



## **Public Reporting of Hospital Infection Rates: Not All Change is Progress**

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Version: February 2013

**DRAFT**

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## Abstract

Healthcare-associated infections (HAIs) are a major public health issue. In response, 25 states have adopted public reporting of hospital-specific HAI rates, but there is considerable diversity in how each state presents information. In related work, the authors assess the efficacy of these efforts by scoring individual states on the content, credibility, and usability of their public reports and websites. In this article, they address a related but distinct topic, focusing on three states (California, Pennsylvania, and Washington) which have made substantial changes in their HAI public reports, websites, or both during the short period since they began disclosing HAI rates. Indeed, Washington has made two sets of substantial changes to its HAI public reports/websites. How have these changes affected the content, credibility, and usability of these reports and websites? Stated more bluntly, does change mean progress? Sadly, they find that the answer is sometimes “no.” They then discuss the lessons that other states should draw from these case studies.

## I. Introduction

Health-care associated infections (“HAIs”) kill about 100,000 people annually.<sup>1</sup> Most are preventable, often at modest cost, but many hospitals have not aggressively addressed the problem. Over the past decade, mandatory public reporting of hospital infection rates has emerged as a major policy response to HAIs. Twenty-five states currently require public reporting of hospital infection rates for at least some types of infections, most often central-line-associated bloodstream infections (CLABSI) and surgical site infections (SSI). National reporting of CLABSI rates on the “Hospital Compare” website, run by the Department of Health and Human Services (HHS) began recently.<sup>2</sup> Private entities (e.g., Consumer Reports) are also providing HAI rates.<sup>3</sup>

Does public reporting actually reduce hospital infections? To date, the literature is small. Of the two studies that have a control group, one (by one of us) finds an impact; the other focuses on pediatric CLABSI and finds no effect.<sup>4</sup> We are currently conducting a multi-state evaluation of this issue. These mixed results suggest the possibility that the effect of public reporting may depend on how effectively HAI information is conveyed to particular target audiences. In related work, we develop a template for assessing the quality of the various reports and websites, by scoring them separately on content, credibility, and usability.<sup>5</sup>

In this article, we apply that template to address a related but distinct topic. We focus on three states (California, Pennsylvania and Washington) that have made substantial changes in their public reports, websites, or both since they began public disclosure. Indeed, Washington has made two sets of substantial changes to its public reports/websites. No one has studied how these changes affect the quality of information reporting. We study those changes, and develop lessons for other states implementing public reporting of HAI rates. For convenience, we number the iterations for each state as follows: California’s first iteration is “California-A”; its second is “California-B”; Pennsylvania is similar; Washington has A, B, and C versions.

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<sup>1</sup> Klevens, RM, JR Edwards, CL Richards, et al., 2007, Estimating Health Care-Associated Infections and Deaths in U.S. Hospitals, 2002. *Public Health Reports* 122(2):160-166.

<sup>2</sup> See U.S. Department of Health & Human Services, Healthcare-Associated Infections, at <http://www.hospitalcompare.hhs.gov/Data/RCD/Healthcare-Associated-Infections.aspx>;

<sup>3</sup> See Consumer Reports, How We Rate Hospitals, at <http://www.consumerreports.org/cro/2012/10/how-we-rate-hospitals/index.htm>.

<sup>4</sup> Bernard Black and Hyun Kim, Does Hospital Infection Reporting Affect Actual Infection Rates, Reported Rates, or Both? A Case Study of Pennsylvania (working paper October 2012), at <http://ssrn.com/abstract=1641459>; Michael L. Rinke, David G. Bundy, Fizan Abdullah, Elizabeth Colantuoni, Yiyi Zhang, and Marlene R. Miller, State-Mandated Hospital Infection Reporting is Not Associated with Decreased Pediatric Healthcare-Associated Infections (working paper 2012).

<sup>5</sup> Ava Amini, David W. Birnbaum, Bernard Black, and David A. Hyman, *Public Reporting of Hospital Infection Rates: Ranking the States on Report and Website Content, Credibility, and Usability*, in Proceedings of 2013 Conference on Information Technology and Communications in Health (forthcoming 2013), at <http://ssrn.com/abstract=2xxxxxx>. This is preliminary work; we are currently revising the template. Those revisions will lead to some changes in the scores we report here, but we do not expect them to affect our overall conclusions or comparative ranking among the states.

Sadly, many states seem to pay limited attention to the quality of their public reporting, and change is often not progress. Among our three focus states, California-B is overall an improvement over California-A, but is less usable in important ways. Washington took a major step backward from Washington-A to Washington-B, and only partially recovered the ground that was lost with Washington-C. Pennsylvania went sideways: content improved from Pennsylvania-A to Pennsylvania-B, but usability dropped.

These case studies are only illustrative, but the lesson that change is often not progress is a broad one. Florida, for example, initially provided *actual* HAI rates, but since 2009 has provided nearly useless descriptive terms (e.g., “average, better than average, and worse than average”), with a high percentage of hospitals ranked as “average.”

Part II briefly describes the changes in public reporting by California, Pennsylvania, and Washington. Part III summarizes our templates for scoring content, credibility and usability, and analyzes how each state’s changes affected its scores. Part IV discusses the implications of our findings. Part V provides a brief conclusion.

## **II. Overview of HAI Reporting in California, Pennsylvania, and Washington**

### **A. California**

California’s public HAI reporting began in early 2011, and has had two distinct iterations. California-A was comprised of a simple website plus a “Technical Report” that covered January 2009 – March, 2010.<sup>6</sup> The first report provided information on three types of bloodstream infections (BSIs): CLABSI, Methicillin Resistant Staphylococcus Aureus BSIs (“MRSA”), and Vancomycin-Resistant Enterococci BSIs (“VRE”).<sup>7</sup> The report consisted of eleven discrete sections, with lengthy tables. The website was not interactive – users could not obtain HAI rates for particular hospitals directly from the website. It served mainly as a location to view or download the report.<sup>8</sup>

California-B was far more ambitious.<sup>9</sup> The initial landing page for California B has links to four separate webpages, each focusing on specific HAIs. The first addresses CLABSI; the second addressed MRSA and VRE; the third and fourth cover two newly added areas: clostridium difficile infections (C-Diff), and SSIs. Each of these separate

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<sup>6</sup> See California Department of Public Health, Center for Health Care Quality, Technical Report: Healthcare Associated Bloodstream Infections in California Hospitals, January 2009 Through March 2010, at <http://www.cdph.ca.gov/programs/hai/Documents/HAIReportSB-1058BSI-FINAL.pdf>. This and other “reports” referred to here can be downloaded as pdf files, and also viewed online.

<sup>7</sup> These are partly overlapping categories. Some MRSA or VRE BSIs also involve patients with central lines, so would also be considered CLABSI. Some MRSA and VRE infections are not BSIs; these are not included in the California reports.

<sup>8</sup> Unfortunately, we did not archive a copy of the website. We are in the process of requesting a copy of the original website from the California Department of Public Health.

<sup>9</sup> California Department of Public Health, Healthcare Associated Infections (HAI) Program, at <http://www.cdph.ca.gov/programs/hai/pages/default.aspx>.

pages has links to multiple tables that had previously been included in the consolidated report, along with explanatory text, and a document listing “key findings and public health actions.” All of the pages include (albeit in small print, near the bottom of the page, and easy to miss) a link to an “infections rate map,” that lets users compare HAI rates at specific hospitals with the U.S. average for SSIs, and the California average for CLABSI, MRSA and VRE. The map uses symbols to indicate whether the rates are lower, the same, and/or higher than national and state averages. It does not provide actual rates, and the vast majority of hospitals score “average.” Finally, instead of a single downloadable report, each of the four main pages provides a downloadable document titled “Technical Notes.”

Instead of the single report that comprised California-A, California-B includes three separate reports: one on CLABSI, another on MRSA/VRE, and a third on SSIs. The CLABSI and MRSA/VRE reports cover April 2010 – March, 2011 (a one-year period that follows the 15-month period covered by the first report). The SSI report covers the entire time period for which data were available (January, 2009 – March, 2011). The California B report format is similar to California A, with multiple sections and lengthy tables.

## B. Pennsylvania

Pennsylvania initially vested HAI reporting with the Pennsylvania Health Care Cost Containment Council (PHC4), but transferred responsibility to the Pennsylvania Department of Health (PDOH) beginning in 2008. Pennsylvania-A, developed by PHC4, provides HAI information in three separate annual reports covering 2005, 2006, and 2007.<sup>10</sup> Users can view or download a report that covers all 165 general acute care hospitals in Pennsylvania. The reports divide hospitals into four “peer groups,” based on services offered and patient volume, to make it easier to compare hospitals to other similar hospitals. For each hospital, each report provides the number of infections and the infection rate per 1,000 admissions during the calendar year. The reports include counts and rates for all HAIs, and for eight subcategories: urinary tract, pneumonia, bloodstream, surgical, gastrointestinal, other, and multiple. The 2007 and 2006 reports also include prior-year HAI counts and rates.

The PHC4 website is interactive. It lets users “Create Your Own Report.” Users can search the database by hospital, infection type, and peer group, slice the data in ways that the report does not, and download the data in spreadsheet form.

Responsibility for HAI reporting moved from PHC4 to to PDOH for 2008 and subsequent years. (We discuss the reasons for the switch of regulatory responsibility from PHC4 to PDOH below). PDOH has since issued reports for the second half of 2008 (the first half was simply lost), 2009, 2010, and 2011, which collectively comprise Pennsylvania-B<sup>11</sup> Users can view or download the reports, but the website does not have

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<sup>10</sup> Pennsylvania Health Care Cost Containment Council, Hospital Acquired Infections in Pennsylvania, at <http://www.phc4.org/hai/>

<sup>11</sup> Pennsylvania Department of Health, Healthcare Associated Infection Prevention, at [http://www.portal.state.pa.us/portal/server.pt/community/healthcare\\_associated\\_infections/14234](http://www.portal.state.pa.us/portal/server.pt/community/healthcare_associated_infections/14234)

any interactive features, nor can users download HAI data in spreadsheet form. The reports provide data for four HAIs: MRSA, catheter associated urinary tract infection (CAUTI), CLABSI (unlike the PHC4 reports, only within intensive care units), and SSI. The information is presented with a mix of tables and graphics, including bar graphs and plots showing a hospital's standardized infection ratio (SIR) and the 95% confidence interval around the SIR. Hospitals are not divided into peer groups, and there is no single overall HAI measure. Hospital performance on different HAI measures is found in multiple locations within the report.

Strikingly, the PDOH website does not refer to the PHC4 website, and the PHC4 website does not refer to the PDOH website. Users of one website may never learn that the other exists. PDOH also made no effort to use measures consistent with those used by PHC4. The lack of an overall HAI rate is one example. Other time-inconsistent measures include the PDOH decision to report CLABSI only within ICUs and to report CLABSI per 1,000 line days and CAUTI per 1,000 catheter days, while PHC4 reports all CLABSI, and are measured per 1,000 discharges. These differences make it effectively impossible to assess whether a hospital is improving or deteriorating over the full period covered by both sets of reports.

### C. Washington

HAI reporting in Washington is handled by the Washington Department of Health (WDOH), and has gone through three major iterations. Washington-A was designed and implemented by a team within WDOH headed by Dr. David Birnbaum, a researcher with extensive experience as a hospital-based epidemiologist, and our coauthor on the coding project. The Washington-A design paid careful attention to website usability for ordinary consumers. The website provided detailed background on HAIs, and allowed users to interactively compare CLABSI rates at different hospitals.<sup>12</sup> However, there was no downloadable report.

Washington-B dramatically revised the website. Most of the detailed information and background on HAIs was removed, as was user ability to interactively compare HAI rates at different hospitals. At the same time, some information on Ventilator Associated Pneumonia (“VAP”) rates was added.

Washington-C moved back in the direction of Washington-A, while adding some new features, including an interactive map.<sup>13</sup> Users can click on a quadrant of Washington state, and obtain infection rates for each hospital in that region. The website and report also provide both tables and box plots that show rates and associated confidence intervals.

## III. Methodology for Scoring Content, Credibility and Usability

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<sup>12</sup> The first iteration is no longer available online, but Dr. Birnbaum was able to provide us with an archived version.

<sup>13</sup> Washington State Department of Health, Healthcare Associated Infections (HAI), at <http://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/HealthcareAssociatedInfections.aspx>

We score each state's reports and websites separately for content, website credibility, and usability. We developed detailed scoring criteria for a number of individual measures relating to each of these three broad attributes. We summarize those criteria here and provide details in related research.<sup>14</sup>

A law student helped us to develop the criteria and measures and scored each reporting state, including each iteration for California, Pennsylvania, and Washington. A second law student, who was blinded to the scores from the first student, separately scored each state's iterations on each of these measures. We checked inter-rater reliability. It was quite high for content (0.87) and website credibility (0.98), but initially much lower for usability. We worked with the first student to revise the measures and scoring criteria and tried again, until we obtained reasonable inter-rater reliability for usability as well. We are in the process of evaluating inter-rater reliability using additional subjects with varying degrees of educational background.

To assess website "credibility" we used ten criteria based on psychological research on persuasive technologies, known as the "Fogg criteria."<sup>15</sup> The specific factors are as follows:

1. Is it easy to verify the accuracy of specific statements, by clicking through to supporting information/data?
2. Demonstration that a "real" organization is responsible?
3. Expertise in the area is highlighted?
4. Evidence of trustworthiness?
5. Easy to contact those responsible?
6. Is site professionally laid out?
7. Easy to use and useful?
8. Updated recently?
9. Limited promotional content?
10. Any [reasonably apparent] mistakes?

Five of these criteria (2, 5, 8, 9 and 10) present yes/no questions; we scored each "yes" at 3 points. The remaining five criteria call for more qualitative assessments; we created a detailed 1-5 scale for each that specified the attributes needed for each score. We summed the scores to develop an overall "Fogg score," on a 5~40 point scale. The weights give roughly equal weight to each measure. They are obviously somewhat arbitrary but in robustness checks, our results are not sensitive to the weighting.

To assess content, we developed measures based on our own and Dr. Birnbaum's knowledge of HAI reporting and research by other scholars on public reporting. We saw the HAI reports as potentially having two distinct audiences: ordinary consumers, for whom technical jargon needed to be both limited and explained; and physicians and other sophisticated users, who would be more comfortable with technical medical terms. We identified ten factors:

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<sup>14</sup> Amini et al. (2013), *supra* note xx.

<sup>15</sup> See Stanford Guidelines for Web Credibility, at <http://credibility.stanford.edu/guidelines/index.html>

1. Provides a good introduction to HAIs
2. Explains meaning of the data/results
3. Helps consumers to integrate information from multiple indicators
4. Uses both numbers and graphs/symbols to convey numeric or statistical information
5. Straightforward to find results for a particular hospital
6. Comparisons of one hospital to another are sensible (i.e., by hospital type)
7. Length and complexity of report appropriate for consumer audience
8. Overall, was the website understandable and useful to ordinary consumer?
9. Length and complexity of report appropriate for physician/sophisticated consumer?
10. Overall, was the website understandable and useful to physician/sophisticated consumer?

As with the qualitative Fogg factors, we developed a detailed description of the attributes needed to receive points. Each factor was scored on a 1-5 scale, for an overall 10~50 point scale.

One could readily develop more or different criteria; indeed, we are continuing to tweak the criteria as we review more websites and assess in greater detail what makes content more or less usable, and reassess where to draw the line between “content” and “usability”. Our criteria also reflect what states in fact do. For example, PDOH in 2009 prepared a 30-page “consumer friendly report”, in addition to its 128-page full report. There is much to be said for preparing separate reports for different audiences. If this practice were common, we would have developed a more elaborate scoring template, that would separately score such efforts. But, PDOH prepared only one such report, and it abandoned the experiment the following year.

Finally, for “Usability,” we developed and then evaluated four criteria, each on a 1-5 scale:

1. Was the state website easy to find through a web search – and once there, were the HAI reports easy to find?<sup>16</sup>
2. Once at the website/report, was it easy to find explanations of the data?
3. Was it easy to find information about specific hospitals?
4. Was it easy to compare specific hospitals online?

Thus, each state’s public reports/websites – and for California, Pennsylvania and Washington, each iteration -- were scored on three separate metrics: content, website credibility, and usability.<sup>17</sup> Table 1 presents the results.

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<sup>16</sup> We are currently experimenting with whether to separately score whether the website was easy to find, and whether the HAI reports were easy to find once the website was located.

<sup>17</sup> We are also scoring each state’s public reports and websites on their readability, which we will include as additional aspects of usability.



**Table 1: Content, Credibility & Usability Scores**

State	Iteration	Content	Credibility	Usability	<b>Total</b>
California	A	32	39	11	82
	B	35	39	15	89
Pennsylvania	A	35	32	17	84
	B	42	32	11	85
Washington	A	33	36	13	82
	B	16	27	11	54
	C	26	33	13	72

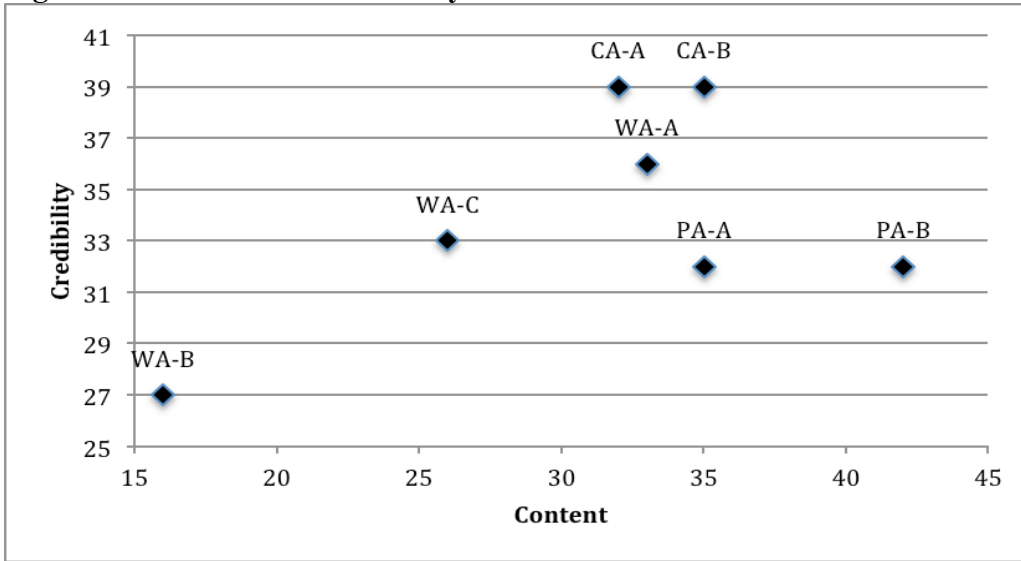
HAI Content scores, website credibility scores, and usability scores for each iteration of public reporting of HAIs in California, Pennsylvania and Washington. We were unable to score Washington A for the “ease of finding website” component of usability, so we imputed the value for that criteria from Washington B.

Comparing the first and second iteration, California and Pennsylvania kept the same credibility score. For content, California saw a modest overall improvement, and Pennsylvania made a more substantial improvement in content. Washington-A had much higher scores on all three measures than Washington-B. Washington-C recovered somewhat on all three measures, but remained well below Washington-A on all three measures.

For California and Washington, content scores moved in parallel with the usability scores. Where we find an increase or decrease in one measure, we find improvement in the other (from California-A to California-B, and from Washington-A to -B to -C). However, for Pennsylvania, the content score rose but usability fell when Pennsylvania switched from PHC4 to PDOH, because PDOH did not provide an interactive website).

Finally, although we note that the individual measures are not commensurate or cumulative or cumulative, we have included a total column in Table 1 for those who feel the need for such a measure. For those more graphically inclined, Figure 1 presents the results for content and credibility for each iteration.

**Figure 1: Content and Credibility Scores**



HAI content and website credibility scores for each iteration of HAI public reporting in California, Pennsylvania and Washington.

#### **IV. Discussion**

Despite the strong interest in public reporting of HAIs, little attention has been paid to the design of the reports and websites by which information is communicated to the public. Instead, each state has “gone its own way” – resulting in considerable variation. Even within Pennsylvania, when responsibility for HAI reporting moved from PHC4 to PDOH, PDOH appears to have paid little attention to the design choices made by PHC4. This diversity provides an opportunity to assess how each states’ design choices affect the efficacy of public reporting, measured in terms of content, website credibility, and usability.

California, Pennsylvania and Washington each made substantial changes in their public reporting strategies during the short period in which public reporting has been in effect. Each state had its own reasons for making these changes, and each state made different design choices. We now turn to the lessons that can be drawn from each state.

##### **A. Lessons From California**

California is a mixed example for whether “change means progress.” California A scored extremely well on credibility, very well on content, and reasonably well on usability. California B maintained California A’s high credibility score, and improved on California A’s content and usability scores.

However, the improvement in California’s scores is not the entire story, and indeed suggests some limitations of our current scoring template. California B provides highly disaggregated HAI data – making it easier for consumers who want very specific information about a particular type of SSI, at the cost of making almost everything statistically insignificant, and removing the information that was available in California A on a hospital’s overall infection record. Few consumers interested in a hospital’s overall

record will have the patience to download multiple mini-reports (on CLABSI, MRSA, VRE, and SSIs (with multiple tables covering specific SSIs)), let alone the ability to make sense of this information. For SSIs, information is suppressed entirely for hospitals conducting fewer than 20 procedures, and the hospital's "Standardized Infection Ratio" is provided only for high-volume procedures.

California B's interactive maps also deliver far less than they might. There are separate maps for CLABSI, MRSA/VRE and selected SSIs. Consider the SSI map. It covers nine categories of SSI. Information about rates is limited: only "better than average," "average," and "worse than average" indicators are provided -- and these are provided for only one hospital at a time, and are often suppressed if the hospital conducted too few of a particular type of procedure. The crude better/average/worse indicators have limited value. Given the short time period covered, and the small number of infections of a specific type at most hospitals, it is literally impossible for most hospitals to do "better than average" -- even zero infections will leave them at "average." Unlike Washington C, the map cannot be divided into geographic areas. Thus, in major population centers, colored circles sit on top of each other, making it hard to find data for any given hospital.

Consider infections following appendectomy, which is not even one of the nine types of SSIs available on the interactive map. Over April-December 2011, Rady Children's Hospital (San Diego) performed more of these surgeries than any other hospital in California. Its reward for zero infections in 452 patients was an average rank. Meanwhile, Kaiser Hospital in Oakland had 3 infections in 203 patients, and earned the same average rank. Mercy Medical Center (Merced) had 4 infections in 133 patients, but was not ranked at all. At best, such rankings are unhelpful to consumers. At worst, they are simply odd. Leaving aside the question of whether it is useful to separately report SSIs for each type of surgery, California managed to rank as "average" hospitals like Rady Children's that performed many appendectomies and had zero infections, while simultaneously not ranking similar hospitals with multiple infections. A hospital like Mercy in Merced would have ranked average if it had zero or one infections, but would not be ranked at all if it had two or more infections.

At an aggregate level, California categorized 9 types of infections and 343 hospitals, for a total of 3,447 possible scores, which could have been above average, average, or below average. But, because of the way it broke out its reporting, there were 63 above average scores (1.8% of all scores); 10 below average scores (0.3% of all scores); and almost 82% of potential scores were simply suppressed. Thus, although California scored high because of its interactive map and the potential availability of comparative data, that high score is deceiving. There is little of value to be found in California's HAI reporting, once one digs into the details.

For CLABSI, the California B iteration followed a similar "subdivide into near meaninglessness" approach. California A provided an overall CLABSI measure. This is removed in California B and replaced with a number of measures for specific ICUs, most of which are scored "average" due to small sample size and resulting wide confidence bands. We doubt that consumers are more interested in the rate of MRSA and VRE at a particular hospital than in the overall risk of acquiring a BSI at that hospital. California-B lets them learn the former, only to find out that almost all hospitals are average; yet it

suppresses information on the overall risk of acquiring a BSI, which is both more useful and more likely to lead to meaningful differences when comparing hospitals.

To assess whether a hospital is doing well or poorly at infection control, one needs a reasonable level of aggregation – for SSIs, across different types of surgeries; for CLABSI, across different locations within a hospital. This is the approach taken by the Agency for Healthcare Research and Quality (AHRQ) in defining Patient Safety Indicators.<sup>18</sup> Multi-year aggregation is useful as well. Combining a rate with confidence bounds around that rate, which is the strategy employed by Washington-A and Washington-C, is far more informative than the simple above average/average/below average scores used in California-B.

## B. Lessons From Pennsylvania

Pennsylvania exemplifies an old truism in politics: “personnel are policy.” PHC4 ran Pennsylvania’s HAI public reporting for several years and prepared Pennsylvania-A. Responsibility was then shifted to PDOH, which developed Pennsylvania-B, and made quite different design choices. The result was that Pennsylvania-B did better on website credibility, somewhat better on content, but worse on usability than Pennsylvania-A. Although Pennsylvania-A and Pennsylvania-B received identical credibility scores, Pennsylvania-B did better on some measures and worse on others. Finally, neither PHC4 nor PDOH deign to acknowledge the existence of one another’s reports/websites – a fact that provides great insight into the bureaucratic mindset in which reports/websites are created and maintained, but is of little help to an ordinary consumer seeking to find and use information on HAI rates.

Why was regulatory responsibility switched from PHC4 to PDOH? We were advised by those with direct knowledge that that PHC4 was too “in your face” about infection rates for the tastes of Pennsylvania’s hospitals. Hospitals accordingly lobbied for regulatory authority to be switched to PDOH. There are signs that this “capture” of reporting by hospitals was effective. Online reporting is gone, replaced by an informative but complex report. A standalone 2008 summary report prepared by PDOH, which simply listed better-than-average and worse-than-average hospitals, disappeared the next year. A consumer-friendly summary report appeared in 2009, but it too then disappeared. And the overall metric of total infections/total discharges, provided by PHC4, disappeared under PDOH.

## C. Lessons From Washington

Washington presents the most interesting case study. Washington-A scored well on each of content, website credibility, and usability. Washington B scored extremely poorly on all three measures. Strikingly, Washington-B’s content and usability scores were the worst of the 25 states that we coded, and its credibility score was in the bottom

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<sup>18</sup> AHRQ developed PSIs to measure the frequency of preventable adverse events within hospitals. FOR HAIs, AHRQ developed a single measure (PSI-7) for all CLABSI, and a separate measure (PSI-13) for all SSIs.

quartile. Washington-C made up some of the ground that had been lost, but remains well below Washington-A on all three measures.

What went wrong in Washington? Our understanding is that Washington A was designed with great care by infection control professionals, who spent considerable effort designing the website to provide sufficient information on HAIs for ordinary consumer users. However senior officials in the WDOH determined that all WDOH websites should conform to a standardized template, even if this made the HAI website less user-friendly. Dr Birnbaum has advised us that the “click-through” rate (the fraction of users who reached the HAI home page and then clicked through to gather more information about HAIs) plummeted from 100% to less than 60% after the redesign from Washington-A to Washington-B.

Washington’s nose-dive in scores illustrate one of the perils of bureaucracy. The absence of a scoring system for assessing the quality of public reports or websites, or an agreed set of best practices, made it easy for WDOH senior personnel to emphasize the benefits of a standard web template for all WDOH websites, and discount the costs of their standardized approach to website design.

#### D. Validity of Our Scoring System

Scoring content, credibility, and usability is a complex and judgmental task. Others could readily reach different judgments than we did about what criteria to include or how to score them. Thus our scores should be taken as indicative, rather than dispositive. Our scoring methodology represents only a “first cut” on how one might assess public reporting of HAI rates – or other healthcare information, for that matter. Other than the very general Fogg criteria for website credibility, there was little or no closely related prior research we could usefully draw on. And, our results are only as good as our scoring system. We believe our criteria capture important attributes of each states’ public reporting, and that our scoring process is sensible, but others might well weight factors differently, and arrive at different scores.

#### V. Conclusion

Our findings indicate that states should pay far more attention to the “hows” of public HAI reporting. It seems likely that the impact (or lack thereof) of public reporting on HAI rates, and consumer knowledge about those rates, is affected by an array of low-profile choices that health agency personnel make in designing the HAI websites and reports.

Many states are doing a credible job of disclosing information on HAI rates to the public – and things could definitely be worse, as Washington B makes clear. But, as the three case studies in this article make clear, states can also do better. All three states exhibit a tendency to provide fine-grained information, but *not* the overall hospital-level information that would make it easier for consumers to assess overall hospital quality. Not all change is progress – but greater attention to how to make HAI reporting more credible and useful can help ensure that the Washington-B experience is not repeated.