the United States' minor brush with Ebola as compared to West Africa's much more major crisis indicates about the American healthcare system, and the United States' capacity to learn lessons from the developing world. Ebola's presence, however limited, in American acute care facilities has illuminated limitations in current infection-control procedures in American hospitals and healthcare facilities.⁶ Yet little has been done to extend lessons learned from Ebola transmission to non-Ebola infectious disease control.⁷

In this way, America has more in common with West Africa than many may think.

The World Health Organization ("WHO") has argued that focusing on a single disease often disrupts health systems in the developing world.⁸ Similarly, this Article argues that while focusing on one disease allows provision of specialty care for that particular disease alone, that singular focus also fails to place that disease's spread in the larger context of infection control failures in America's healthcare facilities.

The public is somewhat persuaded that the proliferation of hand sanitizer dispensers in places public and private will immunize them.⁹ Thus, we alternately confront our own worst fears of a "super bug," and by doing so, push concerns about system weaknesses to the periphery, allowing us to manage to continue to participate in our communal lives. Part of a communal life includes the experiences of acute care hospitalization and nursing home residence, but these facilities are organized much as they have been for decades.¹⁰

And, yet, everything in our perception of infection control practices has changed with the arrival of Ebola. The organization of infectious disease control in American healthcare institutions needs to be standardized, centralized, and enforced if America is going to battle its own epidemics successfully.

When the Centers for Disease Control and Prevention ("CDC") announced that any acute care facility capable of implementing strict infection control procedures should be capable of caring for an Ebola case,¹¹ this announcement should have given many in infection-control circles pause. There are, and have been, significant

⁶ See *Public Health Experts Urge U.S. Hospitals To Be Prepared as Ebola Outbreak Accelerates*, 10 EMERGENCY DEP'T MGMT. 109 (2014) [hereinafter *Hospital Preparation*] (examining whether standard infection control practices are strong enough to manage the Ebola outbreak).

⁷ Ebola's arrival in the United States offers an interesting lens through which to view healthcare associated infections but other pandemics also would offer further perspective.

⁸ See WORLD HEALTH ORG., *Essential Health Services Situation Reports: Background* (2016), <http://www.who.int/csr/disease/ebola/health-systems-recovery/ehs-background/en/> [<http://perma.cc/ELU8-ZPGC>] (explaining that the outbreak of Ebola in West Africa "had a devastating effect" on the health systems in West African countries due in part to the disruption of "vital ongoing programmes").

⁹ See Laura Barton, *Hand Sanitisers: Saved by the Gel?*, GUARDIAN (May 13, 2012, 3:01 PM), <http://www.theguardian.com/society/2012/may/13/do-we-really-need-hand-sanitisers> [<http://perma.cc/2XBT-SMKV>] (outlining popular beliefs giving rise to the surge in hand sanitizer use).

¹⁰ Alana Semuels, *Building Better Nursing Homes*, ATLANTIC (Apr. 21, 2015), <http://www.theatlantic.com/business/archive/2015/04/a-better-nursing-home-exists/390936/> [<http://perma.cc/B5JW-NJQZ>] ("Nursing homes have been run the same way for decades . . ."); see also Beth Kutscher, *Outpatient Care Takes the Inside Track*, MODERN HEALTHCARE (Aug. 4, 2012), <http://www.modernhealthcare.com/article/20120804/MAGAZINE/308049929> [<http://perma.cc/S9C9-66KE>] (discussing various changes needed in the the acute-care realm).

¹¹ See CDC, *When Caring for Patients Under Investigation (PUIs) or Patients with Confirmed Ebola Virus Disease (EVD)*, CDC.GOV (Dec. 29, 2015), <http://www.cdc.gov/vhf/ebola/healthcare-us/evaluating-patients/think-ebola.html> [<http://perma.cc/NV5Q-BCCZ>] (outlining procedures to help healthcare workers recognize and care for Ebola patients); see also *Hospital Preparation*, *supra* note 6 (suggesting ways for hospitals to prepare for and treat Ebola).

challenges to infection-control success at United States acute-care hospitals.¹² The protocols to strictly control infections have failed.¹³ Whatever caused these failings, the assertion that the issues were simple and known should have given any listener pause. Strict infection control in United States acute care facilities has not been our strong suit.¹⁴

Perhaps the group least informed about biology and public health are those who think the Ebola virus is naturally spread by airborne transmission.¹⁵ Fear that we may be unable to control the spread of an infection like Ebola might be found on either end of the spectrum.¹⁶ Those best informed about healthcare infectious disease control in American hospitals are cognizant of the astonishingly poor record for implementing infection-control protocols.¹⁷ These two groups may share a common fear: that domestic infectious disease control practices are not up to the task, even though they may not share a common understanding of the assignment. The Ebola virus certainly makes for some interesting bedfellows.

The CDC's assertion that hospitals could manage Ebola infection highlights our need to acknowledge and manage our microbial mark if our goal is to attain a "normal, healthy microbiome"¹⁸ in healthcare settings. The federal government is gearing up to use pay-for-performance as its lever to motivate an attack on healthcare-associated infections.¹⁹ Yet, in the end, we will need to blur the line between the individual, clinical encounter for which performance is evaluated and pay issued, and public health's population-based approach to infectious disease control in order to succeed.

II. EBOLA AND MRSA

A. OUR FEAR OF EBOLA

West Africa's 2014-2015 Ebola epidemic provoked fear here in the United States.²⁰ Americans were, and still are, palpably afraid of what such epidemics may

¹² See CDC, *Healthcare-Associated Infections*, CDC.GOV (Mar. 2, 2016), <http://www.cdc.gov/hai/surveillance/index.html> [<http://perma.cc/R7WP-5H8S>] (providing information about the incidence of various healthcare-associated infections).

¹³ See *id.*

¹⁴ I made this observation in a talk on healthcare quality at the University of Toledo School of Law's joint medical-legal conference ("Scalpel to Gavel") in 2014. It provoked audible, if uneasy, laughter from a healthcare provider-heavy crowd.

¹⁵ See CDC, *Why Ebola is Not Likely to Become Airborne*, CDC.GOV (Jan. 12, 2016), <http://www.cdc.gov/vhf/ebola/pdf/infections-spread-by-air-or-droplets.pdf> [<http://perma.cc/K8XE-NWDZ>].

¹⁶ See, e.g., Valerie Richardson, *CDC Chief Tries to Ease Fears of Ebola in the U.S.: 'We Can Stop it from Spreading'*, WASH. TIMES (Aug. 3, 2014), <http://www.washingtontimes.com/news/2014/aug/3/ebola-outbreak-highly-unlikely-us-cdc/?page=all> [<http://perma.cc/E23Q-DM29>].

¹⁷ See *Hospital Preparation*, *supra* note 6, at 109.

¹⁸ Elizabeth A. Harris, *Among New York Subway's Millions of Riders, a Study Finds Many Mystery Microbes*, N.Y. TIMES (Feb. 5, 2015), <http://www.nytimes.com/2015/02/06/nyregion/among-the-new-york-city-subways-millions-of-riders-a-study-finds-many-mystery-microbes.html>.

¹⁹ *Linking Quality to Payment*, MEDICARE.GOV, <http://www.medicare.gov/hospitalcompare/linking-quality-to-payment.html> [<http://perma.cc/SY7K-9ZHH>] ("The Affordable Care Act authorizes Medicare to reduce payments to acute care hospitals with excess readmissions" resulting from factors such as "[c]omplications from treatments gotten during a hospital stay . . .").

²⁰ See, e.g., *Ebola in the U.S.: What You Need to Know Now*, CBS NEWS (Oct. 1, 2014 3:20 PM), <http://www.cbsnews.com/news/ebola-virus-in-us-what-you-need-to-know-now/> [<http://perma.cc/GCZ7-MECN>].

mean for the United States in a world with open borders.²¹ Yet Americans are not afraid of what the first arrival of Ebola²² might mean for our nation's hospitals,²³ where some thirty-five million people are admitted to roughly 5000 different hospitals each year.²⁴ Ebola has already arrived.²⁵ Americans are more afraid of what it might mean were Ebola to arrive in wholesale numbers.²⁶

Ebola, a zoonotic anomaly,²⁷ can be a visually arresting killer, as it is a hemorrhagic fever.²⁸ The voluminous diarrhea and vomiting of Ebola victims arrests the human gaze, and provokes fear.²⁹

Some of this fear is based on widespread misinformation about Ebola's transmission rate and method of transmission.³⁰ Almost all of this fear is steeped in ignorance about how viruses and infections mutate,³¹ and some of this fear is driven by actual information about infection and bacterial transmission in hospitals in the United States.³²

²¹ See Donald G. McNeil, Jr., *Using a Tactic Unseen in a Century, Countries Cordon Off Ebola-Racked Areas*, N.Y. TIMES (Aug. 12, 2014), http://www.nytimes.com/2014/08/13/science/using-a-tactic-unseen-in-a-century-countries-cordon-off-ebola-racked-areas.html?_r=0.

²² CDC, *CDC and Texas Health Department Confirm First Ebola Case Diagnosed in the U.S.*, CDC.GOV (Sep. 30, 2014), <http://www.cdc.gov/media/releases/2014/s930-ebola-confirmed-case.html> [<http://perma.cc/3CUY-JSLV>].

²³ Elizabeth Renzetti, *Remember the U.S. Ebola Crisis? The Only Epidemic was Fear-Mongering*, GLOBE AND MAIL (Feb. 27, 2015, 7:39 PM), <http://www.theglobeandmail.com/globe-debate/remember-north-americas-ebola-crisis-the-only-epidemic-was-fear-mongering/article23236339/> [<http://perma.cc/JQ2L-J8KV>]; see also Sabriya Rice, *First U.S. MERS Patient May be Released Soon, Health Officials Say*, MODERN HEALTHCARE (May 5, 2014), <http://www.modernhealthcare.com/article/20140505/NEWS/305059931> [<http://perma.cc/555S-M56S>].

²⁴ CDC, *Hospital Utilization (in non-Federal short-stay hospitals)*, CDC.GOV (Feb. 22, 2016), <http://www.cdc.gov/nchs/fastats/hospital.htm> [<http://perma.cc/7BMV-7CAZ>].

²⁵ Mike Bray & Daniel S. Chertow, *Epidemiology and Pathogenesis of Ebola Virus Disease* (Jan. 21, 2016), <http://www.uptodate.com/contents/epidemiology-and-pathogenesis-of-ebola-virus-disease> [<http://perma.cc/U5NQ-PJF9>] (noting that Ebola is suspected to have first arrived in the U.S. as long ago as the 1980's in a population of imported monkeys); see generally, Michiko Kakutani, *A Visit to the Biohazard Battleground*, N.Y. TIMES (Sept. 30, 1994), <http://www.nytimes.com/1994/09/30/books/books-of-the-times-a-visit-to-the-biohazard-battleground.html> (reviewing Richard Preston's 1994 novel *The Hot Zone*, including one section about a suspected Ebola outbreak from a group of lab monkeys that was reported to have taken an all-out effort by the U.S. Army Medical Research Institute of Infectious Diseases to halt).

²⁶ The fact that Ebola has arrived in wholesale numbers in West Africa was, at a distance, concerning but not as fully compelling as Ebola's arrival on our shores. Compare Madlen Davies, *Ebola in Sierra Leone is 'Spreading Nine Times Faster than Two Months ago', Campaigners Warn*, DAILY MAIL (Nov. 3, 2014, 6:49 PM), <http://www.dailymail.co.uk/health/article-2819090/Ebola-Sierra-Leone-spreading-nine-times-faster-two-months-ago-campaigners-warn.html> [<http://perma.cc/F6YZ-DZF6>] (describing the widespread incidence of Ebola in Sierra Leone) with Tara C. Smith, *America's Ebola Panic*, SLATE (Oct. 6, 2015 8:00 PM), http://www.slate.com/articles/health_and_science/medical_examiner/2015/10/ebola_panic_anniversary_predictions_of_a_u_s_epidemic_didn_t_come_true.html [<http://perma.cc/E3ST-BNVX>] (describing "Fearbola in the United States—the out-of-proportion panic at the possibility of Ebola cases in this country").

²⁷ Natalie Angier, *Ebola and the Vast Viral Universe*, N.Y. TIMES (Oct. 27, 2014), <http://www.nytimes.com/2014/10/28/science/ebola-and-the-vast-viral-universe.html>.

²⁸ CDC, *About Ebola Virus Disease*, CDC.GOV (Feb. 18, 2016), <http://www.cdc.gov/vhf/ebola/about.html> [<http://perma.cc/VR3V-FKUE>].

²⁹ Judy Stone, *Why Ebola is a Wake Up for Infection Control*, SCIENTIFIC AMERICAN (Oct. 23, 2014), <http://blogs.scientificamerican.com/molecules-to-medicine/why-ebola-is-a-wake-up-for-infection-control/> [<http://perma.cc/D5GM-7PJV>].

³⁰ See Tom Fontaine, et al., *CDC's Misinformation Spreads Faster than Ebola Virus*, TRIBLIVE (Oct. 25, 2014, 10:20 PM), <http://triblive.com/news/editorspicks/6997782-74/ebola-cdc-health#axzz3nA7mECm> [<http://perma.cc/4VHM-WLV4>].

³¹ See Erika Check Hayden, *The Ebola Questions*, 514 NATURE 554, 556 (2014).

³² See *Healthcare-Associated Infections*, supra note 12. This also includes fear of loosely reported outbreaks of mucormycosis (a flesh-eating fungal infection) as described in Ian Urbina & Sheri Fink, *A*

Current best estimates are that one in twenty-five patients experiences a hospital-acquired infection.³³ Those in the middle of the infectious disease knowledge continuum know enough not to fear airborne transmission, but do not know enough to fear hospital transmission. Both the most ignorant and the most knowledgeable among us are most fearful of what the large-scale arrival of Ebola in American healthcare settings³⁴ might lead to.³⁵

Remarkably, the general public appears to have become experts on infectious disease through media coverage. Many have acquired a basic understanding or misunderstanding of how infectious diseases are spread: isolating and treating patients, and tracing and monitoring their contacts.³⁶ Many are so afraid that they stigmatize healthcare workers who treat Ebola patients, or those who are employed at healthcare facilities that treat Ebola patients.³⁷ A national debate has begun—a genuine teachable moment—about whether epidemics are best controlled at the source or by internal quarantine.³⁸ Inevitably, this leads to comparisons of Ebola characteristics with those of other infectious diseases.³⁹ But, even there, people tend to focus on diseases where epidemic-control protocols have had some success, like tuberculosis, malaria, and HIV.⁴⁰

There is an irony to our obsession with diseases and conditions that have high visibility, despite having relatively low incidence. We focus on conditions less likely to kill Americans in large numbers than on healthcare-associated infections.⁴¹ For every front page article in the *Kansas City Star* that tracked America's feared Ebola

Deadly Fungus and Questions at a Hospital, N.Y. TIMES, (Apr. 28, 2014), <http://www.nytimes.com/2014/04/29/us/a-deadly-fungus-and-questions-at-a-hospital.html>.

³³ See *Healthcare-Associated Infections*, *supra* note 12.

³⁴ Denise Grady, *Ebola Is Diagnosed in Texas, First Case Found in the U.S.*, N.Y. TIMES (Sept. 30, 2014), <http://www.nytimes.com/2014/10/01/health/airline-passenger-with-ebola-is-under-treatment-in-dallas.html>.

³⁵ Compare Faith Karimi, *From Guinea to the U.S.: Timeline of First Ebola patient in New York City*, CNN (Oct. 25, 2014), <http://www.cnn.com/2014/10/24/health/new-york-ebola-timeline/> [<http://perma.cc/4XAM-MTF7>] (describing how the infection of two nurses who cared for Thomas Duncan in Dallas “rais[ed] concerns about the nation’s ability in Dallas to deal with an outbreak”) with Steven Ross Johnson, *Do the CDC’s Ebola Precautions for U.S. Hospitals Go Far Enough?*, MODERN HEALTHCARE (Aug. 21, 2014), <http://www.modernhealthcare.com/article/20140821/NEWS/308219947> [<http://perma.cc/8VZB-28DX>] (“What’s needed to fight Ebola is not fancy equipment,” [CDC Director Dr. Tom Frieden] said in a message posted during a Twitter chat. “What’s needed is standard infection control, rigorously applied.”).

³⁶ Hayden, *supra* note 31, at 557.

³⁷ Anemona Hartocollis & Nate Schweber, *Bellevue Employees Face Ebola at Work, and Stigma of It Everywhere*, N.Y. TIMES (Oct. 29, 2014), http://www.nytimes.com/2014/10/30/nyregion/bellevue-workers-worn-out-from-treating-ebola-patient-face-stigma-outside-hospital.html?_r=0.

³⁸ See Jeffrey M. Drazen et al., *Ebola and Quarantine*, 371 N. ENG. J. MED. 2029 (2014) (arguing against quarantining healthcare workers who treat and control Ebola).

³⁹ See *Ebola Characteristics and Comparisons to Other Infectious Diseases*, KAISER FAMILY FOUND. (2016), <http://kff.org/infographic/ebola-characteristics-and-comparisons-to-other-infectious-diseases> [<http://perma.cc/M5VY-R8PQ>].

⁴⁰ See Enrique Chaves, Clinical Professor, University of Kansas, Lecture at the University of Missouri-Kansas City: American Medicine and the Panama Canal: Miasmas, Mosquitoes, and Malaria (Dec. 4, 2014) (recording available at <http://livestream.com/lindahall/medicine>). Yellow Fever, also a hemorrhagic fever, might be a particularly powerful comparison—its very name in Spanish meaning “black vomit”—with its fifty percent mortality and lifetime immunity for survivors. *Id.* Some waves of Yellow Fever in Cuba are reported to have killed as much as one third of the population. *Id.* Like Ebola, also a disease of poverty, Yellow Fever was born in overcrowded housing and close living quarters with poor air circulation. *Id.*

⁴¹ Even between and among drug-resistant bacteria, we focus our attention on the anomalous transfer, rather than the routine. See Sabrina Tavernise, *Deadly CRE Germs Linked to Hard-to-Clean Medical Scopes*, N.Y. TIMES (Feb. 19, 2015), http://www.nytimes.com/2015/02/20/health/drug-resistant-germ-is-spreading-by-hospital-device-federal-officials-say.html?_r=0.

epidemic in 2014,⁴² this author could locate only one article discussing healthcare-associated infections in local facilities⁴³ or the dangers of wide-scale bacterial infections resistant to most known antibiotics overseas.⁴⁴ Deaths from superbugs, although on a vastly larger scale than deaths from Ebola, are distinctly less florid than Ebola, often quicker, and leave a residue hidden from the human gaze, accounting for much less public interest and scrutiny.

B. ANTIBIOTIC RESISTANCE AND MRSA

Antibiotic resistance has been described as everything from “the rise of bacteria impervious to the new ‘cure,’”⁴⁵ to *staphylococcus aureus* (“staph”) strains that are “essentially untreatable.”⁴⁶ Resistance to Methicillin-resistant *Staphylococcus aureus* (“MRSA”) specifically has been described as “the bacteria of the decade” for responding only to very advanced antibiotics that were never meant to be a first-line defense.⁴⁷ “Superbugs,”⁴⁸ drug-resistant bacteria,⁴⁹ the problem of “antimicrobial resistance,”⁵⁰ and the description of the modern world as living in a “post-antibiotic era”⁵¹ are descriptors that capture an aspect of the epidemic, but few place it in its historical context.

Infectious diseases were far from unknown in the early years of the American republic. As early as 1764, the town of Swansea, Massachusetts was petitioning the legislature for ninety pounds⁵² to offset “great suffrance in the smallpox.”⁵³ Smallpox flared again in 1778⁵⁴ producing a lively public debate about the wisdom of town sponsored smallpox inoculation.⁵⁵ New York City’s 1832 cholera outbreak offers a further example⁵⁶ of early public discourse on infectious disease transmission.

⁴² I counted inches of news space devoted to Kansas City, MO preparedness for Ebola in Sept.-Nov., 2014.

⁴³ See Dan Margolies, *Heartland Health Monitor: Truman Med Could Get Hit With Penalty Over Infection Rates*, KCUR (June 23, 2014), <http://kcur.org/post/truman-med-could-get-hit-penalty-over-infection-rates#stream/0> [<http://perma.cc/3VYB-2V77>].

⁴⁴ See Gardiner Harris, ‘Superbugs’ Kill India’s Babies and Pose an Overseas Threat, N.Y. TIMES (Dec. 3, 2014), http://www.nytimes.com/2014/12/04/world/asia/superbugs-kill-indias-babies-and-pose-an-overseas-threat.html?_r=0.

⁴⁵ Katherine Xue, *Superbug: An Epidemic Begins*, HARV. MAG., May-June 2014 40, 40.

⁴⁶ MARYN MCKENNA, *SUPERBUG: THE FATAL MENACE OF MRSA 181* (Free Press, 1st. ed. 2010).

⁴⁷ Brian Fung, *MRSA On the Rise: Infections Have Doubled in 5 Years*, ATLANTIC (July 30, 2012), <http://www.theatlantic.com/health/archive/2012/07/mrsa-on-the-rise-infections-have-doubled-in-5-years/260495/> [<http://perma.cc/54UP-46M5>].

⁴⁸ *The Search for New Antibiotics*, WBUR (Feb. 17, 2014), <http://hereandnow.wbur.org/2014/02/17/search-new-antibiotics> [<http://perma.cc/R5WV-2UXC>].

⁴⁹ Shelley S. Magill et al., *Multistate Point-Prevalence Survey of Healthcare-Associated Infections*, 370 NEW ENGL. J. MED. 1198, 1199 (2014).

⁵⁰ INST. OF MED., *ANTIMICROBIAL RESISTANCE: ISSUES AND OPTIONS*, WORKSHOP REPORT (Polly F. Harrison & Joshua Lederberg eds., 1998).

⁵¹ Xue, *supra* note 45, at 47.

⁵² A considerable sum in those days, roughly equivalent in purchasing power to 37,000 pounds or 60,000 dollars in 2014. See MEASURINGWORTH.COM, <http://www.measuringworth.com/ukcompare/relativevalue.php> (last visited Mar. 22, 2016) (providing a tool to find relative values).

⁵³ HISTORY OF SWANSEA, MASSACHUSETTS, 1667-1917 (Otis Olney Wright ed., 1917), http://archive.org/stream/historyofswansea00wrig/historyofswansea00wrig_djvu.txt.

⁵⁴ MARY ANN McDONALD, *SOMERSET, MASSACHUSETTS: PORTRAIT OF THE AMERICAN EXPERIENCE IN A NEW ENGLAND TOWN 79* (Spectator Publishing Corp., 1981).

⁵⁵ *Id.*

⁵⁶ Sonia Shah, *How Unhealthy Paradigms Become Contagious*, TEDMED (2014), <http://www.tedmed.com/talks/show?id=292928>.

The coming of antibiotics transformed bacterial infections from a scourge to a largely-manageable and successfully-managed problem.⁵⁷ But antimicrobial resistance has been developing since the very invention of antibiotics.⁵⁸ Penicillin was discovered in 1928.⁵⁹ By 1945, the *New York Times* quoted Alexander Fleming predicting the development of drug-resistant bacterial strains.⁶⁰ “Penicillin-resistant strains of *S. aureus* began appearing in hospitals just years after the drug was introduced.”⁶¹ Multiple drug resistance developed later, but was observed in Japan as early as the 1950s.⁶² Since then, the race has not been to squelch bacterial infections altogether but to remain one antibiotic ahead of the ever-morphing foe.

And, for decades now, we have been one antibiotic ahead of staph infections.⁶³

MRSA is a form of staph infection that does not respond to first-line antibiotics, meaning it is antibiotic resistant.⁶⁴ Some people carry staph on their skin without any danger, but these people are carriers of sorts, a status known as “being colonized.”⁶⁵ The CDC estimates that one percent of the American population is colonized with MRSA.⁶⁶

MRSA is spread by skin-to-skin contact, and its danger is activated once it enters the colonized individual’s skin or someone else’s skin.⁶⁷ Although we understand how MRSA can be transmitted between individuals in society, “[o]ne of the major knowledge gap[s] of infection control is the degree to which the inanimate environment . . . actually drives the hospital infection process.”⁶⁸ MRSA is able to live on the surface of hospital equipment for as long as nine months.⁶⁹ This means infection preventionists ought to be just as interested in how MRSA lives in a hospital as they are in how it enters the hospital. It also means that America’s healthcare facilities may have an incomplete disinfection problem. Experiments with the use of ultra violet light and the use of hydrogen peroxide fogging agents have been able to reduce MRSA rates considerably⁷⁰ but both approaches take careful effort and, most importantly, substantial time.

⁵⁷ Xue, *supra* note 45, at 40 (explaining the role of the “antibiotic revolution” in “trivializing” once-deadly infections and paving the way for medical breakthroughs”).

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ Gabrielle Canon, *Antibiotics Are Spreading Like Crazy—and a Lot of Them Are About to Stop Working*, MOTHER JONES (Sept. 19, 2015, 6:00 AM), <http://www.motherjones.com/blue-marble/2015/09/antibiotic-resistance-report> [<http://perma.cc/LVG8-UFVP>].

⁶¹ Xue, *supra* note 45, at 40.

⁶² *Id.* at 41.

⁶³ *See id.* at 44.

⁶⁴ *MRSA Health Guide*, N.Y. TIMES (May 12, 2014), <http://www.nytimes.com/health/guides/disease/mrsa-infection/overview.html>.

⁶⁵ *Id.*

⁶⁶ *See* CDC, *MRSA and the Workplace*, CDC.GOV, <http://www.cdc.gov/niosh/topics/mrsa/> [<http://perma.cc/HFQ9-BQCC>] (“While 33% of the population is colonized with staph (meaning that bacteria are present, but not causing an infection with staph), approximately 1% is colonized with MRSA.”).

⁶⁷ *See* CDC, *Methicillin-Resistant Staphylococcus aureus (MRSA) Infections*, CDC.GOV (2015), <http://www.cdc.gov/mrsa/community/#q4> [<http://perma.cc/AM35-HJMC>].

⁶⁸ Linda Poon, *Stethoscopes Do As Much Dirty Work As Hands In Spreading Germs*, NPR (Feb. 27, 2014, 1:05 PM), <http://www.npr.org/sections/health-shots/2014/02/27/283439909/stethoscopes-do-as-much-dirty-work-as-hands-in-spreading-germs>.

⁶⁹ *How a Robot is Helping Reduce Hospital-Borne Infections*, ROBERT WOOD JOHNSON FOUND. (Feb. 24 2014, 4:15 PM), http://www.rwjf.org/en/blogs/new-public-health/2014/02/how_r2d2_is_helping.html [<http://perma.cc/6BCH-HZ3S>].

⁷⁰ *See* *Narrow-Spectrum UV Light May Reduce Surgical Infections*, COLUM. UNIV. MED. CTR. (Oct. 16, 2013), <http://newsroom.cumc.columbia.edu/blog/2013/10/16/narrow-spectrum-uv-light-may-reduce-surgical-infections/> [<http://perma.cc/P2JB-4KME>]; *Hydrogen Peroxide Vapor Enhances Hospital Disinfection*, INFECTION CONTROL TODAY (Jan. 1, 2013), <http://www.infectioncontrolday.com/>

Once the staph enters the body, it can find a home in bone, blood, joint, or organ.⁷¹ Staph in each of these locations is a very different matter from staph present on the skin. Those with compromised immune systems are far more likely to have staph present on the skin turn into one of these diseases.⁷² MRSA is a story of staph amplified from a benign skin condition to a deadly internal infection.⁷³

By 2002, a strain of MRSA had been identified as resistant to Vancomycin.⁷⁴ By June 2007, the Committee to Reduce Infection Deaths (“RID”) declared MRSA as endemic.⁷⁵ Although acknowledging MRSA screening as the key to MRSA control, universal screening for MRSA was delayed.⁷⁶ In retrospect, it is estimated that in the 1970s, two million Americans acquired nosocomial⁷⁷ infections and an estimated 100,000 deaths annually could be attributed to these hospital causes.⁷⁸

Between 2008 and 2014 the CDC reported “progress” on healthcare-associated infection rates,⁷⁹ though the annual cost hovered at \$9.8 billion per year.⁸⁰ Further, healthcare-associated infections were linked to higher hospital re-admission rates⁸¹ which themselves were linked to higher mortality rates,⁸² raising the question of whether hospital-acquired infections were the cause or the symptom of increased mortality.

The difference between then and now is that it is no longer clear that we are—or can—stay ahead. The multi-drug resistant infections endemic has been a long time coming.⁸³ But we have entered an era that might be described as one marked by “the end of antibiotics.”⁸⁴ “In recent years, the rise of drug-resistant microbes has made the antibiotics we use less effective and has increased the risk that an infectious disease could get out of control.”⁸⁵

Much of the healthcare discussion of antibiotic resistance has been pharmaceutical lab focused, and, as a result, centered on understanding industrial and social forces that

news/2013/01/hydrogen-peroxide-vapor-enhances-hospital-disinfection.aspx [http://perma.cc/AT7X-G7QJ].
⁷¹ U.S. NAT’L LIBR. OF MED., *MRSA* (May 1, 2015),
<http://www.nlm.nih.gov/medlineplus/ency/article/007261.htm> [http://perma.cc/U4VU-FUMJ]. MRSA can morph into different complications as the location and disease profile migrate. See *Osteomyelitis*, MAYO CLINIC (Sept. 25, 2015), <http://www.mayoclinic.org/diseases-conditions/osteomyelitis/basics/causes/con-20025518> [http://perma.cc/CM86-XMUC].

⁷² U.S. NAT’L LIBR. OF MED., *MRSA*, *supra* note 71.

⁷³ *MRSA Health Guide*, *supra* note 64.

⁷⁴ Xue, *supra*, note 45, at 47.

⁷⁵ Betsy McCaughney, *Unnecessary Deaths: The Human and Financial Costs of Hospital Infections 1*, COMM. TO REDUCE INFECTION DEATHS (2008), <http://hospitalinfection.org/ridbooklet.pdf> [http://perma.cc/VN79-YKYW].

⁷⁶ *Id.* at 9-10.

⁷⁷ Magill, *supra* note 49, at 1204.

⁷⁸ CDC, *Preventing Healthcare-Associated Infections*, CDC.GOV, <http://www.cdc.gov/washington/~cdcatWork/pdf/infections.pdf> [http://perma.cc/2FKU-MJT6] (“Approximately 1.7 million HAIs occur in U.S. hospitals each year, resulting in 99,000 deaths.”).

⁷⁹ See, e.g., CDC, *Progress Being Made in Infection Control in U.S. Hospitals; Continued Improvements Needed*, CDC.GOV (Jan. 14, 2015), <http://www.cdc.gov/media/releases/2015/p0114-mrsa-hospitals-report.html> [http://perma.cc/AKL2-W5DK].

⁸⁰ *Study: Hospital Infections Cost 9.8 Billion a Year*, CBS NEWS (Sept. 2, 2013, 5:19 PM), <http://www.cbsnews.com/news/study-hospital-infections-cost-98-billion-a-year/> [http://perma.cc/LZ7L-6XEP].

⁸¹ See Magill, *supra* note 49 (discussing a survey estimating the total number of hospital acquired infections in U.S. acute care hospitals in 2011).

⁸² *Id.* at 1202.

⁸³ See Xue, *supra* note 45, at 40 (“If the end is here, it has been a relatively long time coming.”).

⁸⁴ *Id.*

⁸⁵ James Surowiecki, *Ebolanomics*, NEW YORKER (Aug. 25, 2014), <http://www.newyorker.com/magazine/2014/08/25/ebolanomics> [http://perma.cc/YX5G-Q8PA].

have drawn large pharmaceutical companies away from antibiotic discovery.⁸⁶ “Even so, treatments for some pathogens remain worryingly sparse, and the continually evolving nature of bacteria means that constant cycles of drug discovery will be necessary for the foreseeable future if medical care is to remain ahead of antibiotic resistance.”⁸⁷

The focus on an as-needed fix has necessarily precluded a “fix it first” approach targeting the sources and transmittal of bacterial infections themselves. And, the recent spread of new generation antibiotics to widespread use in the food supply compounded the pressure to develop ever more new antibiotics suitable for deployment against multi-drug resistant infections in humans.⁸⁸ Resistance to antibiotics has historically developed within three years of a product’s introduction.⁸⁹ This means our human fixes must be developed at an exponentially faster pace, in an attempt to outstrip the abbreviated lifespan of each successive antibiotic fix.⁹⁰

The biggest problem with this model of antibiotic development is that it is contrary to the financial incentives built into our drug development system. Our drug development system’s financial incentives are focused on promoting drugs that will be taken for long periods of time and by large numbers of people,⁹¹ rather than those to be taken for time-limited periods by relatively small numbers of individuals. However, those few individuals may represent the point of disease entry into the larger group. From a communicable disease perspective, this is similar to the interest we all have in seeing the relatively few Americans among us with tuberculosis receive the treatment they need, precisely so that tuberculosis case numbers remains relatively low.⁹²

The new antibiotic development system design is focused on the clinical encounter when the risk to anyone can only be best understood by a public or group health analysis. Even more troubling, the relevant group for the group health analysis may extend far beyond American borders.⁹³

C. THE EPIDEMIC OF HEALTHCARE-RELATED INFECTIONS

As a nation, Americans are aware of the transmission of viruses and infections. Although the country has not reached a consensus on the role of government compared

⁸⁶ *Id.* (“If a drug company did invent a powerful new antibiotic, we wouldn’t want it to be widely prescribed, because the goal would be to delay resistance.”).

⁸⁷ Xue, *supra* note 45, at 44.

⁸⁸ See Ezekiel J. Emanuel, *How to Develop New Antibiotics*, N.Y. TIMES (Feb. 24, 2015), <http://www.nytimes.com/2015/02/24/opinion/how-to-develop-new-antibiotics.html>.

⁸⁹ Xue, *supra* note 45, at 44.

⁹⁰ *Id.* (explaining that vancomycin, the last-line drug against MRSA, has “enjoyed a relatively lengthy life” because it had a more limited use when first manufactured than penicillin and other related antibiotics).

⁹¹ Surowiecki, *supra* note 85.

⁹² See American Thoracic Society, CDC, *Treatment of Tuberculosis*, MMRW RECOMMENDATIONS AND REPORTS (June 20, 2003), <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5211a1.htm> [<http://perma.cc/L7WG-5HT6>].

⁹³ See Margaret A. Hamburg et al., *Germs Go Global: Why Emerging Infectious Diseases are a Threat to America* 9, TRUST FOR AMERICA’S HEALTH & ROBERT WOOD JOHNSON FOUND. (2008), <http://healthyamericans.org/assets/files/GermsGoGlobal.pdf> [<http://perma.cc/T5TE-7GGC>]; see also Jeffrey Levi et al., *Outbreaks: Protecting Americans from Infectious Diseases*, TRUST FOR AMERICA’S HEALTH & ROBERT WOOD JOHNSON FOUND. (2014), <http://healthyamericans.org/assets/files/Final%20Outbreaks%202014%20Report.pdf> [<http://perma.cc/X29N-VDLP>] (exploring what the Ebola outbreak outside of the U.S. reveals about the adequacy of U.S. infectious disease controls).

to the role of free markets in promoting something as basic as better hand hygiene among food handlers, for instance,⁹⁴ there is an ongoing debate.

An entire industry built around Purell® and alcohol-based cleaners⁹⁵ has grown up to assuage our fears of acquiring communicable diseases and viruses in public spaces.⁹⁶ All of this occurs in the face of the fact that it is widely publicized that the problem may be with our sterilization and cleaning protocols, when “clean enough” stops being just that.⁹⁷ As Lawrence Gostin has noted, “[y]ou can’t put a cellophane wrapper around a whole region and expect to keep germs out.”⁹⁸ Indeed, even where the risk is not substantial, we obsess over what are popularly known as “germs”⁹⁹ or, less commonly, microbes.

Recent outbreaks of Carbapenem-resistant Enterobacteriacease (“CRE”) in California attracted public attention, however briefly, about the potential for contamination of medical equipment.¹⁰⁰ But even there, the focus was on “inadequately sterilized medical scopes”¹⁰¹ and on the surely anomalous nature of the outbreak. Eventually, the Food and Drug Administration (“FDA”) asked device makers about the risk of drug-resistant bacteria outliving device maker-approved cleaning methods.¹⁰² The agency thus acknowledged that duodenoscopes have been implicated in outbreaks at hospitals in Park Ridge, Illinois and Seattle long before the attention-rousing outbreak at Ronald Reagan U.C.L.A. Medical Center.¹⁰³ Indeed, CRE outbreaks associated with hard-to-clean duodenoscopes continue to be reported, even more recently at Cedars-Sinai Medical Center in Los Angeles.¹⁰⁴ But the device makers’ responses were not so widely reported, nor was the FDA’s recent requirement that some duodenoscope manufacturers conduct post-market research on how the

⁹⁴ See Humberto Sanchez, *Thom Tillis: Keep Government Out of the Bathroom*, ROLL CALL (Feb. 3, 2015, 12:37 PM), <http://blogs.rollcall.com/wgdb/thom-tillis-keep-government-out-of-the-bathroom> [<http://perma.cc/2YLM-RJUB>].

⁹⁵ C. Claiborne Ray, *Hand-Wringing Over Bacteria*, N.Y. TIMES (Mar. 9, 2015), <http://www.nytimes.com/2015/03/10/science/10qna.html> (explaining that “even the recommended kinds of sanitizers do not eliminate all germs” and that “[h]and sanitizers that are not based on alcohol . . . are both less effective and slower to act than alcohol . . . present[ing] a risk of producing bacterial resistance”).

⁹⁶ See David Owen, *Floating Feasts*, NEW YORKER (Nov. 3, 2014), <http://www.newyorker.com/magazine/2014/11/03/floating-feasts> [<http://perma.cc/5ZZB-WA4P>] (“Most alcohol-based hand cleansers are only minimally effective against norovirus, but a few years ago the company that makes Purell introduced an extra-powerful version, called VF481, especially for cruise ships, casinos, hospitals, and other high-risk environments.”).

⁹⁷ See Steven Ross Johnson, *UCLA: Endoscope Manufacturers’ Reprocessing Protocols Won’t Stop Superbug Infections*, MODERN HEALTHCARE (Feb. 19, 2015), <http://www.modernhealthcare.com/article/20150219/NEWS/150219878> [<http://perma.cc/9J44-7VD3>].

⁹⁸ *Infected Workers, Slow Deployment, No Vaccines: Ebola Response Shows Pitfalls of Privatized Health* (Democracy Now broadcast Oct. 15, 2014) (transcript available at http://www.democracynow.org/2014/10/15/infected_workers_slow_deployment_no_vaccines [<http://perma.cc/ZQY6-667X>]).

⁹⁹ Nicholas Bakalar, *Go Ahead, Use the Restroom*, N.Y. TIMES (Dec. 4, 2014, 9:33 AM), <http://well.blogs.nytimes.com/2014/12/04/go-ahead-use-the-restroom> (containing reader comments perseverating on the presence of vaginal organisms on women’s toilet seats and not the presence of skin-associated *Staphylococcus aureus*, a common cause of skin infections).

¹⁰⁰ See, e.g., Anahad O’Connor, *California: More Drug-Resistant Cases are Linked to Medical Devices*, N.Y. TIMES (Mar. 4, 2015), <http://www.nytimes.com/2015/03/05/us/california-more-drug-resistant-cases-are-linked-to-medical-device.html>.

¹⁰¹ N.Y. Times Editorial Board, *When Medical Devices Spread Superbugs*, N.Y. TIMES (Feb. 23, 2015), <http://www.nytimes.com/2015/02/23/opinion/when-medical-devices-spread-superbugs.html>.

¹⁰² Catherine Saint Louis, *After Deadly Infections, F.D.A. Asks Device Makers About Cleaning Methods*, N.Y. TIMES (Feb. 25, 2015), <http://www.nytimes.com/2015/02/26/us/after-deadly-infections-fda-asks-device-makers-about-cleaning-methods.html>.

¹⁰³ *Id.*

¹⁰⁴ O’Connor, *supra* note 100.

duodenoscope disinfection process actually works in medical settings as opposed to in the lab.¹⁰⁵

Perhaps the longer denouement of the story exceeds the attention span of the news cycle. It may also reflect an accurate assessment of actual risk. It is worth noting, though, that the underlying discussion of antibiotic resistance also fades with the fade of the focus on the outbreak.¹⁰⁶ We are crisis-driven in our outlook and short-sighted in our calculation of risk.

Inevitably, the question arises about how widespread the problem of health-care-associated infections is. Just as predictably, the consensus answer is that “we do not know with any certainty.”¹⁰⁷ Moreover, we do not know whether our latest movement toward mandated reporting of things like CRE cases to the CDC is the answer,¹⁰⁸ or whether assigning “superbug” reporting decisions and regimens to the discretion of the states raises or reduces incidence or transmission.¹⁰⁹

We are also not entirely clear on the causes of the epidemic.¹¹⁰ As an epidemic without borders, healthcare-associated infections are hard to define, track, and eliminate.¹¹¹ In short, as Bernard Black and David Hyman have made clear, not all change is progress.¹¹²

Ebola epidemics may best be characterized as epidemics driven by poverty.¹¹³ Our healthcare-associated infections epidemic might best be understood as an epidemic driven by wealth.¹¹⁴ Ebola originated in the bush and, most probably, it leapt from fruit bats—who are lifelong hosts of Ebola as a chronic disease—to humans and primates—who serve as relatively short-lived, and therefore inefficient, hosts.¹¹⁵ Ebola epidemics

¹⁰⁵ Steven Ross Johnson, *Duodenoscope Makers Ordered to Study Device-Cleaning Processes*, MODERN HEALTHCARE (Oct. 5, 2015), <http://www.modernhealthcare.com/article/20151005/news/151009969> [<http://perma.cc/8J8B-9C9Q>].

¹⁰⁶ See Jon Hamilton, *Why California’s Superbug Outbreak Isn’t As Scary As It Seems*, NPR (Feb. 20, 2015, 5:49 PM), <http://www.npr.org/sections/health-shots/2015/02/19/387552431/heres-why-californias-superbug-outbreak-isnt-as-scary-as-it-seems> [<http://perma.cc/ACD4-3SPX>].

¹⁰⁷ But see R. Monina Klevens et al., *Estimating Healthcare-Associated Infections and Deaths in U.S. Hospitals, 2002*, 122 PUB. HEALTH REPS. 160 (2007), http://www.cdc.gov/HAI/pdfs/hai/infections_deaths.pdf [<http://perma.cc/H248-DUJS>].

¹⁰⁸ *Calls for Superbug Reporting Rules Increase Amid Outbreaks*, CAL. HEALTHLINE (Mar. 9, 2015), <http://www.californiahealthline.org/articles/2015/3/9/calls-for-superbug-reporting--rules-increase-amid-outbreaks> [<http://perma.cc/3HKW-2SFN>].

¹⁰⁹ *Id.* (explaining that the CDC maintains that “[u]ltimately, the decision should be based on what makes sense for prevention in a particular state” without explaining why such a diffuse approach makes sense with infections that do not respect state borders).

¹¹⁰ Indeed, we do not know if healthcare-associated infections are the problem or one manifestation of a larger problem with skin infections in general. See Roni Caryn Rabin, *Single Dose of Antibiotic Found Effective in Quelling MRSA*, N.Y. TIMES (June 4, 2014), <http://www.nytimes.com/2014/06/05/health/single-dose-of-antibiotic-found-effective-in-quelling-mrsa.html> (noting that rates of skin infection are on the rise, with an estimated fifteen million cases per year in the United States).

¹¹¹ In fact, it can fairly be said that there is no genuine consensus on the number of Americans who die each year from antibiotic-resistant infections, with the CDC itself conceding that some of its numbers are based on what might be called cautious counting, including only deaths definitively considered to be attributable to these infections. See *CDC Studies Assess Effects of Antibiotic Resistant Infections, MRSA*, CAL. HEALTHLINE DAILY EDITION (Sept. 17, 2013), <http://californiahealthline.org/morning-breakout/cdc-studies-assess-effects-of-antibiotic-resistant-infections-mrsa> [<http://perma.cc/SUD4-KXSU>].

¹¹² Bernard S. Black & David A. Hyman, *Public Reporting of Hospital Infection Rates: Not All Change is Progress* (forthcoming).

¹¹³ David Orentlicher, *Ebola: A Problem of Poverty Rather Than Health*, PRAWFS BLAWG (Oct. 28, 2014, 10:09 AM), <http://prawnsblawg.blogspot.com/prawnsblawg/2014/10/ebola-a-problem-of-poverty-rather-than-health.html> [<http://perma.cc/H8MN-PGTU>].

¹¹⁴ WORLD HEALTH ORG., *ANTIMICROBIAL RESISTANCE: GLOBAL REPORT ON SURVEILLANCE* (2014), http://apps.who.int/iris/bitstream/10665/112642/1/9789241564748_eng.pdf [<http://perma.cc/ZJE3-XHXF>].

¹¹⁵ See CDC, *About Ebola Virus*, *supra* note 28.

are thus products of war and poverty because increasing numbers of West Africans are driven to live in closer proximity to bush meat.¹¹⁶

Americans, by contrast, are increasingly estranged from our food supply, living further, physically and mentally, from the sources of our meat.¹¹⁷ Americans are astonished to learn that our meat sources receive massive doses of antibiotics to promote growth as well as health.¹¹⁸ And it is in the matrix created by those antibiotics that the drug-resistant superbugs of hospital-acquired infections evolve.¹¹⁹ From this perspective, the Ebola story and the story surrounding healthcare-associated infections are both stories about modernity and its effect on food supply.¹²⁰

Acknowledging the guide post of “*primum non nocere*” (“first, do no harm”)¹²¹ clarifies the problem of defining harm, the chances of inflicting harm, and the duty we impose on someone to minimize the risk of that harm.¹²² Balancing risk of transmission with severity of the effect of transmission¹²³ is particularly complex in the case of healthcare-associated infections because few data are collected on either dimension of the risk analysis.¹²⁴

Americans are not even certain of the size of our healthcare-associated infection epidemic. An estimated 75,000 people died from what were described as hospital-acquired infections in 2011.¹²⁵ In that year, an estimated 722,000 hospital infections

¹¹⁶ See Kathleen A. Alexander et al., *What Factors Might Have Led to the Emergence of Ebola in West Africa?*, 9 PLOS NEGLECTED TROPICAL DISEASES 1, 11-12 (2015).

¹¹⁷ See USDA, 2012 CENSUS OF AGRICULTURE, PRELIMINARY REPORT HIGHLIGHTS, US FARMS & FARMERS 1 (2014), http://www.agcensus.usda.gov/Publications/2012/Preliminary_Report/Highlights.pdf [<http://perma.cc/N8PD-9V6J>] (“In 2012, the United States had 2.1 million farms – down 4.3 percent from the last agricultural Census in 2007. This continues a long-term trend of fewer farms.”)

¹¹⁸ Sabrina Tavernise, *Antibiotic-Resistant Infections Lead to 23,000 Deaths a Year, C.D.C. Finds*, N.Y. TIMES (Sept. 16, 2013), http://www.nytimes.com/2013/09/17/health/cdc-report-finds-23000-deaths-a-year-from-antibiotic-resistant-infections.html?_r=0. The government has estimated that more than 70 percent of antibiotics in the United States are given to animals. *Id.* Companies use them to prevent sickness when animals are packed together in ways that breed infection. *Id.* They also use them to make animals grow faster, though federal authorities are trying to stop that. *Id.* According to one CDC report, “much of antibiotic use in animals is unnecessary and inappropriate and makes everyone less safe.” *Id.*

¹¹⁹ *Id.*

¹²⁰ California’s recent decision to move forward with legislation addressing the management of antibiotic use in animals may be the harbinger of change in this regard. See Rudolf H. Beese & Phillip Bradley, *Limiting Antibiotic Use in Animals, How States are Taking Charge*, LEXOLOGY (Oct. 22, 2015), <http://www.lexology.com/library/detail.aspx?g=744600e7-b956-4934-95bf-7ba3925bd7fa> [<http://perma.cc/3SN2-YVA4>].

¹²¹ See Cedric M. Smith, *Origin and Uses of Primum Non Nocere—Above All, Do No Harm!*, 45 J. CLINICAL PHARMACOLOGY 371, 371 (2005). Also known as the “Hippocratic injunction to do no harm,” *primum non nocere* is an important phrase in clinical pharmacology and medical education. *Id.* Although its actual author is disputed, this phrase “remains a potent reminder that every medical and pharmacological decision carries the potential for harm.” *Id.*

¹²² Kate Murphy, *The Ethics of Infection*, N.Y. TIMES (Nov. 8, 2014), http://www.nytimes.com/2014/11/09/sunday-review/the-ethics-of-infection.html?_r=0 (exploring the question of whether and to what extent citizens have an “ethical obligation” to prevent the spread of infection and sickness).

¹²³ See, e.g., Tijis J. Tobias, et al., *Association Between Transmission Rate and Disease Severity for Actinobacillus Pleuropneumoniae Infection in Pigs*, 44 VETERINARY RES. (2013) (studying the connection between rate of transmission and severity of disease due to *A. pleuropneumoniae* exposure in pigs, causing respiratory illness).

¹²⁴ See Letter from Lisa McGiffert et al., Consumers Union, to Don Wright, Deputy Assist. Sec’y for Healthcare Quality, HHS (Mar. 27, 2014), <http://safepatientproject.org/wordpress/wp-content/uploads/2014/03/CU-comments-HHS-HAI-action-plan-update-3-27-14.pdf> [<http://perma.cc/6YL9-6RLR>] (speaking of the inability of current aggregated HHS data to adequately convey transmission risk at individual hospitals).

¹²⁵ *Healthcare-Associated Infections*, *supra* note 12.

occurred.¹²⁶ The CDC estimates that, each year, more than two million Americans developed antibiotic-resistant infections while hospitalized, resulting in 23,000 deaths.¹²⁷ Hospital-based estimates suggest that trends are improving, and that the curve is being bent.¹²⁸ Medicare data on Hospital Acquired Conditions (“HACs”)—including hospital-acquired infections—show an overall reduction in HACs between 2010 and 2012.¹²⁹

But this data on HACs are of limited usefulness. They are entirely based on self-reports that are typically derived from patient chart documentation,¹³⁰ rather than from epidemiological studies.¹³¹ In the context of hospital-acquired catheter-associated urinary tract infection (“UTI”) rates, self-reported data were shown to represent only a small fraction of the epidemiologically-defined true rate.¹³² This indicates that parties cannot entirely agree on the scope of our problem.¹³³

Polling data indicate that eighteen percent of Americans have personally experienced a hospital-acquired infection or have a close family member who has experienced one.¹³⁴ Yet, current media coverage is on the trend of improvement in infection control¹³⁵ rather than on the absolute cost of HACs in human life, human suffering, and healthcare dollars.¹³⁶ And, though we are apparently relieved that the trend—on reported health-care-associated infections, at least—is favorable, we are content not to ask too many questions concerning root cause analyses.¹³⁷

¹²⁶ *Id.*

¹²⁷ CDC, ANTIBIOTIC RESISTANCE THREATS IN THE UNITED STATES (2013), <http://www.cdc.gov/drugresistance/pdf/ar-threats-2013-508.pdf> [<http://perma.cc/P682-S9JL>].

¹²⁸ See Robert Lowes, *Hospital-Acquired Conditions and Readmits on Downswing*, MEDSCAPE (May 7, 2014), <http://www.medscape.com/viewarticle/824782> [<http://perma.cc/77DH-YWCK>] (finding a 9% reduction in HACS, saving almost 15,000 lives).

¹²⁹ *Id.*

¹³⁰ *Healthcare-Associated Infections*, MEDICARE.gov, <http://www.medicare.gov/hospitalcompare/Data/Healthcare-Associated-Infections.html> [<http://perma.cc/XU3S-WQXT>] (explaining self-reporting mechanism and its flaws).

¹³¹ *Id.*

¹³² See, Sanjay Saint et al., *Catheter-Associated Urinary Tract Infection and the Medicare Rule Changes*, 150 ANNALS OF INTERNAL MED. 877, 882 (2009) (explaining the lack of incentive to accurately report catheter-associated urinary tract infections, providing an incomplete record for potential epidemiological studies).

¹³³ See Tavernise, *supra* note 118 (explaining that the wide discrepancy between a 2007 CDC report estimating that 100,000 people die of hospital-acquired infections per year and a 2014 CDC report finding that the number is only 23,000 people per year is due to the CDC’s subsequent exclusion of “cases in which a drug-resistant infection was present but not necessarily the cause of death”).

¹³⁴ CONSUMER REPORTS NATIONAL RESEARCH CENTER, PATIENT EXPERIENCE 3 (Mar. 2009), <http://consumersunion.org/pdf/medical-error-poll-309.pdf> [<http://perma.cc/SU3M-D7RB>].

¹³⁵ See CDC, *Progress Being Made in Infection Control in U.S. Hospitals; Continued Improvements Needed*, CDC.GOV (Jan. 14, 2015), <http://www.cdc.gov/media/releases/2015/p0114-mrsa-hospitals-report.html> [<http://perma.cc/6DZN-9RUM>] (edited Feb. 24, 2015).

¹³⁶ See Robert Preidt, *Hospital-Acquired Infection Rates Declining*, CBSNEWS (Jan. 14, 2015, 5:07 PM), <http://www.cbsnews.com/news/hospital-acquired-infection-rates-declining/> [<http://perma.cc/JL6C-DALP>] (calling for “continued efforts to improve infection control in U.S. hospitals”); see also Alice Park, *Here’s What U.S. Health Experts Learned from Ebola One Year Later*, TIME (Sept. 24, 2015) <http://time.com/4047029/ebola-lessons-one-year-later/> [<http://perma.cc/84UY-JERD>] (arguing that we can’t wait for an emergency to put money into preventative measures).

¹³⁷ In this, we have something in common with those West African cultures that will not or cannot change burial rituals involving prolonged close contact with dead bodies. See Abby Haglage, *Kissing the Corpses in Ebola Country*, DAILY BEAST (Aug. 13, 2014, 5:55 AM), <http://www.thedailybeast.com/articles/2014/08/13/kissing-the-corpses-in-ebola-country.html> [<http://perma.cc/8BRM-QNRR>]. The report indicating that seventy percent of new cases of Ebola in Sierra Leone are directly linked to such traditional burials, is met with the same sense of fatalism we greet the news of our own hospital acquired infections pandemic. See Jeffrey Gettleman, *Despite Aid Push, Ebola Is Raging*

D. EBOLA HAS SHINED A LIGHT ON PREVIOUSLY-DARK CORNERS

People have limited attention spans, and Americans are famously in a hurry.¹³⁸ “Speed makes savings” is more our mantra than “haste makes waste.”¹³⁹ The fear of the spread of Ebola has highlighted how infection prevention and control measures are under-resourced in America’s acute care facilities.¹⁴⁰ The identified solution appears to focus on identifying those facilities prepared to meet the highest standards of infection prevention and control, rather than a focus on the failure to have infection prevention and control measures in place in all healthcare settings.¹⁴¹ Infection preventionists, eager to not waste a good crisis, are promoting infection prevention products as Ebola protectants, rather than as protectants against more common kinds of healthcare-associated infections.¹⁴² It is this sole focus on Ebola that allows us to remain estranged from the reality of our own present epidemic.

For example, Ebola’s presence, however limited, in American acute care facilities has brought to light the limitations of current infection control procedures in American hospitals. Texas Health Presbyterian Hospitals’ failure to identify and implement one consistent practice for disposing of medical waste in the face of conflicting agency guidance¹⁴³ raised important and yet unanswered questions about these practices vis-à-vis other healthcare-associated infections.¹⁴⁴

Yet little has been done to extend lessons learned from Ebola transmission to non-Ebola infection disease control. In this aspect, Americans have more in common with Western Africa than previously thought. In Western Africa, a focus on a single disease often disrupts health systems.¹⁴⁵ In America, however, a focus on one disease causes us to focus on specialty care for that disease alone, without placing that disease’s spread in the larger context of infection-control failures in American acute care facilities.¹⁴⁶ Thus, paradoxically, an isolated focus on Ebola might foster an increase

in *Sierra Leone*, N.Y. TIMES (Nov. 27, 2014), <http://www.nytimes.com/2014/11/28/world/africa/despite-aid-push-ebola-is-raging-in-sierra-leone.html>.

¹³⁸ See 2 ALEXIS DE TOCQUEVILLE, *DEMOCRACY IN AMERICA* 887-96, (Henry Reed Trans., Floating Press 2009) (1840).

¹³⁹ Arguably, the goal of rapid acute care facility bed turnover finds its bottleneck at the housekeeping department’s limitations on room turnover cleaning capacity. See Louis Profeta, *ER Doctor: What Scares Me Even More Than Ebola, An ER Doctor Writes*, TRENT (Oct. 27, 2014), <http://www.thetrentonline.com/er-doctor-scared-even-ebola-dr-louis-m-profeta/> [<http://perma.cc/3XS9>] (noting that “[t]he regulations, protocols and procedures put into place to clean a room are so extensive that rapid room turnover was next to impossible with the current staffing model” and that the lowest paid hospital workers are put in the highly pressured position of advancing room turnover).

¹⁴⁰ See Sabriya Rice, *Hospitals Revamp Infection Control Amid Ebola Scare*, MODERN HEALTHCARE (Oct. 26, 2014), <http://www.modernhealthcare.com/article/20141026/NEWS/310249942> [<http://perma.cc/S8NQ>].

¹⁴¹ See 35 U.S. *Hospitals Designated as Ebola Treatment Centers—CDC Trains and Assesses Ebola Hospital Readiness in Collaborative Effort*, GOVDELIVERY (Dec. 2, 2014 4:02 PM), <http://content.govdelivery.com/accounts/USCDC/bulletins/e05f53> [<http://perma.cc/F7M9-D2YM>].

¹⁴² See Beth Kutscher, *Ebola Spurs Higher Demand for Infection-Control Products*, MODERN HEALTHCARE (Oct. 25, 2014), <http://www.modernhealthcare.com/article/20141025/NEWS/310249943> [<http://perma.cc/7SM7>] (describing “greater demand for infection-control products as hospitals prepare for possible Ebola cases in their facilities”).

¹⁴³ Kevin Sack & Manny Fernandez, *Delay in Dallas Ebola Cleanup as Workers Balk at Task*, N.Y. TIMES (Oct. 2, 2014), <http://www.nytimes.com/2014/10/03/us/dallas-ebola-case-thomas-duncan-contacts.html>.

¹⁴⁴ See *id.*

¹⁴⁵ David Sanders, Address at the University of Missouri, Kansas City: The New Health Economy: A Global Perspective (Dec. 11, 2014).

¹⁴⁶ See WHITE HOUSE OFFICE OF THE PRESS SECRETARY, FACT SHEET: U.S. RESPONSE TO THE EBOLA EPIDEMIC IN WEST AFRICA (Sept. 16, 2014), <http://www.whitehouse.gov/the-press-office/2014/09/16/fact>

rather than a decrease in healthcare-associated infections. The rise of command and control regulation on infection prevention measures for Ebola alone in the United States may represent a defeat for improved general infection control in acute care facilities.¹⁴⁷

Americans also express restlessness as the media moves from issue to issue with lightning speed, never minding that complex problems may require complex solutions.¹⁴⁸ Rather, Americans admire “the hack,” or the unexpectedly elegant and simple solution, over the painstaking resolution.¹⁴⁹ Because the public loses interest in complex problems,¹⁵⁰ the numbers of victims of our healthcare-associated infections are hard to comprehend,¹⁵¹ in stark contrast to what was the daily drumbeat of cases of Ebola in the United States.¹⁵²

Once something is described as endemic,¹⁵³ there also comes a sense of inevitability. And so, many have become inured to healthcare-associated infections, all the while miscalculating our risk of dying from one HAC in comparison to our risk of dying from Ebola.¹⁵⁴ Public health research tells us that we are poor calculators of health risk, inclined toward unrealistic optimism when comparing ourselves to others when assessing relative risk.¹⁵⁵ Americans focus on the risks thought to be most specific to us,¹⁵⁶ and this is, in part, an article about how healthcare-associated infections have developed to appear beyond our control and beyond our remedy.¹⁵⁷

Still, this American optimism¹⁵⁸ is almost as incurable and immutable as some infectious diseases themselves. Richard Preston of *The New Yorker* reported that fatal mistakes have been made in preventing Ebola transmission in the healthcare context,

sheet-us-response-ebola-epidemic-west-africa [http://perma.cc/BSL5-DXPN] (outlining, without mention of infection-control in acute care facilities, the new resources deployed to help the U.S. respond to Ebola).

¹⁴⁷ Sanders, *supra* note 145.

¹⁴⁸ See TOCQUEVILLE, *supra* note 138, at 887-96.

¹⁴⁹ *See id.*

¹⁵⁰ *See id.*

¹⁵¹ See Ilyse Resnick et al., *Examining the Representation and Understanding of Large Magnitudes Using the Hierarchical Alignment Model of Analogical Reasoning* 917 (2012), <http://mindmodeling.org/cogsci2012/papers/0167/paper0167.pdf> [http://perma.cc/E8RV-QAEL] (arguing humans struggle to comprehend values of extremely large or small magnitudes).

¹⁵² *How Many Ebola Patients Have Been Treated Outside of Africa?*, N.Y. TIMES (Jan. 26, 2015), <http://www.nytimes.com/interactive/2014/07/31/world/africa/ebola-virus-outbreak-qa.html>.

¹⁵³ *Endemic*, DICTIONARY.COM, <http://dictionary.reference.com/browse/ebola> [http://perma.cc/26MG-J3GA] (defining “endemic” as “natural to or characteristic of a specific people or place; native; indigenous,” or “belonging exclusively or confined to a particular place”).

¹⁵⁴ See TOCQUEVILLE, *supra* note 138, at 714 (“[Americans] have all a lively faith in the perfectibility of man; they are of opinion that the effects of the diffusion of knowledge must necessarily be advantageous, and the consequences of ignorance fatal . . .”); see also Rebecca Jacobson, *These Six Diseases Should Worry You More Than Ebola*, PBS NEWSHOUR (Oct. 8, 2014, 3:43 PM), <http://www.pbs.org/newshour/updates/six-diseases-actually-worry/> [http://perma.cc/S5K3-4XEL] (arguing that “diseases we *should* be worried about” include Enterovirus and Measles, not Ebola) (emphasis included)).

¹⁵⁵ See THE SOCIAL PSYCHOLOGY OF HIV INFECTION 6 (John B. Pryor & Glenn D. Reeder eds., 2015).

¹⁵⁶ *Id.*; see also 2 PSYCHOLOGY AT THE TURN OF THE MILLENNIUM 253 (Claes von Hofsten & Lars Bäckman, eds., 2002) (“[R]isks that are more cognitively available through personal experience or media coverage tend to be overestimated.”); Jacobson, *supra* note 154 (illustrating that what we imagine is most specific to us does not always reflect what we should fear most).

¹⁵⁷ The fact that the response to Ebola largely focused on individual protection via means including personal protection equipment as opposed to general methods to reduce the spread to the general population may be symptomatic of our feelings that the spread of healthcare associated infections is beyond our control. See Jaimy Lee, *Setting the Research Priorities for Ebola*, MODERN HEALTHCARE (Nov. 1, 2014), <http://www.modernhealthcare.com/article/20141101/MAGAZINE/311019948/setting-the-research-priorities-for-ebola> [http://perma.cc/S5K3-4XEL].

¹⁵⁸ TOCQUEVILLE, *supra* note 138, at 714.

but that we “will learn” because “the warriors against Ebola understand that they face a long struggle against a formidable enemy.”¹⁵⁹ Yet the struggle against healthcare associated infections has not, in the past, benefited from the same American triumphalism. The fact that Ebola captures the collective American imagination, while the public barely knows that one in six American hospitals struggles with infection control¹⁶⁰ is a tragedy.

The arrival of Ebola on our shores provided an opportunity to begin educating the public. Public awareness of Texas Presbyterian Hospital’s¹⁶¹ apparent inability to contain Ebola heightened concerns about poor infection and virus control procedures, as well as poor training in general.¹⁶²

But the public was, apparently, persuaded that the problem must not be in infection and virus control training,¹⁶³ and called for Ebola-response teams.¹⁶⁴ That took pressure off of calls for general improvement in infection control,¹⁶⁵ to the disappointment of some.¹⁶⁶ A 2011 study in the *New England Journal of Medicine* traced our infection control problems to less than full compliance with the prosaic prevention measures of hand washing and barrier procedures to protect the patient.¹⁶⁷ But still no public outcry ensued.¹⁶⁸

Studies and statistics emphasizing risks to patient do not compel public attention the same way as studies and statistics emphasizing risk to healthcare workers. This is counter-intuitive as an analysis of risk. Many more of us are likely to be patients in acute care facilities than to be healthcare workers in them. Yet this narrative of risk stokes the American narrative of individual heroism. *Time*’s 2014 person of the year was an individual in full Ebola containment suit.¹⁶⁹ This demonstrated the kind of dramatic individual bravery that we prize over the slow methodical transformation of group practice that is necessary to reduce the larger risks to patients.

¹⁵⁹ Richard Preston, *The Ebola Wars: How Genomics Research Can Help Contain the Outbreak*, NEW YORKER (Oct. 27, 2014), <http://www.newyorker.com/magazine/2014/10/27/ebola-wars> [<http://perma.cc/D6G2-XVS4>].

¹⁶⁰ Jordan Rau, *Hospitals’ Struggles to Beat Back Familiar Infections Began Before Ebola Arrived*, KAISER HEALTH NEWS (Oct. 21, 2014), <http://kaiserhealthnews.org/news/hospitals-struggles-to-beat-back-familiar-infections-began-before-ebola-arrived/> [<http://perma.cc/A9HF-VFJ2>].

¹⁶¹ See Chelsea Rice, *Dallas Hospital Defends Treatment of Ebola Patient*, BOSTON.COM (Oct. 9, 2014, 6:48 PM), <http://www.boston.com/health/2014/10/09/dallas-hospital-defends-treatment-ebola-patient/GJQcfpZUiZUHs9iMqGO3K/story.html> [<http://perma.cc/D7P8-WAWF>].

¹⁶² Kevin Sack, *Downfall for Hospital Where Ebola Spread*, N.Y. TIMES (Oct. 15, 2014), <http://www.nytimes.com/2014/10/16/us/infamy-for-dallas-hospital-where-virus-spread.html>.

¹⁶³ See, e.g., Robert Pearl, *Ebola Response Reveals Double Standard In U.S. Healthcare*, FORBES (Dec. 11, 2014), <http://www.forbes.com/sites/robertpearl/2014/12/11/ebola-double-standard/#7b83e4707f46> (“Some of the same leaders who demand hazmat suits to protect healthcare workers from Ebola have done little to address the risks involved when healthcare workers don’t wash their hands.”).

¹⁶⁴ See Lisa Schnirring, *CDC to Deploy Ebola Response Team to Help Hospitals*, CIDRAP NEWS (Oct. 14, 2014), <http://www.cidrap.umn.edu/news-perspective/2014/10/cdc-deploy-ebola-response-team-help-hospitals> [<http://perma.cc/X78P-UFSF>].

¹⁶⁵ Judy Stone, *Why Ebola Is a Wake Up for Infection Control*, SCIENTIFIC AMERICAN: MOLECULES TO MED. BLOG (Oct. 23, 2014), <http://blogs.scientificamerican.com/molecules-to-medicine/2014/10/23/why-ebola-is-a-wake-up-for-infection-control/> [<http://perma.cc/98AU-ZYF9>].

¹⁶⁶ See *id.*

¹⁶⁷ Rau, *supra* note 160.

¹⁶⁸ But see Anemona Hartocollis, *With Money at Risk, Hospitals Push Staff to Wash Hands*, N.Y. TIMES (May 28, 2013), <http://www.nytimes.com/2013/05/29/nyregion/hospitals-struggle-to-get-workers-to-wash-their-hands.html>.

¹⁶⁹ Nancy Gibbs, *Person of the Year: The Choice*, TIME (Dec. 10, 2014), <http://time.com/time-person-of-the-year-ebola-fighters-choice/> [<http://perma.cc/5CP8-NM5B>].

III. NOT EBOLA BUT MRSA IS THE DISEASE AGENT OF THE DECADE

A. THE HEALTHCARE-ASSOCIATED INFECTIONS EPIDEMIC

MRSA, not Ebola, is the “bacteria of the decade.”¹⁷⁰ The rate of MRSA infections has doubled at United States academic hospitals between 2003 and 2008.¹⁷¹ Hospital-acquired MRSA infections are likely down over this interval,¹⁷² but hospital-associated MRSA infections are likely up.¹⁷³ This raises the possibility that community-associated MRSA is making the leap to the healthcare context, and thus driving a wave of healthcare-associated MRSA.¹⁷⁴ We do not systematically screen for active MRSA infection at hospital admission, or for that matter, for hospital employment.¹⁷⁵ Thus, it is unclear whether patients who arrive with and bring MRSA into the healthcare context arrived with a full-blown MRSA infection or just MRSA colonization.

Until very recently there were no national targets or benchmarks for hospital-acquired MRSA.¹⁷⁶ We have long left it to each facility to measure, report, and remediate as they see fit.¹⁷⁷ Even with publicly issued reports with titles like “Unnecessary Deaths,”¹⁷⁸ we find cries to focus on controlling what are seen as relatively run-of-the-mill healthcare-associated infections to be not very compelling.

Colonization represents the extent of latent potential for future illness,¹⁷⁹ both for the individual colonized or for some other individual.¹⁸⁰ Yet our patient billing data historically has focused only on present illness.¹⁸¹ It often subsumes even the documentable presence of active MRSA under the primary code of some other disease or disorder.¹⁸² In short, it is entirely possible that reported MRSA infections exclude all MRSA colonizations. Moreover, reported infections may exclude many, if not most, active MRSA diagnoses for which active MRSA is the sole diagnosis.¹⁸³

¹⁷⁰ Fung, *supra* note 47.

¹⁷¹ *Id.*

¹⁷² *Id.*; see also CDC, *General Information About MRSA in Healthcare Settings*, CDC.GOV (Apr. 3, 2014), <http://www.cdc.gov/mrsa/healthcare/index.html> [<http://perma.cc/6LJN-Y5M5>] (“Invasive MRSA infections that began in hospitals declined 54% between 2005 and 2011, with 30,800 fewer severe MRSA infections.”).

¹⁷³ See Fung, *supra* note 47.

¹⁷⁴ *Id.*

¹⁷⁵ See U. CHI. MED. MRSA RES. CTR., *For Infection Control Professionals – FAQs* (2016), http://mrsa-research-center.bsd.uchicago.edu/infection_control/faq.html [<http://perma.cc/H2W9-QVRB>] (explaining that some states require screening upon hospital admission, but that the general consensus is that “hospital workers should only be cultured when they are clearly implicated in MRSA transmission”).

¹⁷⁶ See MASS. GEN. HOSP., *MRSA Incidence*, <http://qualityandsafety.massgeneral.org/measures/linemeasurement.aspx?id=630> [<http://perma.cc/3U6X-N4UW>].

¹⁷⁷ See, e.g., *id.* (showing, as a result, that MGH can only compare itself to itself over time or longitudinally and not to facilities of similar size, patient mix, and payor mix).

¹⁷⁸ Betsy McCaughey, COMMITTEE TO REDUCE INFECTION DEATHS, *Unnecessary Deaths: The Human and Financial Costs of Hospital Infections* 1 (3d ed. 2008), <http://www.hospitalinfection.org/ridbooklet.pdf> [<http://perma.cc/TXP3-EZZM>].

¹⁷⁹ C.L. Abad et al., *Does the Nose Know? An Update on MRSA Decolonization Strategies*, 15 CURRENT INFECTIOUS DISEASE REP. 455, 462 (2013) (noting that decolonization efforts “have not been consistent or applicable to all populations”).

¹⁸⁰ See Drazen, *supra* note 38, at 2 (describing New York’s quarantine of healthcare workers returning from Ebola-threatened regions of the world in order to stem spread of potential colonized bacteria).

¹⁸¹ See Michael Z. David et al., *Increasing Burden of Methicillin-Resistant Staphylococcus aureus Hospitalizations at US Academic Medical Centers, 2003-2008*, 33 INFECTION CONTROL HOSP. EPIDEMIOLOGY 782, 787 (2012).

¹⁸² See *id.*

¹⁸³ See Pete Eisler & Morgan Fecto, *MRSA Bacteria Target Crowded Places With Poor Hygiene*, USA TODAY (Dec. 18, 2013, 3:12 PM), <http://www.usatoday.com/story/news/nation/2013/12/16/mrsa-emerging->

Shockingly, we have become inured to reports of deaths from healthcare-associated infections. There is some evidence that the public is beginning to reconceive of the modern acute care hospital as a locus of disease rather than of hope.¹⁸⁴ Healthcare-associated infections are not the only current healthcare crisis where public outrage seems to be conspicuously muted.¹⁸⁵ It is unclear whether this is a result of changing provider-patient power relationships, scientific illiteracy, hard-wired aversions to facing unpleasant medical truths, or other factors. Wise counsel is that hospitals and healthcare facilities are dangerous places. Thus, they are to be avoided.¹⁸⁶ Patient narratives commending a “personal policy of surgical abstinence”¹⁸⁷ are striking.

Persuaded that the proliferation of hand sanitizer dispensers¹⁸⁸ will sufficiently immunize us, Americans simultaneously confront our own worst fears of a “super bug”¹⁸⁹ while participating in our communal lives, including the highly communal and congregate experiences of acute care hospitalization and nursing home residence much as we always have since the rise of these two healthcare institutions in the twentieth century.¹⁹⁰ However, hand sanitizer may have immunized us from some of our worst fears about healthcare-associated infections without immunizing us from the reality of them.

Americans are simultaneously obsessed with hand sanitizer dispensers, and at the same time, concerned that the government may too strongly promote hand washing—or is simply ambivalent about the role of poor hand hygiene in the transmission of communicable diseases. Therefore, Americans entertain public debate about removing public health warnings in food service bathrooms to remind employees to wash their hands before returning to work.¹⁹¹

Interestingly, the latest Ebola epidemic has also proven intractable for some of the same reasons, including poor hand hygiene, failure to screen consistently and thoroughly, and distrust of healthcare providers.¹⁹² One explanation of why it has been

in-schools-prisons-athletic-facilities/4013153/ [http://perma.cc/P2YW-UAAE] (describing a new form of community-acquired MRSA that “caus[es] hundreds of thousands of infections a year that go unreported and untracked by public health agencies.”).

¹⁸⁴ See EZEKIEL EMANUEL, *REINVENTING AMERICAN HEALTHCARE* 22-23 (Public Affairs 2014); see also Concerned MD, Comment to *When a Stressful Hospital Stay Makes You Sick*, N.Y. TIMES: WELL (June 12, 2014), <http://well.blogs.nytimes.com/2014/06/12/when-a-stressful-hospital-stay-makes-you-sick/?hpw&ref=health> (“Hospitals are dangerous places. If at all possible, avoid being admitted. If admitted, get out as soon as possible. And I say that as a physician.”).

¹⁸⁵ See, e.g., Ira Byock, Opinion, *Dying Shouldn't Be So Brutal*, N.Y. TIMES (Jan. 31, 2015), <http://opinionator.blogs.nytimes.com/2015/01/31/dying-shouldnt-be-so-brutal/> (calling for public “outrage” at the “unsafe state” of hospice care).

¹⁸⁶ See Concerned MD, *supra* note 184; Abigail Zuger, *Revolving Doors at Hospitals*, N.Y. TIMES: WELL (June 9, 2014, 4:36 PM), <http://well.blogs.nytimes.com/2014/06/09/revolving-doors-at-hospitals/> [http://perma.cc/4BWF-8QUK] (see subscriber comments); see also Anemona Hartocollis, *Measles Outbreak May Have Spread in Medical Facilities, a New York City Official Says*, N.Y. TIMES (Mar. 18, 2014), <http://www.nytimes.com/2014/03/19/nyregion/measles-outbreak-in-new-york-may-have-spread-in-medical-facilities.html>.

¹⁸⁷ Kerry O’Connell, *Two Arms, Two Choices: If Only I’d Known Then What I Know Now*, 31 HEALTH AFFAIRS 1895, 1898 (2012).

¹⁸⁸ See David Owen, *Hands Across America: The Rise of Purell*, NEW YORKER (Mar. 4, 2013), <http://www.newyorker.com/magazine/2013/03/04/hands-across-america> [http://perma.cc/KFS2-JST8].

¹⁸⁹ See CONTAGION (Warner Bros. 2011); see also OUTBREAK (Warner Bros. 1995).

¹⁹⁰ See PAUL STARR, *Book One: The Rise of a Sovereign Profession and the Making of a Vast Industry*, in *THE SOCIAL TRANSFORMATION OF AMERICAN MEDICINE* (Basic Books 1982).

¹⁹¹ See Sanchez, *supra* note 94.

¹⁹² Dionne Searcey, *The Last Place on Earth With Ebola: Getting Guinea to Zero*, N.Y. TIMES (Nov. 6, 2015), http://www.nytimes.com/2015/11/07/world/africa/the-last-place-on-earth-with-ebola-guineas-fight-to-get-to-zero.html?_r=0.

hard to end the most recent Ebola epidemic in Guinea has been the low level constant progress of the disease until its extinguishment, unlike its progression in Liberia and Sierra Leone.¹⁹³ Guinea, in short, never had the visible “apocalyptic transmission” of the Ebola virus found elsewhere.¹⁹⁴ The lack of public viewing of the carnage from healthcare-associated infections in America has some resonance with this struggle.

Americans are oblivious to the fact that acute care hospitals are not the only healthcare institutions struggling with this epidemic,¹⁹⁵ and that we are not the only country struggling with bacteria resistant to antibiotics.¹⁹⁶ Nursing homes are also at the epicenter of our plague of antibiotic-resistant infections,¹⁹⁷ but we ignore the sage wisdom that only those with absolutely no choice should surrender to an in-patient admission.¹⁹⁸

This wisdom is the advice of another era. It was not until well into the twentieth century that those with financial resources elected to undergo surgical procedures outside of their homes.¹⁹⁹ Now, there is no surgery in the home, but rather out-patient ambulatory facilities, where exposure to healthcare-associated infections is believed to be less likely,²⁰⁰ allowing for a hastier retreat to the perceived safety of our homes. Even this belief has been shaken by the revelation that outpatient clinics do not systematically record or report surgical site infections.²⁰¹ With an increasing percentage²⁰² of all surgeries now performed at ambulatory surgical centers, it is apparent that our failure to monitor surgical infections at these centers, as well as other

¹⁹³ *Id.*

¹⁹⁴ *Id.*

¹⁹⁵ See, e.g., CDC, *Nursing Homes and Assisted Living (Long-Term Care Facilities [LTCFs])*, CDC.GOV (Sept. 15, 2015), <http://www.cdc.gov/longtermcare/index.html> [<http://perma.cc/8M7J-VGQL>] (describing high rates of infection in long-term care facilities).

¹⁹⁶ See Lewis W. Diuguid, *Antibiotics Grow Less Effective Against Infections, Creating Global Concern*, KAN. CITY STAR (May 1, 2014, 11:00 AM), <http://www.kansascity.com/opinion/opn-columns-blogs/lewis-diuguid/article348046/Antibiotics-grow-less-effective-against-infections-creating-global-concern.html> [<http://perma.cc/VT57-4DTM>]; see also Antimicrobial Resistance: A Problem Without Borders, Panel Discussion at the Institute of Medicine 2014: Richard and Hinda Rosenthal Symposium (May 6, 2014).

¹⁹⁷ See Aurora Aguilar, *CDC Steps Up Battle to Squash Superbugs in Nursing Homes*, MODERN HEALTHCARE (Sept. 15, 2015), <http://www.modernhealthcare.com/article/20150915/NEWS/150919916> [<http://perma.cc/EG2V-762T>].

¹⁹⁸ CONSUMERREPORTS, *How Your Hospital Can Make You Sick*, <http://www.consumerreports.org/cro/health/hospital-acquired-infections/index.htm> [<http://perma.cc/27G2-6ZXT>] (quoting one doctor cautioning patients to be on “high alert” any time they enter a hospital); see also Joel Keehn, *12 Hospitals You Might Want to Avoid*, CONSUMERREPORTS (Dec. 7, 2015), <http://www.consumerreports.org/cro/health/12-hospitals-to-avoid> [<http://perma.cc/A6TT-7755>] (listing hospitals with allegedly poor infection control mechanisms).

¹⁹⁹ STARR, *supra* note 190, at 157 (“After 1900, as the old prejudice died out, most surgery moved inside hospitals.”); see also Ann Marie Marciarille, *Healing Medicare Hospital Recidivism: Causes and Cures*, 37 AM. J.L. & MED. 41, 51 (2011) (“[B]y 1913 an observable decline in home care of the sick had been noted . . .”).

²⁰⁰ Dina Fine Maron, *Under the Knife: Where Infections Fly Under the Radar*, SCIENTIFIC AMERICAN (May 19, 2014), <http://www.scientificamerican.com/article/under-the-knife-where-infections-fly-under-the-radar/> [<http://perma.cc/L2XG-P3RZ>] (quoting one doctor saying that “experience suggests the yield [for infections] will be fairly low for these procedures that would be included” in ambulatory surgery centers). The discrepancy in infections may be partially attributed to the average patient pool in ambulatory surgery centers being healthier and lower risk than the average patient pool in hospitals. See MEDPAC, *Chapter 5: Ambulatory Surgical Center Services*, in REPORTS TO THE CONGRESS: MEDICARE PAYMENT AND POLICY 120, 125 (Mar. 2015), http://www.medpac.gov/documents/reports/mar14_ch05.pdf [<http://perma.cc/AH5V-BUVY>].

²⁰¹ Maron, *supra* note 200.

²⁰² *Id.*

outpatient clinics, may have caused us to exclude large numbers of such infections from the surgical site infections database.²⁰³

The irony is that we are the transmission vectors of many healthcare-associated infections.²⁰⁴ The most threatening bacteria include CRE (popularly known as “nightmare bacteria”),²⁰⁵ *Clostridium difficile* (popularly known as “C. diff.”),²⁰⁶ and Gonorrhea.²⁰⁷

In addition, healthcare facilities represent the perfect storm of immunocompromised individuals, close living and treatment quarters, and twentieth century hygiene standards.²⁰⁸ Hospitals are institutions in which everyone—patients, staff, and visitors—leaves a microbial imprint.²⁰⁹ While we rally enthusiastically around all possibilities of a cure or of a one shot fix,²¹⁰ we barely acknowledge the infectious disease aspects of transmission of healthcare-associated infections, many of which are acute bacterial skin infections. Our focus has been on individual solutions for what is characterized as an individual episode of illness.²¹¹ When the *New York Times* reports that celebrity Sandra Lee has been released from the hospital after surgery for a “lingering infection” following a double mastectomy, the focus was on the cancer, with no explanation of the “unexpected setback” that was clearly a major surgical site infection.²¹² The irony is that even after successful individual decolonization,²¹³ a small number of MRSA bacteria are thought to be harbored in the host until conditions become more hospitable to proliferation.²¹⁴ In addition, many patients do not finish the

²⁰³ *Id.*

²⁰⁴ See, e.g., CDC, *Healthcare Associated Infections (HAIs): Staphylococcus aureus in Healthcare Settings*, CDC.GOV (Jan. 17, 2011), <http://www.cdc.gov/HAI/organisms/staph.html> [<http://perma.cc/8DJN-PGUK>] (“*Staphylococcus aureus* . . . is a type of bacteria that about 30% of people carry in their noses.”).

²⁰⁵ CDC NEWSROOM, *Media Advisory: CDC’s Graphs of the Year: Nightmare Bacteria Spread and 100,000 Smokers Likely Quit with Tips*, CDC.GOV (Dec. 31, 2013), <http://www.cdc.gov/media/releases/2013/a1231-graphs-year.html> [<http://perma.cc/KB44-2HJE>].

²⁰⁶ As of March 2012, the CDC Vital Signs publication estimates 94% of *c. difficile* infections are healthcare associated, accounting for approximately 14,000 U.S. deaths each year. CDC VITALSIGNS, *Making Healthcare Safer: Stopping C. Difficile Infections* (Mar. 2012), <http://www.cdc.gov/vitalsigns/hai/stoppingcdifficile/> [<http://perma.cc/2LUX-LR7V>].

²⁰⁷ NIH, *Gonorrhea*, MEDLINEPLUS. <http://www.nlm.nih.gov/medlineplus/ency/article/007267.htm> [<http://perma.cc/X2DJ-G6UN>] (last updated May 5, 2015) (describing symptoms, causes and treatment and causes of Gonorrhea).

²⁰⁸ CONSUMERREPORTS, *How Your Hospital Can Make You Sick*, *supra* note 198.

²⁰⁹ See Brian Handwerk, *You Produce a Microbial Cloud That Can Act Like an Invisible Fingerprint*, SMITHSONIAN.COM (Sept. 22, 2015), <http://www.smithsonianmag.com/science-nature/you-produce-microbial-cloud-can-act-invisible-fingerprint-180956698/?no-ist> [<http://perma.cc/447V-YMHN>].

²¹⁰ Roni Caryn Rabin, *Single Dose of Antibiotic Found Effective in Quelling MRSA*, N.Y. TIMES (June 4, 2014), http://www.nytimes.com/2014/06/05/health/single-dose-of-antibiotic-found-effective-in-quelling-mrsa.html?_r=0.

²¹¹ Kerry O’Connell, *Two Arms, Two Choices: If Only I’d Known Then What I Know Now*, 31 HEALTH AFFAIRS 1895, 1899 (2012) (“But we shouldn’t all have to learn everything the painful way, through tragic individual experiences. Wise systems learn systematically from the collective experience of millions of good and bad outcomes.”).

²¹² Jesse McKinley, *Sandra Lee Is Released From Hospital After Surgery for Infection*, N.Y. TIMES (Aug. 12, 2015), <http://www.nytimes.com/2015/08/13/nyregion/sandra-lee-to-be-released-from-hospital-after-surgery-for-infection.html>.

²¹³ Decolonization is use of topical and/or systemic agents to suppress or eliminate colonization, and it may reduce risk of subsequent infections in colonized individuals. John Jernigan & Alex Kallen, *Decolonization Therapy for MRSA Carriers 25*, in *Methicillin-Resistant Staphylococcus aureus (MRSA) Infections Presentations* (Jan. 19, 2010), http://www.cdc.gov/HAI/pdfs/toolkits/MRSA_toolkit_white_020910_v2.pdf [<http://perma.cc/UFV7-NCAW>].

²¹⁴ See Michael Addidle, *Woolly Mammoths or Unknown Soldiers?*, MICROBIOLOGY MATTERS! (Sept. 28, 2013), <http://microbiology Matters.com/?p=1934> [<http://perma.cc/AG3U-9LCR>].

complicated treatment regimen required for these infections, adding to the risk of producing even more drug-resistant bacteria.²¹⁵

We approached Ebola's arrival at our shores in much the same way. Focused on the individual,²¹⁶ and less attuned to the screening prompted by public health concerns, Texas Presbyterian Hospital in Dallas justified sending Thomas Duncan home from its emergency department with a fever and abdominal pain after his arrival from Liberia.²¹⁷ Whether this was the error of an arguably overwhelmed urban emergency department, or a manifestation of a larger imperative to provide a minimalist interpretation of the Emergency Medical Treatment and Active Labor Act ("EMTALA"), is hard to say. Texas Presbyterian Hospital was slow to concede error as to the former, and it is well protected by legal precedent interpreting EMTALA only to require that Thomas Duncan be treated as other similarly situated individuals, regardless of insurance status.²¹⁸ Thomas Duncan's non-treatment only gradually came to be seen as a societal problem.²¹⁹

B. RECOGNIZING THE MAGNITUDE OF THE PROBLEM

Americans are at a moment of transition in our understanding and treatment of healthcare-associated infections. This transformation has developed with the growing recognition that an estimated one in twenty-five²²⁰ hospitalized individuals will struggle with a healthcare-associated infection, and an estimated 99,000 deaths a year result from these infections.²²¹ The CDC estimates that 1.7 million healthcare-associated infections occur each year in the United States.²²² These deaths are also not evenly distributed throughout the population, as both the young and the old are more vulnerable to increased mortality from these infections.²²³ Even patients at our finest

²¹⁵ Rabin, *supra* note 110.

²¹⁶ Some have suggested that Thomas Duncan's race and insurance status—both individual characteristics—may also have played a role in the decision to send him home. Lauren Gambino & Tom Dart, *Medical Records Reveal Deceased Texas Ebola Patient Sent Home With High Fever*, *GUARDIAN* (Oct. 10, 2014, 4:19 PM), <http://www.theguardian.com/world/2014/oct/10/thomas-duncan-ebola-medical-records-high-fever> [<http://perma.cc/8PQ4-8RW3>].

²¹⁷ *Id.*

²¹⁸ Diana E. Schaffner, *EMTALA: All Bark and No Bite*, 2005 U. ILL. L. REV. 1021, 1031 (2005) (explaining that EMTALA "only guarantees nondiscriminatory emergency medical treatment" and does not "guarantee that all patients are properly diagnosed" or "ensure that they receive adequate care").

²¹⁹ See Gambino, *supra* note 216.

²²⁰ Magill, *supra* note 49, at 1198 ("Out of 11,282 patients, 452 had 1 or more healthcare-associated infections.").

²²¹ It was not until 2013 that the CDC attempted a first-ever national snapshot of antibiotic-resistant infections, in general. See *Preventing Healthcare-Associated Infections*, *supra* note 78; see also Dina Fine Maron, *Drug-Resistant Superbugs Kill at Least 23,000 People in the U.S. Each Year*, *SCIENTIFIC AMERICAN: OBSERVATIONS* (Sept. 16, 2013), <http://blogs.scientificamerican.com/observations/drug-resistant-superbugs-kill-at-least-23000-people-in-the-us-each-year/> [<http://perma.cc/6BQ4-QAM5>].

²²² See Megan McArdle, *How Bad Are Hospital Acquired Infections in America?*, *ATLANTIC: HEALTH* (Sept. 1, 2011), <http://www.theatlantic.com/health/archive/2011/09/how-bad-are-hospital-acquired-infections-in-america/244458/> [<http://perma.cc/TA2E-5CX4>].

²²³ CDC, *Diseases and Organisms in Healthcare Settings*, *CDC.GOV* (Mar. 26, 2014), <http://www.cdc.gov/HAI/organisms/organisms.html> [<http://perma.cc/XGX7-MVTA>] ("Young children, the elderly, and people with other medical illnesses are most at risk for more severe or prolonged [norovirus] infection."); see also Mina Pastagia et al., *Predicting Risk of Death from MRSA Bacteremia*, 18 *EMERGING INFECTIOUS DISEASES* 1072, 1078 (2012) (explaining that patients most likely to die from MRSA are the elderly, patients with liver cirrhosis, patients with renal insufficiency, and patients from nursing homes").

healthcare facilities are not immune.²²⁴ Additionally, the cost is astronomical, with an estimated price tag of thirty billion dollars a year.²²⁵

The Department of Health and Human Services' Hospital Compare ("Hospital Compare") website, tapping into CDC data on infection control at specific hospitals, has made data available to the general public since 2012 on six categories of infections: feeding tubes, catheters, C. diff, MRSA, and surgical site infections after hysterectomies and colon operations.²²⁶ The CDC data are based on self-reported data from hospitals.²²⁷ There is some controversy surrounding the Hospital Compare site's identification of more than a quarter of participating hospitals as having at least one high infection rate for the CDC-identified categories, which invokes questions about the surgical-procedural mix of more or less invasive surgeries and the integrity of reporting.²²⁸ Institutions that provide more complex surgeries, including those arguably more prone to surgical site infections because of the duration or scope of surgical procedures involved,²²⁹ contend that the CDC reporting procedure model is insensitive to these factors.²³⁰ It is difficult to account for the wide variation in infection rates between providers of more complex surgeries or within a particular facility relying on the claim of incommensurate measures alone.²³¹

The measure of C. diff infection in a hospital is also particularly difficult because such data indirectly measure the success of what a facility does not do. For example, by restraining the use of some antibiotics, a hospital can successfully manage conditions that support the growth of C. diff.²³²

Healthcare-associated infections are as old as healthcare itself and may have even played a vivid, though now somewhat obfuscated, role in the founding of the Republic.²³³ Though our understanding of the epidemiology of healthcare-associated infections has improved, actual healthcare-associated infection rates have been quite intractable. Unlike many other healthcare associated problems, increased knowledge has not brought diminished suffering. Increased medical knowledge has allowed for better and more accurate diagnosis of existing suffering but, paradoxically, may also

²²⁴ See Christopher Weaver & Jonathan D. Rockoff, *Killer Bug Is Traced at NIH Hospital*, WALL ST. J., Aug. 23, 2012, at A3 (detailing a "medical mystery that left six patients dead last year at the National Institutes of Health's elite research hospital").

²²⁵ Hartocollis, *supra* note 168.

²²⁶ Rau, *supra* note 160; see also *Measures Displayed on Hospital Compare*, MEDICARE.GOV: HOSPITAL COMPARE, <http://www.medicare.gov/hospitalcompare/Data/Measures-Displayed.html> [<http://perma.cc/3REX-JC9F>].

²²⁷ *Data Sources*, MEDICARE.GOV: HOSPITAL COMPARE, <http://www.medicare.gov/hospitalcompare/Data/Data-Sources.html> [<http://perma.cc/N4UR-BYJA>].

²²⁸ See Arlene S. Ash et al., *Statistical Issues in Assessing Hospital Performance* 7-33 (2012), <http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Downloads/Statistical-Issues-in-Assessing-Hospital-Performance.pdf> [<http://perma.cc/AY6P-C993>].

²²⁹ Rau, *supra* note 160 ("Because cancer surgeries take longer than regular hysterectomies, often involving removal of pelvic lymph nodes, the chances of infection are greater.").

²³⁰ *Id.* (explaining that many hospitals claim the CDC data makes them "look bad because they are more vigilant in identifying and reporting infections, or because they handle very sick patients who are more prone to catching a bug").

²³¹ See *id.* ("Yale-New Haven Hospital had lower rates of bloodstream infections caused by central lines, but higher rates of infections from catheters inserted into the bladder to remove urine.").

²³² *Id.*

²³³ Vernillia R. Randall, *Bioterrorism, Public Health and the Law: Early Biological War on Native Americans* (Nov. 30, 2002), <http://academic.udayton.edu/health/syllabi/Bioterrorism/00intro02.htm> [<http://perma.cc/8MBE-9TH9>] (discussing early biological war on Native Americans during the French & Indian War in the mid 1700s).

have created the circumstances for easier transmission of healthcare-associated infections.

All of this is further complicated by the fact that there are multiple drug-resistant bacteria and fungi that are of concern. In 2013, the CDC identified three bacteria as “urgent”—including CRE, *C. diff.*, and Gonorrhea.²³⁴

Just as the number of reported healthcare associated MRSA cases has declined steeply in the past decade,²³⁵ there has been only a modest decline in reported community-acquired MRSA infections.²³⁶ This higher rate could be attributed to the use of antibiotics in the food supply²³⁷ or to the growth of the kind of comorbidities in the general population that make individuals opportunistic targets for such infections.²³⁸

Not all healthcare-associated infections are antibiotic-resistant. However, the growth of antibiotic-resistant pathogens makes infections difficult or impossible to control.²³⁹ The problem is both one of infection and of infection treatment in what the World Health Organization (“WHO”) has termed a “post-antibiotic era.”²⁴⁰ An estimated two million Americans develop antibiotic-resistant infections each year, with an estimated 23,000 death toll.²⁴¹ But the most serious antibiotic resistance problems are found in hospitals,²⁴² partly because this is where the sickest individuals are found,²⁴³ and partly because this is where those most vulnerable to increased morbidity and mortality from exposure to antibiotic-resistant infections are found.²⁴⁴ Individuals undergoing invasive procedures who also have underlying co-morbidities such as diabetes, asthma, and rheumatoid arthritis, have compromised immune systems that make them antibiotic-resistant infection targets.²⁴⁵

The distinction between hospital and community acquired MRSA may be difficult to draw in a world of quicker and sicker hospital discharges and common re-

²³⁴ See CDC, ANTIBIOTIC RESISTANCE THREATS IN THE UNITED STATES, *supra* note 127, at 7.

²³⁵ See Raymund Dantes et al., *National Burden of Invasive Methicillin-Resistant Staphylococcus aureus Infections, United States, 2011*, 173 JAMA INTERNAL MED. 1970, 1970 (2013) (noting that, “[s]ince 2005, adjusted national estimated incidence rates decreased among HACO infections by 27.7% and hospital-onset infections decreased by 54.2%.”).

²³⁶ *Id.* (“[C]ommunity-associated infections decreased by only 5.0%.”).

²³⁷ See C. Lee Ventola, *The Antibiotic Resistance Crisis: Part 1: Causes and Threats*, 40 PHARMACY AND THERAPEUTICS 277, 279 (2015) (noting that recent “molecular detection methods have demonstrated that resistant bacteria in farm animals reach consumers through meat products”).

²³⁸ See Franklin D. Lowy, *Methicillin-Resistant Staphylococcus aureus: Where Is It Coming From and Where Is It Going?*, 173 JAMA INTERNAL MED. 1978 (2013).

²³⁹ New York Times Editorial Board, *The Rise of Antibiotic Resistance*, N.Y. TIMES (May 10, 2014), <http://www.nytimes.com/2014/05/11/opinion/sunday/the-rise-of-antibiotic-resistance.html>; see also WORLD HEALTH ORG., *supra* note 114, at XIX (noting that “[antimicrobial resistance] results in reduced efficacy of antibacterial, antiparasitic, antiviral and antifungal drugs, making the treatment of patients difficult, costly, or even impossible”).

²⁴⁰ *Id.* at IX (defining a “post-antibiotic era” as one “in which common infections and minor injuries can kill”).

²⁴¹ Maron, *supra* note 221.

²⁴² *Id.*; see also INST. OF MED. OF THE NAT’L ACADEMIES, *The Resistance Phenomenon in Microbes and Infectious Disease Vectors: Implications for Human Health and Strategies for Containment* 9 (Stacey L. Knobler et al. eds., 2003), http://www.ncbi.nlm.nih.gov/books/NBK97138/pdf/Bookshelf_NBK97138.pdf [<http://perma.cc/X3RH-LJM2>] (“The combination of highly susceptible immunosuppressed patients . . . who lack the basic immune mechanisms so essential to elimination of pathogens, intensive and prolonged antimicrobial use, close proximity among patients, and multiple invasive procedures have resulted in hospital-acquired infections that are highly resistant to available therapeutics.”).

²⁴³ INST. OF MED. OF THE NAT’L ACADEMIES, *supra* note 242.

²⁴⁴ *Id.*

²⁴⁵ Maron, *supra* note 221.

admissions.²⁴⁶ Hospital patients thus give and receive infections because they shed pathogens as well as harmless bacteria when they are discharged and re-admitted. “[P]atients leave a microbial mark on hospitals,” which implies that hospitals are as much the cause of healthcare-associated infections as they are overtaken by such infections.²⁴⁷

Americans are outraged by news of healthcare-associated infections.²⁴⁸ And we seek to attack this problem on all fronts, simultaneously. The problem is that we may be attacking the problem in counter-productive ways. A vertical prevention strategy, focused on the individual clinical encounter, promotes screening, testing, and isolation.²⁴⁹ A horizontal prevention strategy focuses on tracking incidence and transmittal, and improving reporting.²⁵⁰

It may be that the evolving science of measurement of nosocomial²⁵¹ infections may bring these two approaches to loggerheads sooner than imagined. A vertical infection-prevention strategy both work to lower individual occurrences of nosocomial infection while also weakening the horizontal infection-prevention strategy of elimination.²⁵² Our focus on the clinical encounter here may be in tension with public health goals, which serves as a metaphor for the same problem that looms throughout our entire healthcare system. Our goal of better individual clinical outcomes may not be entirely consistent with better public health. Ebola may be the wake-up call for infection control that the American healthcare system has so assiduously avoided.

IV. DEALING WITH HACs

The study of healthcare-associated infections is as much art as it is science. The science involves big data, statistical manipulation, and epidemiology, but the art is in defining the topic.

²⁴⁶ Xufeng Qian et al., ‘Quicker and Sicker’ Under Medicare’s Prospective Payment System for Hospitals: New Evidence on an Old Issue From a National Longitudinal Survey, 63 BULLETIN ECON. RES. 1, 1-2 (2011).

²⁴⁷ Beth Mole, *Patients Leave a Microbial Mark on Hospitals*, NATURE (May 23, 2013), <http://www.nature.com/news/patients-leave-a-microbial-mark-on-hospitals-1.13057> [<http://perma.cc/4RFV-6HXE>].

²⁴⁸ See *MRSA Outbreak Affects Babies at Sutter Memorial*, CBS SACRAMENTO (Aug. 27, 2012 10:11 PM), <http://sacramento.cbslocal.com/2012/08/27/mrsa-outbreak-affects-sutter-memorial-babies/> [<http://perma.cc/48WD-XRN4>] (quoting the statements of an indignant mother of a newborn diagnosed with MRSA: “I just think for them not to be able to tell my baby how he got MRSA is not OK . . . [t]hey’re the hospital, they should have answers.”).

²⁴⁹ Richard P. Wenzel & Michael B. Edmond, *Infection Control: the Case for Horizontal Rather than Vertical Interventional Programs*, 14S4 INT’L J. INFECTIOUS DISEASES S3, S3 (2010).

²⁵⁰ *Id.*

²⁵¹ See *Nosocomial definition*, ACADEMIC DICTIONARIES AND ENCYCLOPEDIAS, <http://medicine.academic.ru/5737/Nosocomial> [<http://perma.cc/M2DS-WAH4>] (“Nosocomial: Originating or taking place in a hospital, acquired in a hospital, especially in reference to an infection. The term ‘nosocomial’ comes from two Greek words: ‘nosus’ meaning ‘disease’ + ‘komeion’ meaning ‘to take care of.’ Hence, ‘nosocomial’ should apply to any disease contracted by a patient while under medical care. However, ‘nosocomial’ has been whittled down over the years and now just refers to hospitals — it is now synonymous with hospital-acquired.”).

²⁵² See Wenzel & Edmond, *supra* note 249, at S3.

A. WHAT ARE HACs?

We know, or think we know, what hospital acquired conditions are. They are conditions that patients acquire while receiving treatment for another condition in an acute healthcare setting.²⁵³

Hospital-acquired infections, as understood in the Medicare program, are included in this definition.²⁵⁴ For Medicare reimbursement or non-reimbursement purposes, a HAC requires a qualifying diagnosis code and evidence that this diagnosis was not present at the time of inpatient admission, or documentation that is insufficient to determine if the condition was present at the time of inpatient admission.²⁵⁵ This definition requires that proof of non-existence of a healthcare-associated infection be collected at the door of the admitting acute care hospital, for example, by screening for MRSA colonization at admission or running the risk of being accountable for failing to do so.

Outside of Medicare, HAC definitions are more diffuse. By one measure of incidence, most “infections that become clinically evident after 48 hours of hospitalization are considered hospital-acquired.”²⁵⁶

B. IN THE UNITED KINGDOM

Healthcare-associated infections, in the United Kingdom, are defined as “infections resulting from medical care or treatment in hospital [in or out-patient], nursing home, or the patient’s own home.”²⁵⁷ There, the emphasis is not on hospital acquired infections, but rather on healthcare-associated infections.²⁵⁸ Illustrating the theory that what you look for may help determine what you find, the infection

²⁵³ Amanda Cassidy, *Medicare’s Hospital-Acquired Condition Reduction Program*, HEALTH AFFAIRS: HEALTH POLICY BRIEF 1, 1 (Aug. 6, 2015), http://healthaffairs.org/healthpolicybriefs/brief_pdfs/healthpolicybrief_142.pdf [<http://perma.cc/6N5X-69XL>]; see also CMS, *Hospital-Acquired Conditions*, CMS.GOV (Aug. 19, 2015, 8:02 AM), http://www.cms.gov/medicare/medicare-fee-for-service-payment/hospitalacqcond/hospital-acquired_conditions.html [<http://perma.cc/MF3E-EF77>] (providing a list of examples of HACs recognized by CMS).

²⁵⁴ See CMS, *Hospital-Acquired Conditions*, *supra* note 253 (listing various Surgical Site Infections, which fall under the broader “Hospital-Acquired Conditions” category).

²⁵⁵ CMS, *Hospital-Acquired Conditions (Present on Admission Indicator)*, CMS.GOV (Sept. 29, 2014, 3:49 PM), http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/index.html?redirect=/hospitalacqcond/06_hospital-acquired_conditions.asp [<http://perma.cc/5XDL-VJ94>]; CMS, *Coding*, CMS.GOV (Aug. 20, 2015, 8:44 AM), <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/Coding.html> [<http://perma.cc/4EKJ-UYPP>].

²⁵⁶ Ruth L. Kleinpell et al., *PATIENT SAFETY AND QUALITY: AN EVIDENCE-BASED HANDBOOK FOR NURSES*, CHAPTER 42: TARGETING HEALTHCARE-ASSOCIATED INFECTIONS: EVIDENCE-BASED STRATEGIES (Ronda G. Hughes ed., 2008), <http://www.ncbi.nlm.nih.gov/books/NBK2632/> [<http://perma.cc/JPA3-KZLR>].

²⁵⁷ Ruth Kipping et al., North Somerset Council, *Health Protection: Infectious Diseases* 1, 11 (2014), <http://www.n-somerset.gov.uk/wp-content/uploads/2015/11/health-protection-and-infectious-diseases-chapter.pdf> [<http://perma.cc/7G3W-AF77>].

²⁵⁸ See PUBLIC HEALTH ENG., *Healthcare Associated Infections (HCAI): Guidance, Data and Analysis*, GOV.UK (July 31, 2014), <http://www.gov.uk/government/collections/healthcare-associated-infections-heai-guidance-data-and-analysis> [<http://perma.cc/6KQZ-ZY6A>] (using the term “healthcare associated infections” rather than “hospital acquired infections”); Rob Carr et al., *Healthcare Associated Infection Operational Guidance and Standards for Health Protection Units* 1, 4 (2012), http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332051/HCAI_Operationalguidancefinalamended_05July2012.pdf [<http://perma.cc/3Y99-CX8Q>] (“The term HCAI covers a wide range of infections . . . [including those contracted] as a direct result of healthcare delivery in the community, [and] as a result of an infection originally acquired outside a healthcare setting . . . and brought into a healthcare setting by patients, staff or visitors and transmitted to others within that setting.”)

preventionists in the United Kingdom have chosen not to target acute healthcare facilities alone.²⁵⁹

In the U.K. the Public Health England (“PHE”)—an independent organization set up by the government—mandates that each of the health trusts report all cases of blood stream infection caused by MRSA, CRE and infections with *C. diff.*²⁶⁰ Additionally, PHE makes its surveillance data available on a proprietary website.²⁶¹ PHE also operates the Surgical Site Infection Surveillance Scheme by which it helps hospitals self-monitor their own rates of post-surgical infection and compare that data with that of their competitions.²⁶²

C. PAY FOR PERFORMANCE?

In the United States, the Centers for Medicare and Medicaid Services (“CMS”) attempts to wield the power of the purse by making six conditions related to infections non-reimbursable.²⁶³ The Joint Commission now lists Catheter-Associated Urinary Tract Infections as the most common hospital-acquired infection.²⁶⁴ But, “the problem of rising antimicrobial resistance is as much about economics as it is about science or medicine,”²⁶⁵ and so all three must be analyzed.

D. DON’T ASK, DON’T TELL: A CODE OF SILENCE

MRSA has been reported to be able to live on the surface of hospital equipment for as long as nine months.²⁶⁶ This means that infection preventionists ought to be just as interested in how MRSA lives inside of a hospital as they are in how it enters the hospital. It also means that America’s healthcare facilities may have an incomplete disinfection problem. Experiments with the use of ultra violet light and the use of hydrogen peroxide fogging agents have been able to reduce the MRSA rates by considerable amounts²⁶⁷ but both approaches take considerable careful effort and, most importantly, time.

America’s acute care hospitals live and die by their occupancy rates. And occupancy is most productive when it is either continuous or contains the least amount of unoccupied intervals as possible. Fogging a patient room between patients with

²⁵⁹ See PUB. HEALTH ENG., *supra* note 258 (including an instructional section on infection prevention and control in “care homes”).

²⁶⁰ See Carr, *supra* note 258, at 14 (noting that “[t]he effectiveness of HPA surveillance systems . . . depends entirely on the ability of providers to . . . routinely report [cases of infection] to the HPA”).

²⁶¹ See PUB. HEALTH ENG., *MRSA, MSSA and E. Coli Bacteraemia and Clostridium Difficile Infection: Annual Data for Independent Sector Healthcare Organisations*, GOV.UK (Oct. 6, 2015), <http://www.gov.uk/government/statistics/mrsa-mssa-and-e-coli-bacteraemia-and-clostridium-difficile-infection-annual-data-for-independent-sector-healthcare-organisations> [<http://perma.cc/Q9GD-MU5K>].

²⁶² See Carr, *supra* note 258, at 16-17.

²⁶³ See CMS, *Hospital-Acquired Conditions*, *supra* note 253.

²⁶⁴ *Standards FAQ Details: Surveillance Requirements for CAUTI*, JOINT COMM’N (July 18, 2011), http://www.jointcommission.org/standards_information/jcfaqdetails.aspx?StandardsFAQId=442 (noting that “[u]rinary tract infections are the most common type of healthcare-associated infection, accounting for more than 30% of infections reported by acute care hospitals”).

²⁶⁵ See Jim O’Neill, *The Economic Consequences of Drug Resistance*, WORLD ECON. FORUM (Dec. 12, 2014), <http://www.weforum.org/agenda/2014/12/the-economic-consequences-of-drug-resistance> [<http://perma.cc/W2ZD-PYMV>].

²⁶⁶ *How a Robot is Helping Reduce Hospital-Borne Infections*, ROBERT WOOD JOHNSON FOUND. (Feb. 20, 2014, 4:15 PM), http://www.rwjf.org/en/blogs/new-public-health/2014/02/how_r2d2_is_helping.html [<http://perma.cc/DZ64-WNW3>].

²⁶⁷ See *Narrow-Spectrum UV Light May Reduce Surgical Infections & Hydrogen Peroxide Vapor Enhances Hospital Disinfection*, *supra* note 70.

hydrogen peroxide lengthens the turnaround time for a hospital bed because it involves opening and closing air ducts.²⁶⁸

Those with compromised immune systems are far more likely to have staph present on their skin turn into one of these diseases.²⁶⁹ This means that serious staph infections are more likely found in those hospitalized for relatively lengthy periods,²⁷⁰ including dialysis patients, cancer patients, users of illegal injectable drugs, and surgical patients.²⁷¹ It is a strength of our healthcare system that we are able to prolong the lives of those with compromised immune systems,²⁷² whether they are chronically or temporarily compromised. It is a weakness in any plan for healthcare-associated infection control to have so many immuno-compromised people passing through our healthcare facilities.²⁷³ Similarly, it is a strength that so many individuals now receive care that was formally delivered only in acute care settings²⁷⁴ in out-patient settings while it is also a weakness in any plan for healthcare-associated infection control to have the sickest of the sick and the most immuno-compromised concentrated in our acute healthcare facilities.²⁷⁵

Community-acquired MRSA targets congregate living and care, including those who are tattooed and who share athletic locker rooms, children in day-care settings, and members of the military.²⁷⁶ It is in the acute care hospital setting where these two worlds collide. A hospital is, at least in its most common modern configuration of sometimes shared and sometimes single rooms,²⁷⁷ a congregate living arrangement,

²⁶⁸ See *Hydrogen Peroxide Vapor Enhances Hospital Disinfection*, *supra* note 70.

²⁶⁹ See U.S. NAT'L LIBR. OF MED., *MRSA*, *supra* note 71 ("Serious staph infections are more common in people with chronic (long-term) medical problems.").

²⁷⁰ See Minnesota Department of Health, *Causes and Symptoms of HA-MRSA*, MINNESOTA.GOV, <http://www.health.state.mn.us/divs/idepc/diseases/mrsa/hamrsa/basics.html> [<http://perma.cc/SJ9L-F3TY>] (noting that "[h]ospitalized patients are at increased risk for MRSA infection" because "[m]any hospitalized patients are taking antibiotics that can decrease the normal flora found on the body, giving MRSA strains an advantage," and "[m]any patients in hospitals have breaks in their skin . . . that can allow bacteria to enter underlying tissues or the bloodstream").

²⁷¹ See Joel W. Beam & Bernadette Buckley, *Community-Acquired Methicillin-Resistant Staphylococcus aureus: Prevalence and Risk Factors*, 41 J. ATHLETIC TRAINING 337, 337 (2006) ("The risk factors identified were recent hospitalization. . . chronic illness, injection drug use."); Navy Envtl. Health Ctr., *Guidelines for the Management of Community-Acquired Methicillin-Resistant Staphylococcus Aureus (CA-MRSA) Infections in the US Navy and Marine Corps*, 1, 5 (2005), <http://fhp.osd.mil/pdfs/CA-MRSAguidelines.pdf> [<http://perma.cc/4CNR-GZ7M>] ("Staphylococcal colonization occurs more commonly in injection drug users, individuals with type 1 diabetes, hemodialysis patients, persons with acquired immunodeficiency syndrome (AIDS), surgical patients, and previously hospitalized patients.").

²⁷² U.S. Dep't of Health and Human Servs., *Preserving Health and Prolonging Life for People with HIV* (Aug. 20, 2015), <http://www.nih.gov/research-training/preserving-health-prolonging-life-people-hiv> [<http://perma.cc/8Q2E-F6WA>].

²⁷³ See generally Marciarille, *supra* note 199, at 62 (arguing that Medicare hospital discharge "is not designed to promote successful community re-entry or reduce hospital recidivism").

²⁷⁴ *Id.* at 43 (noting that "[w]ell into the twentieth century, the dominant model was for patients to experience their general acute care illnesses at their homes," but that "a different hospitalization and post-hospitalization model ha[s] grown up in an attempt to mediate the relationships between the hospital, the family, and other social service institutions outside the hospital").

²⁷⁵ See generally Emily R. M. Sydnor & Trish M. Perl, *Hospital Epidemiology and Infection Control in Acute-Care Settings*, 24 CLINICAL MICROBIOLOGY REV. 142, 144 (2011) (reporting that "[r]oughly 25% of nosocomial infections occur in intensive care units (ICUs)").

²⁷⁶ Beam & Buckley, *supra* note 271, at 338 ("recent outbreaks of CA-MRSA have been reported . . . among athletic teams"); Navy Envtl. Health Ctr., *supra* note 271, at 5 ("Military conditions often involve prolonged close contact between individuals. These close contact situations, combined with lapses in personal hygiene (particularly in the recruit and deployed settings) are an ideal environment for CA-MRSA transmission.").

²⁷⁷ See generally Kevin Cullinan & Martha Wolf, *The Patient Room: What is the Ideal Solution?*, Planning and Managing the Workplace: Evidence-Based Design and the Organizational Ecology of

replete with residents with the most compromised immune systems and staffed by many younger and healthier individuals who are likely athletes, parents of children in day-care, and perhaps tattooed.²⁷⁸

The war against drug-resistant bacteria will, in no small measure, have to fathom how to measure MRSA incidence and prevention in people who have never been hospitalized.²⁷⁹

E. WE COULD KNOW SO MUCH MORE

As *The Economist* has observed, “[t]o improve healthcare, governments need to use the right data.”²⁸⁰ We are less than certain what the right data is that should be used to target healthcare-associated infections. This uncertainty is an inhibitor on accurate commensurable data collection involving healthcare-associated infections and is an inhibitor to the comparative study of infection transmission and infection in the wider community.

The most vulnerable patients in an acute care facility are typically found in the facility’s intensive care unit (“ICU”).²⁸¹ There, MRSA’s persistence and transmission could be the most apparent. It was in the ICU that the battle of targeted versus universal testing and decolonization for MRSA was played out.²⁸² Both targeted decolonization and universal decolonization of patients in the ICU were viable candidate strategies to prevent healthcare-associated infection transmission in the ICU and universal MRSA screening and targeted isolation added a third possible approach.²⁸³

The development of ultrafast gene sequencing has changed the nature of viral infection identification.²⁸⁴ Ironically, our love of gene sequencing extends to the highest levels of government,²⁸⁵ but not to the lowest levels of MRSA.

Healthcare Environments, Cornell University, 1, 23-29 (2010), <http://iwsp.human.cornell.edu/files/2013/09/The-patient-room-what-is-the-ideal-solution-26h3eox.pdf> [<http://perma.cc/8GRX-M98H>] (discussing single versus multi-patient rooms).

²⁷⁸ See Martin E. Stryjewski & Henry F. Chambers, *Skin and Soft-Tissue Infections Caused by Community-Acquired Methicillin-Resistant Staphylococcus aureus*, 46 CLINICAL INFECTIOUS DISEASES S368, S369 (2008) (noting that “CA-MRSA infections have been reported in . . . tattoo recipients” and that “[t]ransmission has occurred through activities in which direct contact and turf abrasions are common—for example, among football players, [and] wrestlers”).

²⁷⁹ See generally, *Waging War Against Drug Resistant Bacteria*, ROBERT WOOD JOHNSON FOUND. (Oct. 7, 2013), <http://www.rwjf.org/en/about-rwjf/newsroom/newsroom-content/2013/10/waging-war-against-drug-resistant-bacteria.html> [<http://perma.cc/XV6V-ABSJ>] (“We were seeing MRSA in subjects who had never been hospitalized.”).

²⁸⁰ *Measuring Healthcare: Need to Know*, ECONOMIST (Feb. 1, 2014), <http://www.economist.com/news/international/21595474-improve-health-care-governments-need-use-right-data-need-know>.

²⁸¹ See Jane D. Siegel et al., CDC, *Management of Multi-Drug Resistant Organisms In Healthcare Settings* 1, 7 (2006), <http://www.cdc.gov/hicpac/pdf/guidelines/MDROGuideline2006.pdf> [<http://perma.cc/56W8-CUNB>] (“Hospitalized patients, especially ICU patients, tend to have more risk factors than non-hospitalized patients do, and have the highest infection rates.”).

²⁸² Susan S. Huang et al., *Targeted Versus Universal Decolonization to Prevent ICU Infection*, 368 NEW ENG. J. MED. 2255 (2013).

²⁸³ *Id.* at 2255.

²⁸⁴ Angier, *supra* note 27 (“Through ultrafast gene sequencing and targeted gene silencing techniques, researchers have identified genes critical to viral infection and drug resistance. ‘We’ve discovered viruses we didn’t even know existed,’ Dr. Freed said.”).

²⁸⁵ Austin Frakt & Aaron E. Carroll, *Can This Treatment Help Me? There’s a Statistic for That*, N.Y. TIMES (Jan. 26, 2015), <http://www.nytimes.com/2015/01/27/upshot/can-this-treatment-help-me-theres-a-statistic-for-that.html> (noting that in his 2015 State of the Union address, “President Obama encouraged the

F. IF IGNORANCE IS BLISS, 'TIS FOLLY TO BE WISE

The incentive to remain ignorant of healthcare-associated infection prevalence in acute care facilities is strong. Even if acknowledged, the incentives to change reporting are stronger than those to change behavior.²⁸⁶ Inevitably, this leads to the question of whether an outcome-oriented regulation is the answer.

Healthcare-associated infections are not the only pay for performance measure founded and foundering on a self-reported compliance measure. CMS's Nursing Home Compare website has recently revamped its star ratings systems in light of apparent rampant gaming of self-reported data.²⁸⁷ Seen from this perspective, we want to pay for quality, but only if quality goals are easily achieved.²⁸⁸

V. MOVING AWAY FROM DON'T ASK DON'T TELL

The Affordable Care Act has three quality-based penalty programs, each of which is based on one or more quality-of-care metrics.²⁸⁹

A. HIGH-TECH MOLECULAR DETECTION

The CDC has targeted antibiotic-resistance in general through the proposal of an Advanced Molecular Detection initiative, using technologies like genome sequencing to improve detection and epidemiology,²⁹⁰ as well as through improvements to the National Healthcare Safety Network, to provide an integrated reporting system for healthcare-associated infections.²⁹¹ Communities, health providers, and healthcare

development of 'precision medicine,' which would tailor treatments based on individuals' genetics or physiology").

²⁸⁶ See David A. Hyman & Charles Silver, *Medical Malpractice Litigation and Tort Reform: It's the Incentives, Stupid*, 59 VAND. L. REV. 1085, 1086 (2006) (noting that the tort system "rather than motivating providers to do better . . . paralyzes them with fear and causes them to hide their mistakes"); David A. Hyman, *Healthcare Fraud and Abuse: Market Change, Social Norms, and the Trust "Reposed in the Workmen"*, 30 J. LEGAL STUD. 531, 533 (2001) (arguing that "addressing the problem of healthcare fraud and abuse" is "considerably more difficult than condemning it").

²⁸⁷ See Julie Appleby, *Government to Grade Nursing Homes on Tougher Scale*, KAISER HEALTH NEWS (Feb. 12, 2015), <http://khn.org/news/government-to-grade-nursing-homes-on-tougher-scale/> [<http://perma.cc/9SQM-ZLQ8>].

²⁸⁸ See Aaron Carroll, *We Really Want to Pay for Quality, But It's So Darn Hard*, INCIDENTAL ECONOMIST (Feb. 7, 2015), <http://theincidentaleconomist.com/wordpress/academyhealth-we-really-want-to-pay-for-quality-but-its-so-darn-hard/> [<http://perma.cc/62JF-S9M3>]; Andrew Tobel, *Admitting the Problem With the Hospital Readmissions Reduction Program*, 8 AHLA J. HEALTH & LIFE SCI. L. 45, 68-73 (2015) (providing an assessment of just how difficult it can be to lower some pay for performance measures, like readmissions rates).

²⁸⁹ The Affordable Care Act has created a "Hospital Readmissions Reduction Program" to reduce payments to hospitals based on patient readmission rates. Patient Protection and Affordable Care Act, 42 U.S.C. § 1395ww(p) (2012). The Act also has a "Payment Adjustment for Hospital Acquired Conditions" section, which imposes penalties on the twenty-five percent of hospitals whose rates of hospital-acquired conditions are the highest. 42 U.S.C. § 1395ww(p). In addition, the Secretary of Health and Human Services is required to establish a "Hospital Value-Based Purchasing Program" ("VBP Program") that links physician reimbursements to value in care. 42 U.S.C. § 1395ww(o).

²⁹⁰ See CDC, *Emerging and Zoonotic Infectious Diseases*, CDC.GOV (2016), <http://www.cdc.gov/budget/documents/fy2017/ezyd-factsheet.pdf> [<http://perma.cc/7FK9-X6X4>].

²⁹¹ See CDC, *What is NHSN?*, CDC.GOV (Oct. 15, 2015), <http://www.cdc.gov/nhsn/about-nhsn/index.html> [<http://perma.cc/35DL-7K6V>]; see also Maron, *supra* note 221 ("The [CDC] also requested an increase of about \$12.5 million for improvements to the National Healthcare Safety Network, which provides an integrated reporting system for healthcare-associated infections.").

officials have all offered proposals to prevent both the original incidence and the spread of healthcare-acquired infections.²⁹²

B. CLINICAL HYGIENE

Prevention plans almost always focus on hand washing or hand hygiene,²⁹³ but are overwhelmingly developed from a consumer-driven perspective.²⁹⁴ Patients, as healthcare consumers, are urged to insist that all healthcare providers wash their hands before touching them.²⁹⁵

Engaging patients in the prevention of healthcare-associated infections has great appeal. Patients should be the most interested in their own health and safety and the patient is arguably best situated to monitor the hand hygiene practices of providers.²⁹⁶ But those with compromised immune systems—the aged, the very young, the very ill—are often the worst equipped to strictly monitor their care for quality.²⁹⁷ Even the most robust among us, despite the encouragement to do so, are unlikely to correct a healthcare provider.²⁹⁸ There also appears to be some relationship between nurses and better hand hygiene for all hospital based healthcare providers, implying that an active and energetic hand-hygiene-oriented nursing staff may actually be more successful at reducing MRSA incidence and transmission rates.²⁹⁹ Nurse staffing patterns may matter and, if they do, they implicate another costly input for reducing MRSA transmission in the hospital setting.³⁰⁰

²⁹² See *infra* Part V.B.

²⁹³ See, e.g., *Comprehensive Infection Prevention Strategies*, INFECTION CONTROL TODAY, <http://sd.infectioncontrolday.com/galleries/2015/03/comprehensive-infection-prevention-strategies.aspx?pg=5#gallery> [<http://perma.cc/9L2A-42T7>].

²⁹⁴ See Maron, *supra* note 200 (“At the Massachusetts Avenue Surgery Center [in Bethesda, Maryland] . . . , a registered nurse is charged with splitting her time between acting as a postanesthesia care unit nurse and acting as the facility’s infection control manager.”).

²⁹⁵ Maron, *supra* note 221 (“Hospital patients . . . should insist everyone wash their hands before touching them.”).

²⁹⁶ Andrew Ottum et al., *Engaging Patients in the Prevention of Health-Care Associated Infections: A Survey of Patients’ Awareness, Knowledge, and Perceptions Regarding the Risks and Consequences of Infection with Methicillin-Resistant Staphylococcus Aureus and Clostridium Difficile*, 41 AM. J. INFECTION CONTROL 322, 323 (2013) (finding that “hand hygiene programs that emphasize patient empowerment and encourage patients to participate in their care have effectively improved compliance with hand hygiene among healthcare workers”); see also Benedetta Allegranzi et al., *Status of the Implementation of the World Health Organization Multimodal Hand Hygiene Strategy in United States of America Healthcare Facilities*, 42 AM. J. INFECTION CONTROL 224, 227 (2014) (noting that “[a]nother element with the potential to make a significant contribution to the creation of a safety climate is patient involvement”).

²⁹⁷ See *Protect Yourself Against Healthcare-Associated Infections (HAIs)*, PATIENT CARE LINK, <http://www.patientcarelink.org/uploadDocs/1/Massachusetts-Consumer-HAI-Basics.pdf> [<http://perma.cc/3KM2-78MT>] (providing questions for patients to ask healthcare providers to help protect themselves against HAIs). Note that the suggested questions require patients to have a degree of strength, alertness, and awareness that very sick patients may not have. *Id.*

²⁹⁸ See Pauline W. Chen, *Afraid to Speak Up at the Doctor’s Office*, N.Y. TIMES: WELL (May 31, 2012, 12:01 AM), <http://well.blogs.nytimes.com/2012/05/31/afraid-to-speak-up-at-the-doctors-office/>.

²⁹⁹ Jeannie P. Cimiotti et al., *Nurse Staffing, Burnout, and Healthcare-Associated Infection*, 40 AM. J. INFECTION CONTROL 486, 488 (2012) (noting the relationship between nursing burnout and staffing patterns to the incidence of certain infections).

³⁰⁰ Dep’t for Professional Emps., AFL-CIO, *Safe-Staffing Ratios: Benefiting Nurses and Patients*, Fact Sheet 2014 1, 2 (2014), <http://dpeaflcio.org/programs-publications/issue-fact-sheets/safe-staffing-ratios-benefiting-nurses-and-patients/> [<http://perma.cc/2NY8-ECPR>] (noting that “[h]igh nurse-to-patient ratios are associated with an increase in medical errors, as well as patient infections, bedsores, pneumonia, MRSA, cardiac arrest, and accidental death”).

Americans, however, are astonishingly passive in the clinical encounter.³⁰¹ There is considerable debate about the best way to activate healthcare patients as consumers.³⁰² Thus, this leaves self-policing of hand hygiene to healthcare providers.

The WHO has developed hand hygiene guidelines³⁰³ in stark contrast to the American “do your own thing” approach to healthcare facility hand hygiene. Even where expectations are clear, however, the standards are not always met.³⁰⁴ One study of 168 United States healthcare facilities participating in the 2009 WHO global campaign to improve hand hygiene concluded that one in five facilities sampled fails to place alcohol-based hand sanitizer at every point of care.³⁰⁵ Because they do not follow conventional rules, American hospitals are known as independent thinkers on infection prevention, giving rise to a whole industry of professional infection preventionists who help American hospitals operate unconventionally.

C. WHO MEASURES PERFORMANCE? WHO DECIDES TO PAY?

Beginning in 2008, CMS has refused payment for the correction of certain hospital-acquired conditions.³⁰⁶ Targeting multiple HACs, the program only partially targets healthcare-associated infections.³⁰⁷ CMS targeted two kinds of HACs in particular, central catheter-associated bloodstream infections and catheter-associated urinary tract infections, in the limited universe of hospitals already participating in the National Healthcare Safety Network’s data reporting system.³⁰⁸

Interestingly, the pilot program did not, perhaps because it could not, track the effect of the reimbursement change on infection rates as compared with baseline trends.³⁰⁹ One study attempting to extract information from the limited data set found no evidence that the 2008 CMS payment policy reduced infection rates.³¹⁰

³⁰¹ Kaarin Michaelsen et al., *Overcoming Patient Barriers to Discussing Physician Hand Hygiene: Do Patients Prefer Electronic Reminders to Other Methods?*, 34 INFECTION CONTROL & HOSP. EPIDEMIOLOGY 929 (2013) (noting little likelihood of patients chastising healthcare personnel for not washing their hands).

³⁰² See generally Jennifer Lenz, Alana Burke & Karen Onstad, National Committee for Quality Assurance, *Value Judgment: Helping Healthcare Consumers Use Quality and Cost Information*, CAL. HEALTHCARE FOUND.: ISSUE BRIEF 1 (Dec. 2012) (proposing that “[i]nformed consumers, armed with information on value, may help elevate the importance of value in healthcare by shopping for and choosing providers and health plans that provide high-quality, low-cost care”); Sharon B. Arnold, *Improving Quality Healthcare: the Role of Consumer Engagement*, ROBERT WOOD JOHNSON FOUND., ACADEMY HEALTH: ISSUE BRIEF 1 (Oct. 2007), <http://www.academyhealth.org/files/issues/ConsumerEngagement.pdf> [<http://perma.cc/XF9F-2PKH>] (discussing “Hibbard’s Patient Activation Measure (PAM) that assesses patients’ knowledge skill and confidence in managing their health and healthcare” as they become “fully competent managers of their own health and healthcare”).

³⁰³ See WORLD HEALTH ORG., *WHO Guidelines on Hand Hygiene in Healthcare* (2009), http://apps.who.int/iris/bitstream/10665/44102/1/9789241597906_eng.pdf [<http://perma.cc/UZ36-H3VU>].

³⁰⁴ See Allegranzi, *supra* note 296, at 224 (noting that “compliance with recommended hand hygiene practices by healthcare workers (HCW) is unacceptably low”).

³⁰⁵ See *id.* at 225 (noting that “[o]verall, 77.5% of facilities reported that alcohol-based handrub is continuously available facility wide at each point of care”).

³⁰⁶ See CMS, *Hospital-Acquired Conditions (Present on Admission Indicator)*, *supra* note 255 (stating that “[f]or discharges occurring on or after October 1, 2008, hospitals will not receive additional payment for cases in which one of the selected conditions was not present on admission”).

³⁰⁷ *Id.*

³⁰⁸ See CDC, *Healthcare-Associated Infections*, *supra* note 12 (noting a “50 percent decrease in central line-associated bloodstream infections (CLABSI) between 2008-2014,” and “no change in overall catheter-associated urinary tract infections (CAUTIs) between 2009 and 2014”).

³⁰⁹ See CMS, *Hospital-Acquired Conditions (Present on Admission Indicator)*, *supra* note 255 (noting that CMS only required hospitals to “report present on admission information” starting in October of 2007).

³¹⁰ Grace M. Lee, *Effect of Nonpayment for Preventable Infections in U.S. Hospitals*, 367 NEW ENG. J. OF MED. 1428, 1428 (2012) (finding “no evidence that the 2008 CMS policy to reduce payments for central

Although this study did not discuss payment penalties as much as payment refusals for corrective measures needed to treat the targeted HACs,³¹¹ the change in reimbursement from the status quo for the participating entities must surely have been interpreted as punitive. It is significant, however, that the refusal of reimbursement extended only to the HAC corrective expenses and not to any of the other costs associated with the patient treated.³¹² Although described as “non-payment for preventable complications,”³¹³ it is clear that the bite of the non-payment could have been far deeper. Testing whether “avoidance of losses” is really preferable to “achievement of gains”³¹⁴ might require a more substantial loss. The corrective expenses tracked, after all, represented a relatively modest percentage of the total reimbursement.³¹⁵

CMS’s Hospital-Acquired Condition Program for 2015³¹⁶ has been modified. A HAC is defined as a qualifying diagnosis³¹⁷ that was either not present on inpatient admission or when documentation is insufficient to determine if the condition was present at the time of inpatient admission.³¹⁸ Hospitals have been required to submit Medicare claims specifying whether claims were present on admission since October of 2007, but it was only as of October 2008 that discharges from hospitals no longer received additional payment for cases in which one of the selected conditions was not present at admission.³¹⁹ Payment is made, in short, as if the secondary diagnosis of complications from the HAC were not presented for payment.³²⁰ But something else has been lost as well. HACs continue to be reported as part of the Inpatient Prospective Payment System (“IPPS”) and subject to payment adjustment,³²¹ but have been removed from the Inpatient Quality Reporting Program and are no longer reported on the Hospital Compare website.³²² In addition, a new Hospital-Acquired Condition Reduction Program, associated with discharges beginning on October 1, 2012, has been added to the current Hospital-Acquired Conditions Program.³²³ The Fiscal Year 2015 payment adjustment will be reduced by one percent for hospitals that rank among

catheter-associated bloodstream infections and catheter-associated urinary tract infections had any measurable effect on infection rates in U.S. hospitals”).

³¹¹ *Id.* at 1435 (noting that, although the study focuses on nonpayment for HACs, “[g]reater financial penalties might induce a greater change in hospital responsiveness to the CMS policy”).

³¹² *Id.* at 1428.

³¹³ *Id.* at 1429.

³¹⁴ *Id.*

³¹⁵ See generally Richard D. Miller, Jr. et al., *Readmissions Due to Hospital-Acquired Conditions (HACs): Multivariate Modeling and Under-Coding Analyses*, RTI INT’L (Sept. 2012), <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/Downloads/Final-Report-Readmissions.pdf> [<http://perma.cc/7JMX-RAZ3> <http://perma.cc/7JMX-RAZ3>] (project funded by CMS) (“Between FY 2009 and FY 2010, we did not discover any large changes in the readmission rates for any of the HACs.”).

³¹⁶ See CMS *Hospital-Acquired Condition Reduction Program (HACRP)*, CMS.GOV (Feb. 4, 2016, 1:52 PM), <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/HAC-Reduction-Program.html> [<http://perma.cc/WA7P-VJSF>].

³¹⁷ See CMS, *Hospital-Acquired Conditions*, *supra* note 253 (listing the HAC qualifying diagnoses).

³¹⁸ See CMS, *Hospital-Acquired Conditions (Present on Admission Indicator)*, *supra* note 255.

³¹⁹ *Id.*

³²⁰ See Prospective Payment Systems for Inpatient Hospital Services, 42 C.F.R. § 412.48 (2009).

³²¹ See CMS, *Hospital-Acquired Conditions*, *supra* note 253.

³²² See *Data Sources*, MEDICARE.GOV HOSPITAL COMPARE, <http://www.medicare.gov/hospitalcompare/Data/Data-Sources.html> [<http://perma.cc/CC5U-495W>].

³²³ See 42 U.S.C. 1395ww(p); see also Prospective Payment Systems for Inpatient Hospital Services, 42 C.F.R. § 412.172 (2015); CMS *Hospital-Acquired Condition Reduction Program (HACRP)*, *supra* note 316.

the lowest-performing twenty five percent with regard to certain enumerated hospital-acquired conditions.³²⁴

In sum, the HAC Program for 2015 will have three measures across two Domains, and Domain 2 will consist of two healthcare-associated infection measures, targeting central line-associated blood stream infections and catheter-associated urinary tract infections.³²⁵ The focus on healthcare-associated infections is admirable. The target of only the lowest quartile of performers³²⁶ is less so. Penalized institutions will see their total payments reduced across the board, including indirect medical education payments to teaching hospitals and disproportionate share payments to DSH hospitals.³²⁷ Seen from one perspective, the HAC Reduction Program is a penalty program focused on reducing hospital payments for excess HACs in contrast with other Value-Based Purchasing (“VBP”) and Incentive Programs which reward certain behaviors.³²⁸ Seen from a different perspective, the HAC Program is a percentage reduction to the amount otherwise payable under the Inpatient Prospective Payment Systems (“IPPS”), while the other VBP and Readmissions Reduction Programs represent adjustments to the base Diagnosis-Related Group payments.³²⁹ So much more is at stake with the HAC Reduction Program scoring methodology because the bite is felt in the hospital’s overall budget.

Similarly, Congress has used no less than the Affordable Care Act to target central line-associated bloodstream infections (“CLABsis”) acquired in hospitals.³³⁰ CLABsis identification complexity, however, can teach us some things about the similar problems in MRSA prevalence data collection. First, there are different methods in use to identify CLABsis.³³¹ Second, there are different methods of data reporting of an identified infection.³³² CLABsis, like MRSA, is not standardized in method of identification, method of reporting, or mandated reporting.³³³

D. THE PROBLEM OF METRICS

The clearest illustration of the inadequacy of performance metrics designed to monitor and reduce healthcare-associated infections may be best illustrated by the Partnership for Patients initiative (the “Partnership”). Using baselines set in 2010, the Partnership has been able to conclude that, there has been a forty-nine percent

³²⁴ See 42 U.S.C. § 1395ww(p)(1).

³²⁵ CDC, *Healthcare-Associated Infections*, *supra* note 12.

³²⁶ 42 C.F.R. § 412.172 (2015).

³²⁷ As compared to Readmissions and VBP Programs, where the payments are based upon Diagnosis Related Groups (DRGs). See, e.g., 42 U.S.C. § 1395ww(o).

³²⁸ Compare 42 U.S.C. § 1395ww(p) (penalizing hospitals for excess HACS) with § 1395ww(o) (establishing value-based incentives for hospital payments).

³²⁹ See CMS, *Hospital Value-Based Purchasing*, CMS.Gov (Oct. 30, 2015), <http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/hospital-value-based-purchasing/index.html?redirect=/Hospital-Value-Based-Purchasing/> [<http://perma.cc/N4JT-T6PW>].

³³⁰ See Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long Term Care Hospital Prospective Payment System and Fiscal Year 2015 Rates, 79 Fed. Reg. 49,853, 50,090 (Aug. 22, 2014) (“For FY 2015, we will keep CDC’s NHSN CAUTI and CLABSI measures in Domain 2 as they are currently endorsed.”); see also *Hospital-Acquired Condition (HAC) Reduction Program*, QUALITYNET <http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPPage%2FQnetTier3&cid=1228774294977> [<http://perma.cc/TKA3-LCQN>].

³³¹ See Susan Morabit, *NHSN Bloodstream Infection Surveillance in 2015*, CDC, 6-34 (Feb. 19, 2015), <http://www.cdc.gov/nhsn/pdfs/training/2015/clabsi-2015.pdf> [<http://perma.cc/VP4P-2JUB>].

³³² See *id.* at 64-77.

³³³ See generally *id.*

reduction in CLABs as of 2013.³³⁴ How does the Partnership know this? Because hospital-reported data tells them so, though even professional analysts of the numbers conceded that these successes are evaluated on ever-evolving measures.³³⁵ Dr. Peter Provonost ventures that the improvements in HAC rates at Johns Hopkins, an estimated thirty-seven percent improvement by 2013, may be attributable more to documentation and coding in response to penalties than to actual improvements in quality and safety.³³⁶

VI. CONCLUSION

The journey from highly stylized healthcare-associated infection reporting metrics to the actual experience of Ebola's arrival in the United States is a convoluted one. "These Ebola cases should be regarded as a teaching moment and a time to call for necessary changes and a reinvigoration of infection control and epidemiology practices. If the CDC and hospital administrators fail to capitalize upon the impetus for better infection control that we are now seeing with Ebola, that will be a far greater tragedy."³³⁷ Reinvigoration of infection control in the acute care hospital setting may have to begin in the Emergency Department in a time of pandemic, a venue that is often not finely attuned to the dangers of cross infection.

Moreover, it would be a larger failure to ignore what our brush with Ebola could teach us about the limits of self-reported pay for performance measures in providing incentives reinvigorate infection control at all points of entry into acute care.

On an international level, targeting antimicrobial resistance itself will require a globally collaborative effort. Initiatives such as the Wellcome Trusts' project, examining the economic issues surrounding antimicrobial resistance,³³⁸ and the Bill & Melinda Gates Foundation Grand Challenge to develop Novel Approaches to Characterizing and Tracking the Global Burden of Antimicrobial Resistance,³³⁹ are a welcome start. From this perspective, drug resistance is a problem of managing a shared global resource.³⁴⁰ If we are indeed, as Dr. Lance Price maintains, running

³³⁴ AGENCY FOR HEALTHCARE RESEARCH AND QUALITY, *Interim Update on 2013 Annual Hospital-Acquired Condition Rate and Estimates of Cost Savings and Deaths Averted From 2010 to 2013* 16-17 (Nov. 2015), <http://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/pfp/interimhacrate2013.pdf> [<http://perma.cc/SEVD-BU77>].

³³⁵ *Id.* at 12. The update also notes that the lack of adequate studies makes it difficult to understand whether the harm reduction interventions are the actual cause of any reduction in HACs. See Sabriya Rice, *Despite Progress on Patient Safety, Still a Long Way Across the Chasm*, MODERN HEALTHCARE (Dec. 6, 2014), <http://www.modernhealthcare.com/article/20141206/MAGAZINE/312069987> [<http://perma.cc/JQ82-7TZ7>] ("But quality metrics experts say the lack of well-defined studies make it . . . difficult to know whether interventions to reduce other infections produce the intended impact.").

³³⁶ Rice, *supra* note 335.

³³⁷ Stone, *supra* note 165.

³³⁸ *Internationally Focused Commission on Antimicrobial Resistance Announced by PM*, WELLCOME TRUST (July 2, 2014), <http://www.wellcome.ac.uk/News/Media-office/Press-releases/2014/WTP056762.htm> [<http://perma.cc/H7SE-CAL8>].

³³⁹ *Novel Approaches to Characterizing and Tracking the Global Burden of Antimicrobial Resistance*, BILL & MELINDA GATES FOUND., <http://gcgh.grandchallenges.org/challenge/novel-approaches-characterizing-and-tracking-global-burden-antimicrobial-resistance-round> [<http://perma.cc/8J2H-93E8>].

³⁴⁰ See Sarah Childress, *Ramanan Laxminarayan: the Global Reach of Resistance*, PBS FRONTLINE (Oct. 22, 2013), <http://www.pbs.org/wgbh/frontline/article/ramanan-laxminarayan-the-global-reach-of-resistance/> [<http://perma.cc/R9AL-CJWZ>] ("This is a problem of shared commons, so just like each of us could choose to drive a car, and that contributes to global warming but we don't really see the connection, in the same way, we could choose to overuse antibiotics in our own lives, and that has global consequences.").

toward the edge of a cliff,³⁴¹ then our collective situation is very grim indeed. A developing sense that our national health security is intertwined with global health security is necessary and appears to be developing, albeit slowly.³⁴²

The term “pay for performance” is now at least a decade old in its application to healthcare.³⁴³ Despite the passage of time we are no closer to uniformity of definition on what performance we would like to reward. It has been observed that the problem with our quality metrics is that we use ones that are easy to measure, not ones that matter.³⁴⁴ This Article has attempted to discern how we reached the position we currently inhabit with regard to healthcare-associated infections: loving quantity but despising quality measures.

Our nation’s brush with Ebola reveals that we, like the acute care facility and public health authorities in West Africa, have incentives to be less than forthcoming about the incidence and transmission of healthcare-associated infections. Our nation’s brush with Ebola reveals that our response, like those struggling with Ebola in West Africa, are constrained and shaped by cultural norms, whether they be burial customs involving close contact with human bodies in West Africa,³⁴⁵ or a determination to implement EMTALA in a way that minimizes acute care hospital exposure to expensive in-patient stays by the uninsured.³⁴⁶ We, too, are creatures of culture and may be called upon to re-examine our own culture of care in the context of infectious disease control inside and outside of acute care facilities.

³⁴¹ Dr. Lance B. Price, Microbiologist from the Translational Genomics Research Institute, excerpt from RESISTANCE (Uji Films 2014) (excerpt available at http://www.youtube.com/watch?v=_6bcP0f82qY&feature=youtu.be).

³⁴² See, e.g., THERESA WIZEMANN ET AL., RAPID MEDICAL COUNTERMEASURE RESPONSE TO INFECTIOUS DISEASES: ENABLING SUSTAINABLE CAPABILITIES THROUGH ONGOING PUBLIC- AND PRIVATE-SECTOR PARTNERSHIPS 1 (Nat’l Acad. of Sci. 2016) (quoting the following excerpt from the Office of the Assistant Secretary for Preparedness and Response’s (ASPR’s) National Health Security Strategy: “As the movement of people, goods, and services across borders increases, our national health security is increasingly dependent on global health security.”).

³⁴³ Michael G. Trisolini, *Introduction to Pay for Performance*, in PAY FOR PERFORMANCE IN HEALTHCARE: METHODS AND APPROACHES 7 (Jerry Cromwell et al., eds. 2011).

³⁴⁴ See Patrick H. Conway et al., *The Core Quality Measures Collaborative: A Rationale and Framework for Public-Private Quality Measure Alignment*, HEALTH AFFAIRS BLOG (June 23, 2015), <http://healthaffairs.org/blog/2015/06/23/the-core-quality-measures-collaborative-a-rationale-and-framework-for-public-private-quality-measure-alignment/> [<http://perma.cc/5PRE-2TCC>].

³⁴⁵ See discussion of burial rituals involving prolonged close contact with dead bodies, *supra* note 137.

³⁴⁶ See Schaffner, *supra* note 218.