

COMMENTARY

Potential Uses of a National Healthcare-Associated Infection Reporting System

Graham M. Snyder, MD, SM;¹ Daniel J. Morgan, MD, MS²

(See the article by Weiner et al, on pages 1105–1108.)

For decades, the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) and its precursor, the National Nosocomial Infections Surveillance System, have provided a standardized mechanism by which facilities report healthcare-associated infections (HAIs) in the United States. The NHSN has grown exponentially from 211 healthcare facilities representing 40 states and the District of Columbia in 2006 to a repository of all HAI data from more than 17,000 diverse medical facilities nationwide in 2015.^{1,2} Participation in the NHSN has been largely driven by state regulatory requirements and mandates from insurers, including the Centers for Medicare and Medicaid Services.

In this issue of *Infection Control and Hospital Epidemiology*, Weiner et al³ present NHSN data from the required Annual Hospital Survey, including policies for the control of multidrug-resistant organisms (MDROs). Their main finding was that approximately 80% of acute care hospitals (ACHs), 85% of long-term acute care hospitals (LTACHs), and 65% of inpatient rehabilitation facilities (IRFs) employ contact precautions for patients infected or colonized with an MDRO. Across all facility types, contact precautions were less commonly employed for extended-spectrum β -lactamase-producing organisms (ESBLs) than for methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant Enterococci (VRE), or carbapenem-resistant Enterobacteriaceae (CRE). Many facilities reported not using contact precautions for MRSA or VRE. This finding is consistent with recent trends toward discontinuing contact precautions for MRSA and/or VRE.⁴ The median frequency at which ACHs report being notified of a patient's MDRO status on transfer into the facility was 75% of admissions (higher for LTACHs and IRFs).

Weiner et al also report that in some regions as many as 32% of facilities do not use contact precautions for CRE and that more than 2% of facilities report having no policy on the use of contact precautions for CRE. Routine CRE screening was uncommon and was reported by only 7.0% of ACHs, 11.9% of

LTACHs, and 5.7% of IRFs, with limited details describing how screening was performed. Taken together, these CRE-related findings are concerning, and they are divergent with CDC recommendations, including the recommendation that all ACHs and high-acuity post-acute-care settings use contact precautions for the care of patients with CRE.⁵

The authors do not report the survey response rate, although presumably it is nearly 100% given that participation is required. The authors acknowledge that there may be a discrepancy between reported policies and actual practice, and there remains some ambiguity regarding the nuances of actual practices due to questions about wording or response details, which are not reported here.⁶ These issues, however, do not significantly diminish the findings. To our understanding, this survey captures an accelerating trend of forgoing contact precautions for MRSA and VRE, and it describes a concerning lack of precautions or preparations for CRE as well as inadequate communication among transferring facilities regarding MDRO carriage by transferred patients.

While this survey of reported practices is informative, we believe that NHSN has much greater potential to directly impact health policy regarding the control of MDROs and HAIs in the United States. These potential activities include (1) promoting a strategic shift from focusing on the control of MDROs within individual hospitals to a coordinated response across healthcare, (2) developing more robust research investigating the effect of differing policies on HAIs and MDROs, and (3) identifying facilities practicing outside the recommended standards of care for possible review of practices and outcomes.

Coordinated MDRO tracking has been successful in small countries, including the Netherlands for MRSA and Israel for CRE.^{7,8} It is surprising, therefore, that despite improved efficiency and transparency of reporting of CRE threats by the CDC as well as guidance on CRE prevention, a significant proportion of facilities in this survey do not employ screening or contact precautions for CRE. Successful control of MDRO will

Affiliations: 1. Department of Health Care Quality, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, Massachusetts; 2. VA Maryland Healthcare System and Department of Epidemiology & Public Health, University of Maryland School of Medicine, Baltimore, Maryland.

Received June 16, 2016; accepted June 18, 2016

© 2016 by The Society for Healthcare Epidemiology of America. This is a work of the U.S. Government and is not subject to protection in the United States. All rights reserved. 0899-823X/2016/3709-0016. DOI: 10.1017/ice.2016.163

require coordination of care among healthcare networks and regions. Persuasive data support the role of MRDO transmission not only at the level of individual facilities but also on a network scale.⁹ In this study, the rate of MDRO reporting among patients transferred among facilities was as low as 10% in the lowest decile of ACHs. The US healthcare system has responded to the opioid crisis in part by developing state-level prescription drug monitoring programs (<http://www.cdc.gov/drugoverdose/pdmp/>). Is it time to consider an analogous intervention such as a statewide or nationwide MDRO registry? Could the resources spent on misguided mandatory MRSA surveillance laws be transitioned into such a registry? An initial registry of rare organisms like CRE could be initiated by NHSN to remedy the inadequacy of identifying MDRO status on interfacility transfers.

NHSN reporting is standardized and nearly universal, and it is being used for public accountability and reimbursement. Given these characteristics, the data provided to the NHSN have been underutilized as a resource for infection control research. For example, the NHSN could be a foundation for conducting observational or effectiveness trials. This function could be directly performed by the CDC or through coupling with research groups like the Society for Healthcare Epidemiology of America Research Network.¹⁰

Finally, having access to prevention practices and MDRO and HAI rates puts the NHSN in an excellent position to identify facilities with non-normative practices or particularly high rates. Facilities not using proven or accepted prevention practices (eg, contact precautions for CRE) may benefit from nonpunitive notification and review. Likewise, facilities with successful outcomes not practicing standard-of-care prevention interventions may be innovative, with practices worth sharing. The CDC's forthcoming Targeted Assessment for Prevention (TAP) strategy, which partners with national and regional organizations to identify facilities with "a disproportionate burden of HAIs" for HAI prevention resources will hopefully fill this role.¹¹

This NHSN survey provides the infection control community with useful information about contact precautions for the control of MDROs in US healthcare facilities. The NHSN, however, has potential to be used more broadly to prevent MDROs and HAIs by improving communication and coordination of HAI prevention across facilities, promoting high-quality research, and scrutinizing rates and prevention practices.

ACKNOWLEDGMENTS

Financial support. No financial support was provided relevant to this article.

Potential conflicts of interest. Both authors report no conflicts of interest relevant to this article.

Address correspondence to Graham Snyder, MD, 330 Brookline Ave, Mailstop SL-435, Boston, MA 02115 (gsnyder@bidmc.harvard.edu).

REFERENCES

1. Edwards JR, Peterson KD, Andrus ML, et al. National Healthcare Safety Network (NHSN) Report, data summary for 2006, issued June 2007. *Am J Infect Control* 2007;35:290–301.
2. About | NHSN | CDC. Centers for Disease Control and Prevention website. <http://www.cdc.gov/nhsn/about-nhsn/index.html>. Published 2015. Accessed June 5, 2016.
3. Weiner LM, Webb AK, Walters MS, et al. Policies for controlling multidrug-resistant organisms in US healthcare facilities reporting to the National Healthcare Safety Network, 2014. *Infect Control Hosp Epidemiol* 2016;37:1105–1108.
4. Morgan DJ, Murthy R, Munoz-Price LS, et al. Reconsidering contact precautions for endemic methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant *Enterococcus*. *Infect Control Hosp Epidemiol* 2015;36:1163–1172.
5. Guidance for control of carbapenem-resistant Enterobacteriaceae (CRE) – November 2015 Update – CRE Toolkit. Centers for Disease Control and Prevention website. <http://www.cdc.gov/hai/pdfs/cre/CRE-guidance-508.pdf>. Published 2015. Accessed June 5, 2016.
6. Patient Safety Component-Annual Hospital Survey. Centers for Disease Control and Prevention website. http://www.cdc.gov/nhsn/forms/57.103_pshospurv_blank.pdf. Published 2015. Accessed June 5, 2016.
7. Schwaber MJ, Lev B, Israeli A, et al. Containment of a country-wide outbreak of carbapenem-resistant *Klebsiella pneumoniae* in Israeli hospitals via a nationally implemented intervention. *Clin Infect Dis* 2011;52:848–855.
8. Palmore TN, Henderson DK. Managing transmission of carbapenem-resistant enterobacteriaceae in healthcare settings: a view from the trenches. *Clin Infect Dis* 2013;57:1593–1599.
9. Datta R, Brown S, Nguyen VQ, et al. Quantifying the exposure to antibiotic-resistant pathogens among patients discharged from a single hospital across all California healthcare facilities. *Infect Control Hosp Epidemiol* 2015;36:1275–1282.
10. Safdar N, Anderson DJ, Braun BI, et al. The evolving landscape of healthcare-associated infections: recent advances in prevention and a road map for research. *Infect Control Hosp Epidemiol* 2014;35:480–493.
11. TAP Strategy | HAI | CDC. Centers for Disease Control and Prevention website. www.cdc.gov/hai/prevent/tap.html. Published 2016. Accessed June 5, 2016.