



Concerns and frustrations about the public reporting of device-related healthcare-associated infections

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Objectives

- Gain an understanding of healthcare leader and staff concerns surrounding the public reporting of healthcare-associated infections
- Recognize the value of qualitative research to enrich our knowledge of infection prevention practices
- Describe how requirements for public reporting of infection data may interact with management practices for infection prevention



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Evidence supporting HAI prevention

- Specific clinical interventions
 - Protocols for device insertion and maintenance
 - Process standardization
 - Checklists
 - Provider education

But...

- Success has not been uniform
 - Some hospitals face challenges achieving results
 - Others challenged to sustain gains



Management Practices for Infection Prevention

- Research regarding factors that impact organizations' success at adopting evidence-based clinical practices has been limited...
- ...preliminary research efforts revealed role of management practices in the success of infection prevention efforts:
 - Leadership
 - Goal setting
 - Speaking up to support infection prevention





Searching for Management Approaches to Reduce HAI Transmission



SMART began with the observation that ...

Two types of healthcare-associated infections (HAIs) - central-line associated bloodstream infections (CLABSIs) and catheter-associated urinary tract infections (CAUTIs) - are considered to be among the most preventable types of HAIs. Although some hospitals have managed to virtually eliminate these HAIs in their intensive care units, others continue to struggle attaining zero infections.

As a result, SMART is intended to identify the management practices associated with better performance at reducing and preventing HAIs. SMART seeks to open the "black box" of management practices to better understand the specific strategies that can influence HAI prevention. Through our national research we identified the following strategies that can contribute to the successful reduction of HAIs:

- Goal Setting and Management Support
- Strategic Alignment/Communication and Information Sharing
- Systematic Education
- Interprofessional Collaboration
- Meaningful Use of Data
- Recognition for Success

You may reach the SMART Team by email at smart@osumc.edu.

If you would like to be notified of updates to the Toolkit, please provide your email address [here](#).



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What is SMART?

■ SMART:

- 5-year project funded by the Agency for Health Research and Quality (AHRQ)
- Goal has been to address healthcare-associated infection (HAI) prevention

■ Background:

- Emerged from prior research on prevention and reduction of central line-associated blood stream infections in U.S. hospitals
- Found little management guidance to accompany clinical practice “bundles”

■ Study Aims:

- Examining how management factors contribute to HAI reduction success
- Creating SMART Toolkit accessible on website



Methodology

Part 1: Site Visits

- 18 site visits to U.S. hospitals
 - Participation based on geography, size, teaching status, etc.
- Onsite interviews with key informants representing different areas involved in infection prevention
- Site visit interview questions:
 - Topics included management practice areas such as communication strategies, data sharing related to HAI prevention, rewards and recognition for preventing infections, etc.



Hospital Study Site Characteristics

Site	Region	Size [†]	Teaching hospital	CAUTI performance [‡]	CLABSI performance [‡]	Key informants			
						Administrative leaders	Clinical leaders	Infection prevention & quality	Frontline staff
1	Midwest	Small	Yes	Average	Average	2	3	4	11
2	Midwest	Large	Yes	Worse	Better	2	11	8	11
3	Midwest	Small	No	Average	Average	1	5	4	9
4	Northeast	Large	Yes	Average	Better	2	8	5	11
5	Northeast	Medium	Yes	Average	Better	7	4	6	10
6	Midwest	Large	Yes	Better	Average	3	7	9	11
7	Northeast	Small	No	Average	Average	1	10	7	11
8	Northeast	Large	Yes	Better	Better	3	4	5	7
9	South	Extra-large	Yes	Worse	Average	3	12	9	6
10	South	Small	No	Average	Better	1	5	4	6
11	Midwest	Extra-large	Yes	Better	Average	3	21	10	12
12	Midwest	Small	No	Average	Average	1	4	2	9
13	West	Large	No	Average	Average	1	12	2	26
14	West	Small	No	Average	Average	4	10	1	11
15	Northeast	Medium	Yes	Worse	Average	3	6	11	10
16	South	Extra-large	Yes	Better	Better	7	5	5	10
17	South	Medium	No	Average	Better	2	4	4	5
18	South	Extra large	No	Better	Better	5	6	6	5

[†]Hospital size is indicated by number of beds, such that small=less than 300; Medium=300-499; Large=500-899; Extra-large=900 or greater hospital beds.

[‡]Hospital performance is indicated relative to the national average according to standardized infection ratios reported by the Centers for Medicare and Medicaid Services' Hospital Compare data.



Participant Characteristics

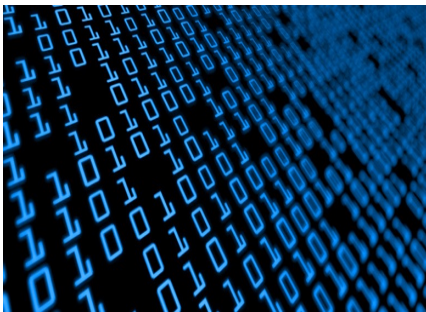
- Interviews were conducted with 471 participants
 - 188 leaders
 - 51 administrative leaders
 - 137 clinical leaders
 - 283 staff
 - 181 healthcare providers (e.g., physicians, nurses)
 - 102 infection prevention and quality staff



Methodology (continued)

Part 2: Findings Synthesis & Dissemination

- Management Toolkit Development
 - Informed by interviews across the U.S.
 - Will enable hospitals to answer questions:
 - *How is my hospital doing?* (in both absolute and relative terms)
 - *What can I do to impact my outcomes?*



A Web-Based Toolkit to Support Infection Prevention Efforts



SMART

smart.osu.edu



COMMUNICATING HAI DATA



REWARDS & RECOGNITION



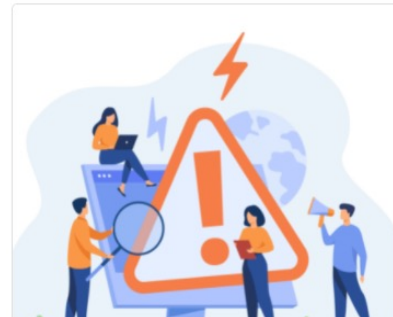
SPEAKING UP



PATIENT AND FAMILY
EDUCATION



TIERED HUDDLES



EHR ALERTS

Methodology

Semi-structured interview guide topics

- Goal Setting and Support
- Leadership
- Policies and Procedures
- Communication and Information Sharing
- Use of Information Technologies
- Systematic Education
- Interprofessional Collaboration
- Meaningful Use of Data
- Recognition for Success



Methodology

Qualitative Analysis approach

- Deductive thematic analysis
 - Organization of themes based on pre-defined categories (e.g., from interview guide topics)
- Inductive thematic analysis
 - Organization of themes based on emergent categories (e.g., unanticipated topics or perspectives)



Methodology

Semi-structured interview guide topics

- Goal Setting and Support
- Leadership
- Policies and Procedures
- Communication and Information Sharing
- Use of Information Technologies
- Systematic Education
- Interprofessional Collaboration
- Meaningful Use of Data
- Recognition for Success

Perspectives
About Public
Reporting of
HAI data



Public Reporting of Device-Related HAIs

- Centers for Medicare and Medicaid Services (CMS) implemented requirements for public reporting of device-related healthcare-associated infections (HAIs) under the Hospital Inpatient Quality Reporting Program
 - 2011 – required public reporting of central line-associated bloodstream infections (CLABSIs)
 - 2013 – required public reporting of catheter-associated urinary tract infections (CAUTIs)



Public Reporting of Device-Related HAIs

- Goals of public reporting:
 - Incentivize improvements in infection prevention
 - Inform consumer health decision making
- Consequences of public reporting:
 - CMS payment penalties – 1% reduction in payments for 12 months for the lowest 25% of performers under the Hospital-Acquired Condition Reduction Program (HACRP)
 - Attraction/retention of patients who can choose where to seek health care



Public Reporting of Device-Related HAIs

- National Healthcare Safety Network (NHSN) guidelines serve to support consistency of reporting within and across health care systems
- HAI data is reported as standardized infection ratios (SIRs)
 - 1 = Average (number of infections as expected)
 - >1 = Worse (number of infections more than expected)
 - <1 = Better (number of infections less than expected)

$$SIR = \frac{\text{Observed (O) HAIs}}{\text{Predicted (P) HAIs}}$$



CMS Care Compare

Infections

Healthcare-associated infections, or HAIs, are infections that people get while they're getting treatment for another condition in a healthcare setting. HAIs can occur in all settings of care, including acute care hospitals, long term acute care hospitals, rehabilitation facilities, surgical centers, cancer hospitals, and skilled nursing facilities. Many of these infections can be prevented through the use of proper procedures and precautions.

- Infections are reported using a standardized infection ratio (SIR). The SIR compares the actual number of infections at a hospital to a national benchmark based on data reported to the National Healthcare Safety Network (NHSN). Lower numbers are better.

[Read less](#)

Central line-associated bloodstream infections (CLABSI) in ICUs and select wards

↓ Lower numbers are better

1.492

Worse than the national benchmark

National benchmark: 1.000

Catheter-associated urinary tract infections (CAUTI) in ICUs and select wards

↓ Lower numbers are better

0.356

Better than the national benchmark

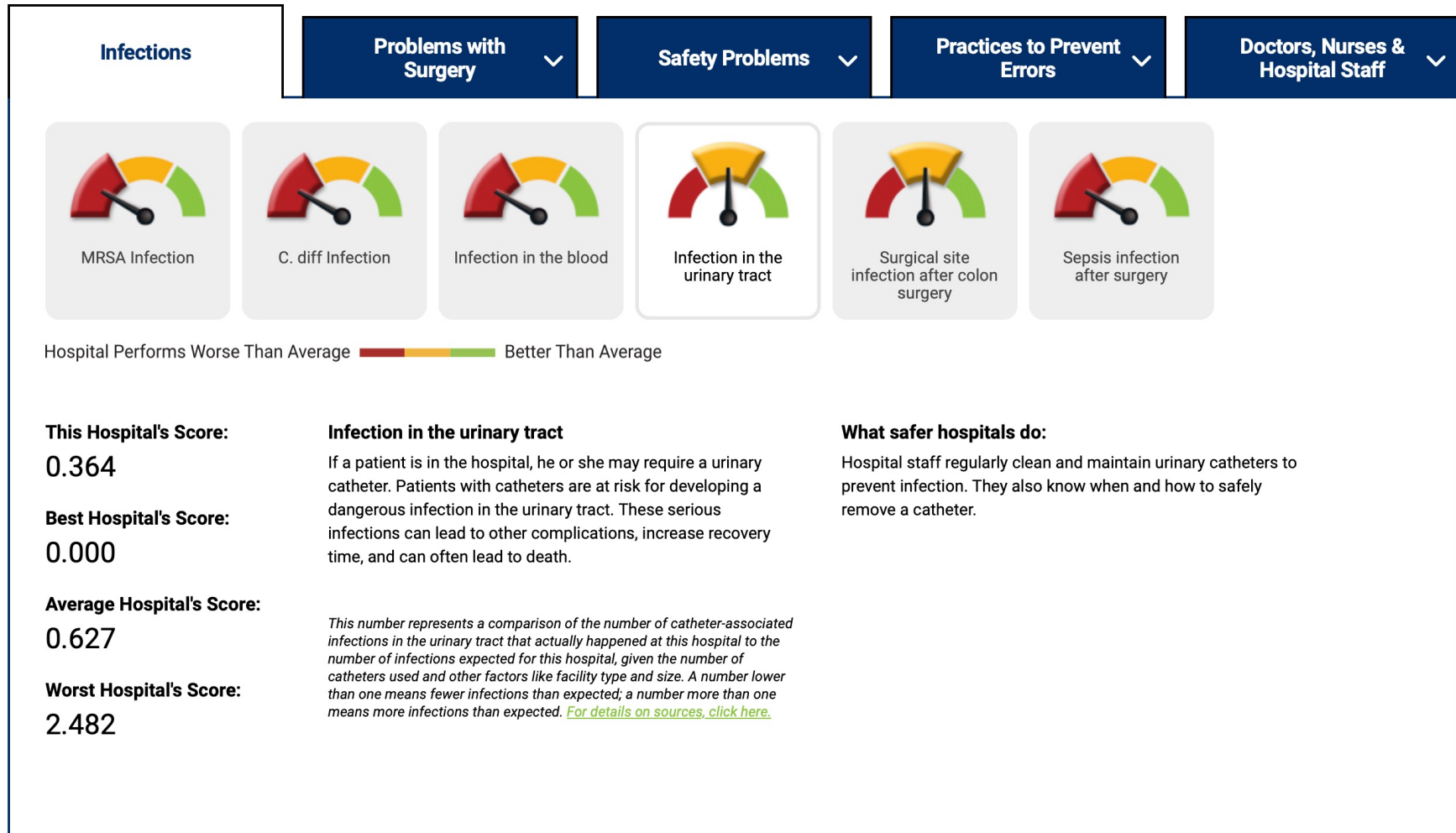
National benchmark: 1.000

<https://www.medicare.gov/care-compare/>



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Leapfrog Hospital Safety Grade



<https://www.hospitalsafetygrade.org>



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Public Reporting of Device-Related HAIs

- Studies have revealed inconsistencies in the surveillance and reporting of HAIs.
- For example: 2009 audit of surgical charts in NY state hospitals
 - **7%** of surgical site infections (SSIs) should not have been counted based on NHSN standards.
 - **24%** of indications for infection that should have been reported as SSIs were not.

Haley VB, Antwerpen CV, Tserenpuntsag B, et al. Use of Administrative Data in Efficient Auditing of Hospital-Acquired Surgical Site Infections, New York State 2009–2010. *Infection Control & Hospital Epidemiology*. 2012;33(6):565-571.



Public Reporting of Device-Related HAIs

- Concerns have been voiced about public reporting of HAI data
 - Variable application of NHSN guidelines
 - Reliability and validity of data
 - Possibilities and pressure to “game the system”

Horowitz HW.: Infection control: public reporting, disincentives, and bad behavior. Am J Infect Control 2015; 43: pp. 989-991.



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Public Reporting of Device-Related HAIs

- Our study sought to explore the viewpoints of hospital leaders and staff involved in infection prevention efforts regarding the public reporting of HAI data.
- Our findings help us to reflect on if/how public reporting of HAI data serves the intended purpose to reduce HAIs.

> [Am J Infect Control](#). 2023 Jun;51(6):633–637. doi: 10.1016/j.ajic.2022.08.003. Epub 2022 Aug 8.

Concerns and frustrations about the public reporting of device-related healthcare-associated infections: Perspectives of hospital leaders and staff

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Affiliations + expand

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Concerns About Public Reporting of HAIs



Concerns About Public Reporting of HAIs

- Lack of trust in publicly-reported HAI data



Concerns About Public Reporting of HAIs

- Lack of trust in publicly-reported HAI data
 - Data coming from an individual's own organization

“

We have gone through some of those about trusting the data and trusting the definitions. So, I know I really had conversations with my team and said, you know, the definitions are the definitions. You are not going to argue your way through every single one of them. There is definitely time for a candid conversation or a spirited discussion about a case but, you know, but we have created that because we sometimes change them. We sometimes... they come out, we don't believe them ourselves.

”



Concerns About Public Reporting of HAIs

- Lack of trust in publicly-reported HAI data
 - Data coming from other organizations



And it is not just providers not trusting our data, but simply they don't trust other hospitals' data. ...what they [physicians] will say is, they might say, 'Well I just went to this conference and I talked about that case with a colleague and they said that would have never been counted at my hospital.'

I know of a lot of institutions that have claimed they've gotten to zero infections, CLABSIs, CAUTIs for a long period of time. To some degree what they've done is manipulate the numbers. And I think that's wrong.



Concerns About Public Reporting of HAIs

- Questions about the consequences of public reporting of HAI data



Concerns About Public Reporting of HAIs

- Questions about the consequences of public reporting of HAI data
 - For the hospital



I worry a little bit that it can drive reporting underground. There's that much attention on it.

If you are really good at what you are doing, then you are going to find more problems. If you don't care and don't look, then you aren't going to have any problems. And who looks better on Hospital Compare? People that don't look. If you are not looking for CLABSIs and CAUTIs, you are not going to find them. ...So, places that actually try to improve, that actually are honest in trying to figure out where the problems are, we always look worse than the places that don't have the resources to look for the problems.



Concerns About Public Reporting of HAIs

- Questions about the consequences of public reporting of HAI data
 - For the public

“

I remember one patient I saw said that, ‘Oh I looked at the rates to see what the rates of infection were here before I decided to come in terms of elective surgeries.’ So, certainly there are some patients out there that will understand...but that's such a minority. ...There's peer pressure among hospitals to look good on Leapfrog, you know, and certainly I do know the local media will occasionally, when these reports come out on Leapfrog and things like that, they report these on the news like, ‘Oh, so and so got good grades.’ And they'll show mapping. So, if you ever see somebody reporting on the radio and TV and local news that they start reporting these for the day, and then it's gone. You know, it's just the day it comes up and then it disappears from the public radar.

”



Frustrations About Identification and Attribution of HAIs for Public Reporting



Frustrations About Identification and Attribution of HAIs for Public Reporting

- Culturing to identify HAIs (e.g., blood/urine cultures)



Frustrations About Identification and Attribution of HAIs for Public Reporting

- Culturing to identify HAIs (e.g., blood/urine cultures)
 - Culturing practice/frequency

“

The places that do the most culturing are punished for it because they find the most problems. It's nothing to do about checking for quality. It's strategy.

”



Frustrations About Identification and Attribution of HAIs for Public Reporting

- Culturing to identify HAIs (e.g., blood/urine cultures)
 - Establishing/communicating appropriate policies

“

So, part of understanding the definition of CLABSI, and then going through this too at some point, were sort of looking at how many are real? ...there was a certain amount of CLABSIs that probably were not clinically relevant. And so, as part of this process, too, was outlining when blood cultures should be. ...the pitfall of that is people interpret it as, 'You don't want us to get blood cultures because we are going to get dinged.'

”



Frustrations About Identification and Attribution of HAIs for Public Reporting

- Accountability for HAIs



Frustrations About Identification and Attribution of HAIs for Public Reporting

- Accountability for HAIs
 - How infections are attributed to devices

“

The only reason I had to count the CLABSI is because they couldn't secondary source it. ...I couldn't believe that she didn't have something somewhere else. For this, you know, liver cancer, she had chemo, radiation... E. Coli is usually somewhere else unless you had a fem[oral] line in or something. It is very odd to have E. Coli.

If we draw the blood culture first and then the sputum later that afternoon, the blood culture was done first. I can't secondary it to dispute them, even if, you know ... it's coming from the sputum, but it will come up as a positive [CLABSI].

”



Frustrations About Identification and Attribution of HAIs for Public Reporting

- Accountability for HAIs
 - How infections in transferred patients are attributed to receiving hospitals

“

CLABSI rates are much lower in hospitals that have an easier ability transferring patients to the hospital or other facilities because it shows up after they've left.

You still kind of get this like, 'This isn't my CLABSI.'

”



Summarizing Concerns and Frustrations

- Lack of trust, questions about consequences, and frustrations about identification and attribution of publicly reported HAI data shed light on questions about how data is used to improve infection prevention practices.
 - Does publicly shared data improve quality of care?
 - Who is penalized by these programs?
 - Do consumers use this data to make healthcare decisions?



Does public reporting improve quality of care?

- 2014-2016 study among acute care hospitals in the United States that were penalized based on publicly reported HAI data
- There was **no statistically significant improvement**
 - Hospital acquired conditions
 - 30 day readmissions
 - 30 day mortality

Sankaran R, Sukul D, Nuliyalu U, Gulseren B, Engler T A, Arntson E et al. Changes in hospital safety following penalties in the US Hospital Acquired Condition Reduction Program: retrospective cohort study BMJ 2019; 366 :l4109



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Who is penalized by these programs?

- Hospitals that are more likely to be penalized are those that serve vulnerable and medically complex populations.

“By disproportionately penalizing hospitals caring for more disadvantaged patients, the HACRP could exacerbate inequities in care.”

- In 2020, safety net hospitals were more likely to be penalized and less likely to escape penalty in the following year.

Sankaran R, Sukul D, Nuliyalu U, Gulsere n B, Engler T A, Arntson E et al. Changes in hospital safety following penalties in the US Hospital Acquired Condition Reduction Program: retrospective cohort study BMJ 2019; 366 :l4109

Serpa JA, Gemeinhardt G, Arias CA, et al. Teaching and Safety-Net Hospital Penalization in the Hospital-Acquired Condition Reduction Program. JAMA Netw Open. 2024;7(2):e2356196.

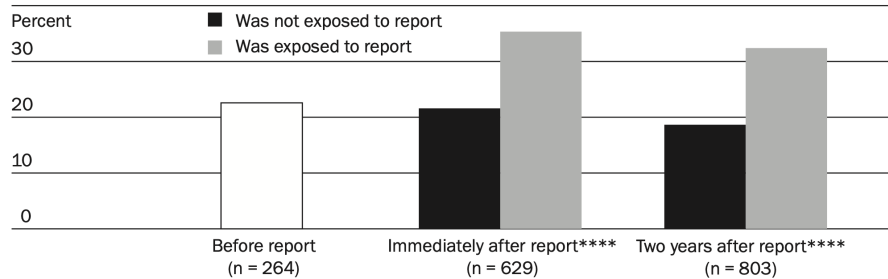


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Do consumers use this data?

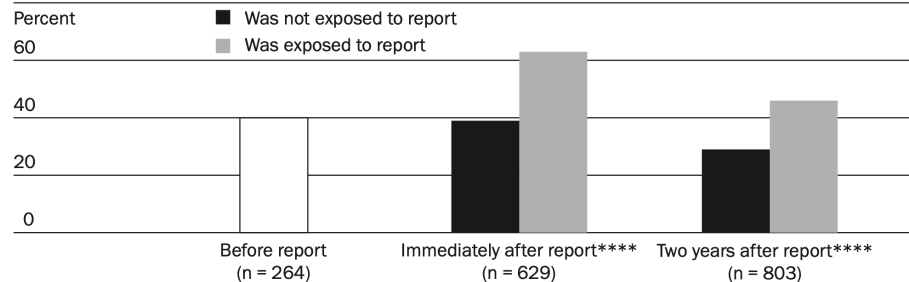
- 2005 public survey after state-wide release of hospital ratings based on adverse events
 - 40% of surveyed public recalled seeing the report
 - Those that saw the report were particularly better at identifying lower-performing hospitals
 - 4% of surveyed public said they used the information to choose a hospital

EXHIBIT 3
Percentage Of Consumers Who Correctly Identified Highly Rated Hospitals, By Exposure To QualityCounts Report



SOURCE: Survey data collected by the authors.
**** $p < .001$

EXHIBIT 4
Percentage Of Consumers Who Correctly Identified Poorly Rated Hospitals, By Exposure To QualityCounts Report



SOURCE: Survey data collected by the authors.
**** $p < .001$

Hibbard JH, Stockard J, Tusler M. Hospital performance reports: impact on quality, market share, and reputation. Health Aff (Millwood). 2005 Jul-Aug;24(4):1150-60.



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What strategies could improve current practices for public reporting of HAI data?

- Guidelines
 - Clarify HAI definitions and establish transparency within and across hospitals
- Resources
 - Increase education/training/time to apply guidelines
- Increased auditing and audit consequences
- Improved risk adjustment
- Organizational culture
 - Encourage a “just” patient safety culture to prevent “driving reporting underground”
- Realistic organizational goals
 - “Zero is achievable, but not necessarily sustainable.”

What barriers remain?

- Current penalty programs discourage identification of infections and the attribution of infections to devices.
- Hospitals are likely to continue to take measures to reduce the number of reported HAIs.
- Pressure to circumvent negative consequences to financial reimbursement and public reputation, but at the detriment of trust among hospital leaders and health care providers.
- Unclear how these behaviors and their repercussions detract from the fundamental goals of publicly reporting HAIs: to improve infection prevention practices, reduce HAIs, and increase patient safety.



Conclusions

- Need to identify strategies to improve consistency and transparency in the public sharing of HAI data.
- Call for consideration of alternative incentive programs.
- Improvements in this process needed if publicly-reported HAI data are to be used to improve quality and safety of patient care.



Thank you for your interest!

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