Preventing Hospital-Acquired Infections Starts with Data Collection

By John R. Cange, MSHI

One out of 10 US hospital patients contract an infection during their hospital stay, resulting in thousands of unnecessary deaths and billions of dollars in unnecessary costs. Almost all hospital-acquired infections (HAI) are preventable, which is why the Centers for Medicare and Medicaid Services (CMS) no longer reimburse hospitals for the costs to treat HAIs.[1]

To prevent a problem, however, requires that you understand the potential causes of the problem—and this understanding requires data. A complete understanding requires a complete dataset. In the case of HAIs, the ideal dataset would contain data concerning every type of HAI from every hospital in every state. Only some states require HAI data collection on all of the major types of HAI. Half of states report on some types of HAIs and not others, while many hospitals do not report on HAIs of any type.

In the near term, there is little chance that all 50 states will start requiring HAI reporting by imposing new state regulations, but there is hope. Hospitals could report on HAIs with little effort or additional cost by including HAI data with the "meaningful use" Electronic Health Record (EHR) Incentive Program data they already provide to CMS through their EHR systems.

EHRs are nearly ubiquitous in US hospitals today. Consequently, some have argued that CMS should mandate HAI reporting of all types by reimbursing hospitals for their HAI data as part of their meaningful use payments or reducing their HAI reimbursement if the hospital does not comply. This strategy has been proven to be very effective with CMS' meaningful use reporting. Ultimately, this article serves as a call to action to CMS and an invitation to discuss a strategy for mandatory HAI reporting.

State Laws Undermine HAI Reporting

In a 2008 study published in the *American Journal of Infection Control*, the authors estimated that 10 percent, or about two million American hospital patients, acquire a clinically significant HAI every year.[2] These infections result in 100,000 deaths per year, making HAIs one of the top five causes of death in the United States. HAIs also cost US hospitals between $28 billion and $45 billion per year to treat. Reducing the number of HAIs will save lives and reduce healthcare costs, both of which are imperative—so why aren't hospitals at least required to report on HAI incident rates?

Only state governments can regulate and mandate HAI reporting to their state's department of health and to the National Health Safety Network (NHSN), the research branch of the Centers for Disease Control and Prevention (CDC) that studies HAI.[6] Currently, 16 out of 50 state governments do not require HAI reporting at all, and of those states that do require HAI reporting, many limit the types of HAI data that hospitals must report. Also, certain hospitals are excluded from reporting HAI data if their hospitals do not perform the specific procedure that can lead to an HAI.

These omissions and exceptions are reasonable compromises when hospitals expend manual efforts to gather this data. But from a research perspective, these omissions limit the quantity and the completeness of the data, requiring researchers to make assumptions about HAI incidence.[7] Table 1below shows current national HAI reporting requirements for each state, by HAI type.

Table 1:
Current HAI Reporting Requirements Adapted from NHSN 2013 Progress Report

DEFINITIONS: SSI = Surgical-site infection

CLABSI = Central line-associated bloodstream infection
CAUTI = Associated urinary tract infection
MRSA = Methicillin-resistant Staphylococcus aureus
CDI = Clostridium difficile
VAP = Ventilator-associated pneumonia
CAUTI = Associated urinary tract infection
VAE = Ventilator-associated events

Hospitals Reporting HAI, by State			**State Mandated Data in Report++**				
State	**Total**	**NHSN+**	**CLABSI**	**CAUTI**	**SSI**	**MRSA**	**CDI**
Alabama	118	75	Y	Y			
Alaska	26	10					
Arizona	97	56					
Arkansas	87	48	Y	Y	Y	Y	Y
California	417	350	Y		Y	Y	Y
Colorado	94	52	Y		Y		
Connecticut	41	30	Y	Y	Y	Y	Y
Delaware	13	8	Y	Y	Y	Y	Y
Florida	237	191					
Georgia	166	102	Y	Y	Y	Y	Y
Hawaii	27	15	Y	Y	Y	Y	Y
Idaho	47	16					
Illinois	207	148	Y			Y	Y
Indiana	148	104	Y	Y	Y	Y	
Iowa	122	50					
Kansas	149	49					
Kentucky	116	72					
Louisiana	172	79					
Maine	41	21	Y				
Maryland	59	47	Y				
Massachusetts	95	69	Y				
Michigan	157	97					
Minnesota	144	47	Y	Y	Y	Y	Y
Mississippi	111	47					
Missouri	135	74					
Montana	64	14					
Nebraska	95	20					
Nevada	46	23	Y			Y	
New Hampshire	29	24	Y	Y	Y		
New Jersey	94	72	Y	Y	Y	Y	
New Mexico	48	36	Y				Y

New York	251	172	Y		Y		Y
North Carolina	133	98	Y	Y		Y	Y
North Dakota	48	6					
Ohio	203	137				Y	Y
Oklahoma	144	53	Y				
Oregon	64	49	Y		Y		Y
Pennsylvania	221	172	Y	Y	Y	Y	Y
Rhode Island	14	11	Y				Y
South Carolina	81	65	Y		Y	Y	
South Dakota	64	16					
Tennessee	154	95	Y	Y	Y	Y	Y
Texas	506	281	Y		Y		
Utah	53	26	Y	Y	Y	Y	Y
Vermont	16	7	Y		Y		
Virginia	109	81	Y				
Washington	103	83	Y		Y		
West Virginia	58	43	Y	Y	Y	Y	Y
Wisconsin	144	90					
Wyoming	31	21					

+ Not all hospitals required to report on these infections (i.e., some hospitals do not use urinary catheters so CAUTI would not apply).
++ State mandated. Requires hospitals in the state to report HAI to the National Healthcare Safety Network (NHSN).

Source: Centers for Disease Control and Prevention. "National and State Healthcare Associated Infections: Progress Report (Based on 2013 Data)." January 2015. www.cdc.gov/HAI/pdfs/progress-report/hai-progress-report.pdf.

What Gets Measured Gets Improved

As shown on Table 1, only 11 states require reporting on all types of HAI; 23 states require that only certain types of HAIs be reported; and 16 states do not require HAI reporting of any kind. Curiously, the National Health Safety Network did not report on ventilator associated events/ventilator associated pneumonia (VAE/VAP) types of HAI in their latest annual progress report, though they do list VAE/VAP on their website. VAP infections cause more deaths than the other types of HAI as illustrated above in Table 2, so HAI reporting inconsistencies exist at the federal level, too.

To prevent HAI requires that healthcare professionals first understand all the causes of HAI, which requires the industry to establish and enforce national HAI reporting guidelines in all 50 states. But, rather than fight an uphill battle with 50 state legislatures, the most expedient route to get hospitals to report HAI data would be to have CMS require that hospitals provide their HAI data or reduce their meaningful use program reimbursements if they do not comply. With 72 percent of hospitals using EHRs to report to CMS today, the industry already has the means to collect and report HAI data.[8]

The CDC's 2013 progress report on national and state HAIs (from which Table 1 was derived) demonstrates the potential impact of collecting all HAI data. Case in point are central line-associated bloodstream infections (CLABSI). These infections are the only type of HAI to be mandated by over 50 percent of states and are also the only type of HAI to have been reduced by 50 percent in less than 10 years. This example helps prove the maxim that "what gets measured, gets improved."

Table 2: HAI Costs Adapted from NHSN 2013 Progress Report

HAI Infection Type	# Infections per Year	Cost per Infection	# Deaths per Year	% Deaths per Infection
Surgical-site infection (SSI)	290,485	$25,546	13,088	5%
Ventilator-associated pneumonia (VAP) +	250,205	$9,966	35,967	14%
Central line-associated bloodstream infection (CLABSI)	248,678	$36,441	30,655	12%
Catheter-associated urinary tract infection (CAUTI)	561,677	$1,006	8,205	1%

+ Note that NSHN collects VAE/VAP data, but did not include it in their 2013 report.

Source: Centers for Disease Control and Prevention. "National and State Healthcare Associated Infections: Progress Report (Based on 2013 Data)." January 2015. www.cdc.gov/HAI/pdfs/progress-report/hai-progress-report.pdf.

Call to Action

More than 72 percent of healthcare providers already use their EHR systems to report meaningful use clinical, quality, and public health data to CMS. If CMS would reimburse hospitals for their HAI data or reduce payment if they do not provide it, the healthcare industry would have a proven, reliable method for obtaining the HAI data. Including HAI data with meaningful use reports takes little effort, and the costs should be more than offset by CMS payments for hospitals' HAI data.

Once HAI data collection and reporting are automated, there is no reason that HAI data could not be collected even more frequently without imposing additional costs on hospitals. Adding EHRs to the real-time surveillance mechanisms already in place should greatly improve public health work and the ability of epidemiologists to monitor infectious diseases and prevent future outbreaks. With 100,000 lives at stake, surely the idea is worth a discussion.

Notes

1. Stone, Patricia et al. "CMS Changes in Reimbursement for HAIs: Setting a Research Agenda." *Medical Care* 48, no. 5 (2010): 433–439.
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4. Stone, Patricia. "Economic burden of healthcare-associated infections: An American perspective." *Expert Review of Pharmacoeconomics & Outcomes Research* 9, no. 5 (2009): 417–422.
5. Roberts, Rebecca et al. "Costs attributable to healthcare-acquired infection in hospitalized adults and a comparison of economic methods." *Medical Care* 48, no. 11 (2010): 1026-1035.
6. National Healthcare Safety Network. "CMS Resources for NHSN Users." October 14, 2015. www.cdc.gov/nhsn/cms/index.html#ach.
7. Agency for Healthcare Research and Quality. "Advances in the Prevention and Control of HAIs." June 2014. www.impaqint.com/sites/default/files/files/advancesinhai.pdf.
8. Heisey-Grove, Dawn et al. "Hospital Reporting on Meaningful Use Public Health Measures in 2014." *ONC Data Brief* 22 (March 2015). www.healthit.gov/sites/default/files/databrief22_hospitalreporting.pdf.

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