Published in final edited form as:
Urol Nurs. 2013 ; 33(1): 15–23.

Including Catheter-Associated Urinary Tract Infections in the 2008 CMS Payment Policy: A Qualitative Analysis

Jennifer A. Palmer, MS [Research Project Coordinator],

Center for Health Quality, Outcomes, and Economic Research, Edith Nourse Rogers Memorial Veterans Hospital, Bedford, MA

Grace M. Lee, MD [Associate Professor],

Harvard Medical School, and Boston Children's Hospital, Boston, MA

M. Maya Dutta-Linn, MPH [Project Manager],

Harvard Medical School, Boston, MA

Peter Wroe, BA [Medical Student], and

University of Chicago, Chicago, IL

Christine W. Hartmann, PhD [Research Health Scientist]

Center for Health Quality, Outcomes, and Economic Research, Edith Nourse Rogers Memorial Veterans Hospital, Bedford, MA; and an Assistant Professor, Boston University School of Public Health, Boston, MA

Research Summary

Background—With its 2008 reimbursement policy change, the Centers for Medicare and Medicaid Services (CMS) sought to link payment and quality. CMS stopped reimbursing hospitals for additional treatment costs due to hospital-acquired conditions, such as catheter-associated urinary tract infections (CAUTIs). Little is yet known about the impact of this policy.

Objective—To examine stakeholders' views about the inclusion of CAUTIs in the 2008 CMS payment policy and its potential impact on hospital practices.

Methods—A cross-sectional qualitative study was conducted using semi-structured interviews of infection preventionists. This included 36 infection preventionists from a purposive sample of non-federal, acute care U.S. hospitals. An interview guide refined through iterative development was used, and interviews were audio-recorded, transcribed, and coded thematically. Qualitative methodology employed grounded theory tools, including open coding and constant comparative analysis.

Results—Two main themes emerged: 1) participants' attitudes toward the inclusion of CAUTIs in the CMS policy, including issues of the infection's significance, opportunity costs, and financial

incentives; and 2) participants' views about advances in clinical organizational behaviors and limited defensive practice.

Conclusions—Equivocal attitudes toward CMS' policy targeting CAUTIs were somewhat discordant with the reported improvements in CAUTI prevention in response to the policy. Perhaps "stick" pay-for-performance policies can complement "carrot" policies in coaxing quality improvement. To support such a conclusion, the field needs more research on multiple stakeholders' views on other selected hospital-acquired conditions in the policy. CMS could also benefit from continued feedback from stakeholders on the policy and its perceived consequences.

Level of Evidence – VI—(Polit & Beck, 2012)

Keywords

Catheter-associated urinary tract infection (CAUTI); health care-associated infection (HAI); infection prevention; Medicare; reimbursement; qualitative

As national attention has increasingly focused on improving quality of care and minimizing preventable harms occurring in health care settings, payers have begun to link reimbursement to quality through pay-for-reporting and pay-for-performance programs. In an example of this, the Centers for Medicare and Medicaid Services (CMS) is using a novel approach to link payment and quality. With the passage of the Deficit Reduction Act of 2005 and the implementation of the Final Rule in October 2008, CMS no longer pays hospitals for the additional cost of care resulting from hospital-acquired conditions (see Table 1 for a complete listing).

The CMS payment policy drives reimbursement issues to this day (CMS, 2012b). Targeted hospital-acquired conditions consisted of those that were deemed to be frequently occurring, financially burdensome, and "reasonably preventable." Several health care-associated infections were included, such as catheter-associated urinary tract infections (CAUTIs).

CAUTIs are among the most common health care-associated infections in the U.S. (representing 40% of health care-associated infections) (Saint, Kowalski, Forman et al., 2008) and result in increased morbidity, mortality, and costs. As many as 25% of patients have an indwelling catheter in place while in the hospital (Saint, Kowalski, Forman et al., 2008), and contracting a urinary tract infection occurs at a daily risk of 3% to 7% in such situations (Lo et al., 2008). If symptomatic, such an infection can lead to bladder discomfort, dysuria, and fever. Researchers found that 42% of patients with a catheter in place described discomfort from the catheter, 48% reported pain from the catheter, and 61% found their activities of daily living to be limited by the catheter (Saint, Lipsky, Baker, McDonald, & Ossenkop, 1999). Urinary tract infections can also result in bacteremia, which itself may progress to chills, confusion, hypotension, and leukosytosis (Saint, 2000). As a more serious complication, sepsis may ensue (Lo et al., 2008). The annual mortality rate associated with urinary tract infections in 2002 resulted in greater than 13,000 deaths (Klevens et al., 2007). Incurred costs derive from increased lengths of stay, urinalysis, and urine culture and sensitivity tests, as well as the use of antibiotics (Saint, 2000). These costs amount to at least \$600 per CAUTI episode (Saint, 2000; Saint, Meddings, Calfee, Kowalski, & Krein, 2009; Saint, Olmsted et al., 2009).

Established clinical guidelines exist for preventing CAUTIs (Hooton et al., 2010; Lo et al., 2008), and the risk of acquiring a CAUTI is related to reasonably modifiable factors, including method and duration of catheter use and catheter care (Lo et al., 2008; Wald & Kramer, 2007). Multi-modal interventions include limited use and early removal of catheters supported by clinician education, surveillance and feedback, reminder systems, and nurse-driven protocols (Krein & Saint, 2010; Lee & Malatt, 2011; Saint, Kowalski, Forman et al., 2008; Saint, Kowalski, Kaufman et al., 2008; Saint, Meddings et al., 2009; Wald & Kramer, 2007). Despite the pervasiveness of CAUTI and the existing clinical guidelines to prevent the condition, it has traditionally ranked as a relatively low priority in hospital infection control programs (Krein & Saint, 2010). If the promise of CMS' policy for stimulating quality improvement is realized, prevention of CAUTIs in hospitals may become a higher priority.

To evaluate the impact of the 2008 CMS payment policy, the authors interviewed infection preventionists from a nationwide sample of hospitals. Infection preventionists often have a nursing, medical, public health, or epidemiology degree. They perform such tasks as gathering and analyzing trend data on hospital infection rates, designing and implementing evidence-based infection prevention interventions, and teaching hospital personnel and the public about how to contain the spread of infectious disease (Association for Professionals in Infection Control and Epidemiology [APIC], n.d.). These professionals focus their concern for patients at the aggregate hospital level rather than at the level of the individual patient.

Saint et al. (2010) emphasized the important role of infection preventionists in hospital safety efforts, even over that of hospital leadership. This study focuses on these stakeholders' views regarding the inclusion of CAUTIs in the CMS policy and its potential impact on hospital practices. Peer-reviewed articles in nursing journals have previously discussed this CMS policy and health care-associated infections in general (Clarke, Raphael, & Disch, 2008; Kurtzman, 2010; Stone et al., 2011; Uchida et al., 2011), but not solely with a focus on the interaction of the policy with CAUTI care, as presented here.

Methods

Study Design and Population

This study represents a sub-analysis of a larger "parent" study (Hartmann et al., 2011; Hoff et al., 2011). In the larger study, participants consisted of infection preventionists from a purposive sample of non-federal, acute care U.S. hospitals identified in the American Hospital Association (AHA) 2007 National Survey database. Hospitals not affected by the 2008 CMS policy were excluded, including critical access hospitals, pediatric hospitals, other specialty hospitals (such as burn facilities), and long-term care facilities. Hospitals were purposively sampled from strata based on bed size (large –more than 400 beds; mid-size –100 to 400 beds; small – fewer than 100 beds) and nurse staffing levels, defined as RN hours per patient day (less than 5 hours; greater than or equal to 5 hours). Descriptive data on facility characteristics were also gathered from the AHA database, such as hospital location, hospital teaching status, varying types of hospital bed size, and the percentage of hospital discharges paid by Medicare.

One hundred and thirty-five (135) infection preventionists were invited to participate, each of whom was mentioned as the “lead infection preventionist” in the AHA database for his or her purposively sampled hospital. Each of these individuals was sent an invitation letter along with a small token of appreciation (a box of cookies) for considering enrollment in the study. A total of 27% of those invited were interviewed; initial and follow-up recruitment was halted once the parent study interviews led to no new thematic findings. This thematic saturation was identifiable given the authors’ iterative process between data collection and data analysis.

Participants were interviewed between September 2009 and February 2010. The institutional review boards at Harvard Pilgrim Health Care; University at Albany, SUNY; and the Bedford, Massachusetts, VA Medical Center granted approval of this study’s protocol.

Interviews

Semi-structured telephone interviews lasted a mean of 48.4 minutes (SD = 7.8 minutes). The interview protocol primarily probed participants’ impressions of the policy, its implementation at their facility, and its consequences. Specific interview questions and probes that pertained to CAUTIs in relation to the CMS policy were reviewed in the analytic process as described below (see Table 2).

Data Analysis

Telephone interviews were audio-recorded and transcribed verbatim. Analyses were facilitated by the use of NVivo 8.0 qualitative data management software. Analysis was based on elements of a grounded theory approach, which relies on an iterative process between data collection and data analysis. Line-by-line coding was followed by focused coding to identify data segments and then categorize them into salient themes. Constant comparative methodology was used by cycling through the analyses in a recursive fashion and updating final codes based on review of previously established codes (Charmaz, 2006). One author (J.P.) conducted the analyses. To validate the results, a second author (C.H.) reviewed the coding list and the coded interviews throughout the analytic process.

Findings

In the parent study, 36 intervention preventionists were interviewed, each from a different hospital. These participants’ ages ranged from 39 to 64 years, and their years of experience in the field of infection prevention varied from 1 to 39 years (see Table 3). Facilities represented the four U.S. census regions, spread across 24 states (see Table 4).

Table 5 presents the prominent themes and subthemes identified from interview data. Quotations from the interviews are provided to highlight each theme. Each quote comes from a different individual to highlight the wide range of sources supporting these findings.

Theme 1: Attitudes Toward Policy’s Inclusion of CAUTIs

The first theme relates to attitudes participants expressed toward the selection of CAUTIs for the CMS policy. The attitudes of participants varied, depending on the issue, and each subtheme indicated a different perspective on the consequences of including CAUTIs in the

policy. Some attitudes pertained to CAUTIs alone, while others highlighted the multi-faceted interplay among competing priorities (for example, prevention of other health care-associated infections) in the hospital setting.

Focuses on a relatively minor complication—While respondents recognized the importance of CAUTI prevention in absolute terms, they also described CAUTIs as less of a health risk to patients than other health care-associated infections. This caused several infection preventionists (IPs) to question the relevance of targeting CAUTIs in the policy.

One participant stated:

I think there probably are more relevant health care-associated infections that could be addressed... [CAUTI] can develop into a more complicated problem. But there are infections certainly out there that are more significant for morbidity and mortality than the [CA]UTIs. [IP #1]

One respondent went even farther, depicting CAUTIs as the lowest priority among notable health care-associated infections:

And so, if we're focusing on those issues that cause the greatest morbidity and mortality, then a [catheter associated] urinary tract infection really would be at the bottom of the list. [IP #2]

Only a few interviewees described CAUTIs as having a relatively large impact on patient outcomes.

May divert resources away from other prevention activities—Several participants perceived a tension between a focus on CAUTIs and a focus on other hospital needs. Some asserted that including CAUTIs in the policy pulled resources away from other infections with more health risk or cost burden, such as ventilator-associated pneumonia or *Clostridium difficile*.

For example, one participant noted this point about cost:

The biggest one I have a problem with is the urinary tract infection because I just think from a cost perspective...it's diverting more attention, and resources are going to be directed towards UTIs... And that is extremely frustrating when you're saying I have to take it away from an infection that costs... [IP #3]

Similarly, other participants saw the focus on CAUTIs as causing reduced attention to other safety measures. One infection preventionist explained:

And so it [CMS policy] pulled them [nursing directors] away from other issues of concerns that were a priority. And I'm not speaking only of issues related to infection prevention, but issues related to fall prevention, medical [sic] reconciliation. [IP #4]

May have minimal financial impact on hospitals' bottom line—The majority of participants felt the inclusion of CAUTIs in the CMS policy would not have a large financial impact on their hospital's bottom line.

One participant explicitly described this potentially reduced impact as unique to CAUTIs:

[CAUTIs are] a whole different ball game. [IP #5]

The following quote expounds upon this view:

[CAUTI is] a high-volume but a low-risk infection. And it doesn't have a financial impact. [IP #6]

One participant expressed the view of several others when explaining this phenomenon further:

In many instances, catheter-associated UTIs, it really doesn't even hit our pocketbook, okay? Because those [instances] are oftentimes your seriously ill patients who are going to have co-morbid factors. And so your DRG [diagnosis-related group] is going to go up, and the fact that you have a \$2,000 [CA]UTI isn't going to change anything. [IP #7]

A few divergent views surfaced, however. One respondent argued that the inclusion of CAUTIs in the policy made sense, citing the cost of antibiotics, length of stay, and risk of multi-drug resistant infections:

A lot of very small things happen that impact the bottom line and the outcome for that patient. [IP #8]

A couple of representatives noted the differential impact CAUTI non-payment may have on small hospitals, as one individual notably mentioned:

...that's the organizations that is [sic] going to be more impacted, too, financially because they're not as likely to have patients with multiple complications like we are. [IP #9]

As alluded to by IP #7 above, hospitals with more complex caseloads will continue to collect a higher level of DRG payment under the CMS policy; reimbursement for a patient with multiple diagnoses beyond a certain number will not be affected by yet another diagnosis. Hence, smaller hospitals with patients who are less ill may take more of a financial "hit" than larger hospitals when a CAUTI occurs.

Theme 2: Behaviors In Reaction to Policy's Inclusion of CAUTIs

The second theme centers on different behaviors participants described as resulting from the inclusion of CAUTIs in the CMS policy. Participants described the policy influencing various outcomes, some expressly congruent with the intent of the policy and other outcomes less expected. Interviewees also touched upon some behaviors that the pre-policy literature indicated might result, as well as the differing impact the policy may have on diverse hospital units or in different hospital environments.

Less frequent use of catheters for staff "convenience"—Many respondents indicated that the policy resulted in less frequent catheter placement for purposes of staff convenience, as evidenced in the following excerpt:

There is [sic] certain criteria when it [Foley catheter] should be used, and that criteria must now be followed. And once it's inserted, then it's checked each day.... In the past, a lot of times nursing took it upon themselves to put a Foley in or add to the order for a Foley more for convenience.... But now they're more likely to adhere to using the underpants and checking frequently and changing them if they're incontinent... [IP #10]

As this individual notes, new behaviors surfaced in this hospital after the CMS policy, replacing less ideal behaviors motivated by expediency.

Improved CAUTI prevention activities—Some infection preventionists described systemwide CAUTI prevention practices implemented in response to the policy. These consisted of applying CAUTI bundle practices, documenting catheter care, implementing reminder systems, educating clinicians, observing patients, and employing champions of catheter care. Some of the comments from participants connected to this theme were:

Well, what we've implemented is a catheter bundle...who puts it in, how it's put in, and then we, in our documentation, we're going ahead and making sure we're doing the catheter care that needs to be done. [IP #11]

Further corroborating this theme, another participant stated:

So now there's [sic] policies in place. There's observation, there's nursing, and everybody gets involved to make sure. And there's a whole program on just the UTI...And there's one person that takes ownership of that and makes sure that people do what they need to do on a daily basis. They've really dramatically reduced their UTI infections or catheter-associated UTIs. So that's been a great program for us, and that was really out of CMS. [IP#12]

One infection preventionist described how his/her facility involved the hospital's quality improvement (QI) department to prevent CAUTIs post-CMS policy:

Our quality department has these monthly seminars that they offer...as the CMS things come out.... So as far as the information being out there in departments and units and everyone knowing about it, I think everyone's very much aware of it. So that gives us the impetus to go ahead and start with the UTI bundle and getting a bunch of best practices... [IP #13]

Little culturing for CAUTIs upon admission—Participants expressed a range of views about the practice of culturing on admission for UTIs due to the policy. A number of participants stated their facilities were not culturing on admission regardless of the policy. For example, one said:

...culturing people walking in the door has been a sad aftermath of people trying to prove that they did or didn't do something. And we can't afford to pay for that. [IP #14]

One infection preventionist expressed disagreement with his/her hospital's doctors; s/he believed that urinalysis should be performed on each admitted patient given the new policy:

We tried to get that implemented because of the policy. They're [physicians are] just not really receptive to that. They understand that it's because of that [CMS] policy, but they're not – they found many things to complain about on it. It'll increase cost to the patient, whatever. [IP #15]

Alternatively, a few participants believed that their facility might be culturing on admission as a result of the new CMS policy. This perception appears in the following quote:

I think we're doing a whole lot more urinalysis; we're doing a whole lot more testing to prove that we don't have it – that the patient might have it to begin with... [IP #16]

Another example of this viewpoint has a more qualified description of the policy's effect:

[I]f the patient warranted it, we were doing it anyway. And the age of our patients, the majority of them would warrant it. But they seem to be much more careful to check for an existing UTI before the patient's been here a day or so. [IP #17]

Another interviewee reflected that her/his facility had been performing routine urinalysis on most patients “for a long time” [IP #18], even before the CMS policy was instituted.

Mixed impact on surveillance of CAUTIs—Participants shared varying views about the CMS policy's influence on surveillance activities in relation to CAUTIs. According to a few respondents, their facilities did not monitor the incidence of CAUTIs, given its perceived lower health risk, until the advent of the CMS policy.

One participant noted:

VAPs [ventilator-associated pneumonias] and central line infections, we've been doing all along, again driven by volume and risk, especially, of course, in our ICU population...we were not doing surveillance for [CA]UTIs. We are now in specific areas. And that, I would say, was driven by the Medicare changes. [IP #19]

Another interviewee's words affirm and add to this sentiment:

We hadn't really been tracking catheter associated UTIs...just because it was a low morbidity, low mortality [infection], we had placed our emphasis and resources on looking at things like VAP and surgical site infections, central line infections. So, I think the effect it [the CMS policy] triggered was, “Okay, we need to look at that. If it's going to affect payment a lot, then we need to focus on that.” [IP #20]

Other infection preventionists had different experiences. Their facilities already monitored CAUTI trends in their units, so they felt the policy had not impacted their CAUTI-related surveillance practices.

As one example, a respondent expressly stated:

Even though it's part of nonpayment, there hasn't been any push at all from senior leadership or from any other direction to add it [CAUTI] back to the surveillance plan or prioritize it in any way. [IP #21]

Another depicted a similar situation but noticed more of a CMS policy role in surveillance efforts:

It has affected my surveillance to a minimal extent because I would do that surveillance anyway. But in terms of getting reimbursement from CMS, we might look at it a little more critically to see whether or not we should charge for that. [IP #22]

Discussion

This study uniquely assessed the perceptions of CAUTIs and the 2008 CMS payment policy from the perspective of infection preventionists. This in-depth analysis of these stakeholders' views sheds light on attitudes and behaviors related to the inclusion of CAUTIs in the 2008 CMS policy. The reluctant attitudes toward prioritizing CAUTI prevention were not particularly congruent with the reporting of desirable behaviors in response to the policy.

This work enhances the literature on the CMS policy that, as of now, includes few studies with an evidence base; many are opinion-based (Hoff & Soerensen, 2011). Several peer-reviewed articles relate to the current findings, however, including the overarching theme of attitudes toward CAUTI inclusion in the policy. Saint, Kowalski, Forman et al. (2008) discovered attitudes in their pre-policy interviews with infection preventionists that resonated with attitudes that surface in the post-policy interviews presented in this article. Their interviewees cited the relatively reduced morbidity and mortality of CAUTIs compared to other health care-associated infections, as did interviewees in the current study. At the same time, however, participants in both studies acknowledged the need for early removal of catheters during the course of a hospital stay. This suggests a possible pattern of conflicting feelings among infection preventionists about the clinical priority of CAUTI prevention.

Other authors have also postulated on the competition for resources exacerbated by the CMS policy (Deutsch, 2008; Saint, Meddings et al., 2009). For example, Deutsch emphasized that Medicare does not "operate in a vacuum" and must carefully weigh the conflicting financial and organizational demands of everyday practice when developing payment rules (Deutsch, 2008). Respondents' comments in the present study support these sentiments, reinforcing the idea that CAUTI prevention must compete against other priorities in a resource-limited environment.

Some studies have questioned the financial burden, and thus, the incentivizing potential of CMS' new payment rule (Stone et al., 2010; Wachter, Foster, & Dudley, 2008). One study simulated the policy's financial impact based on 6 hospital-acquired conditions, including CAUTIs, and found "negligible" loss of revenue to hospitals (McNair, Luft, & Bindman, 2009). Interviewees in the present study voiced similar views to these suggested consequences of the policy but highlighted that there existed a potentially more significant monetary impact on smaller facilities.

With regard to the present study's second overarching theme, "behaviors related to CMS' inclusion of CAUTIs in the payment policy," another study envisioned CMS' policy as improving hospital care processes for all relevant health care-associated infections (Stone et al., 2010). In addition, Wald and Kramer's (2007) findings supported the selection of CAUTIs as a policy target, predicting a "direct" and "immediate" impact of the policy on hospital and provider practices. Saint, Meddings et al. (2009) also proposed several possible consequences of the CMS policy on CAUTI prevention. These included a heightened focus within hospitals on CAUTIs, increased education of health care professionals on appropriate catheter use, and greater commitment to prompt catheter removal and to alternative treatments to indwelling catheters. In a survey of Minnesota physicians by Drekonja, Kuskowski, and Johnson (2010), roughly one-third of those in primary care reported that CMS' policy had led them to initiate catheter removal at an earlier time point. This study found that only about one-fifth of surgeons had increased such behavior (Drekonja et al., 2010).

One article with dissenting views of hospital administrators from safety net hospitals exists (McHugh, Van Dyke, Osei-Anto, & Haque, 2011); when interviewed, these stakeholders described limited effort by hospitals to initiate new care practices in reaction to the CMS policy.

In anticipation of CMS' new policy, several authors warned of increased rates of testing upon hospital admission (Brown, Doloresco, & Mylotte, 2009; McNair et al., 2009; Saint, Meddings et al., 2009; Wachter et al., 2008; Wald & Kramer, 2007). Such an activity can be classified as not an evidence-based practice, but rather, a practice of "defensive medicine." Researchers predicted that defensively conducting urinalyses upon admission would increase inappropriate antibiotic use, antibiotic resistance, and hospital costs, but this concern was not borne out in our interviews. Additionally, infection preventionists in Saint, Kowalski, Forman, and colleagues' (2008) pre-policy interviews spoke of CAUTI surveillance as largely absent at the hospital level. They reported that external forces, such as public reporting, had led to greater than expected CAUTI surveillance efforts. Respondents in the current study expressed equivocal beliefs about the CMS policy as such an external force; some believed CAUTI surveillance had increased as a direct impact of the policy while others did not.

Limitations to this study must be considered. First, given the use of a strategy of purposeful sampling, the findings cannot be interpreted as representative of hospital infection preventionists' perspectives from the larger U.S. hospital population. In addition, interviewing other stakeholders, such as more hospital administrators, physicians, and coders, about their views would have broadened the findings. Finally, because the analysis herein derives from data of a larger, more general study about health care-associated infections and the CMS policy, the interview questions did not systematically ask all participants about more specific issues surrounding CAUTIs and the CMS policy (see Table 2 for sample study interview questions) that further limits transferability. Despite these limitations, the exploratory nature of this work provides a foundation for further qualitative and quantitative analysis of the CMS policy in relation to CAUTIs. As Stone et al. (2010)

argue, the need for analysis of the new CMS policy needs to be conducted “immediately” with the use of mixed methods holding promise for unearthing important findings.

The study’s most pervasive findings suggest that the CMS policy to align financial incentives with improved quality of care may be achieved for CAUTI prevention. This new pay-for-performance tool, with its “stick” (vs. “carrot”) approach, has possibly prompted hospitals to advance their CAUTI prevention activities. This could imply that the policy improves system-wide prevention strategies around CAUTI care in hospitals (for example, the use of bundles and reminder systems; better documentation, education, and patient observation efforts) despite equivocal attitudes toward the salience, trade-offs, and monetary incentive of doing so (such attitudes are also discussed in other authors’ conceptual model of clinician response to incentives) (Frølich, Talavera, Broad-head, & Dudley, 2007).

Perhaps this sheds some light on the question of punitive versus reward-based incentives in quality improvement initiatives. Mehrotra, Sorbero, and Damberg (2010) hypothesize that “loss aversion” in pay-for-performance programs has a greater impact on provider behavior than the promise of gain. Conrad and Perry (2009) further propose that a balance of rewards and penalties may be one element of a comprehensive approach to improving the design of pay-for-performance. It is conceivable that the new “stick” approach in CMS’ reimbursement of hospitals could play a role in this balancing act.

Conclusions

The overall impact of the 2008 CMS payment policy on health care-associated infection prevention and hospital quality of care should continue to be carefully monitored. CMS has reported conducting evaluations of the selected conditions under the policy (Straube & Blum, 2009). Such ongoing review, as well as continued partnerships with key stakeholders, will be important in future policy decisions regarding reimbursement approaches for health care-associated infections.

Further research will be important. Studies suggesting potential opportunity costs within the policy may provide some valuable input. Future changes to the CMS payment policy are planned and will need to be evaluated. For example, CMS will move away from using individual billing data and toward using hospital-wide rates of infection, which may further alter behaviors and practices. Finally, further research should examine a range of insiders’ perspectives on CAUTI and other targeted health care-associated infections. This would allow the assessment in more contexts as to whether behaviors in reaction to this “stick” policy consistently trump underlying attitudes, and if so, what such a result would mean for differential or combined use of “stick” and “carrot” approaches towards quality improvement.

References

- Association for Professionals in Infection Control and Epidemiology (APIC). About APIC. n.d. Retrieved from <http://www.apic.org/About-APIC/About-APIC-Overview>
- Brown J, Doloresco F III, Mylotte JM. ‘Never events’: Not every hospital-acquired infection is preventable. *Clinical Infectious Disease*. 2009; 49(5):743–746.10.1086/604719

- Centers for Medicare and Medicaid Services (CMS). Hospital-acquired conditions. 2012a. Retrieved from http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/Hospital-Acquired_Conditions.html
- Centers for Medicare and Medicaid Services (CMS). Statute Regulations Program instructions. 2012b. Retrieved from http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/Statute_Regulations_Program_Instructions.html
- Charmaz, K. Constructing grounded theory: A practical guide through qualitative analysis. Thousand Oaks, CA: Sage Publications; 2006.
- Clarke SP, Raphael C, Disch J. Challenges and directions for nursing in the pay-for-performance movement. *Policy, Politics, & Nursing Practice*. 2008; 9(2):127–134. 1527154408320419 [pii]. 10.1177/1527154408320419
- Conrad DA, Perry L. Quality-based financial incentives in health care: Can we improve quality by paying for it? *Annual Review of Public Health*. 2009; 30:357–371. 10.1146/annurev.publhealth.031308.100243
- Deutsch R. The federal role in reducing hospital-acquired conditions: Are Medicare reimbursement incentives enough? *Columbia Journal of Law and Social Problems*. 2008; 42(1):1–41.
- Drekonja DM, Kuskowski MA, Johnson JR. Foley catheter practices and knowledge among Minnesota physicians. *American Journal of Infection Control*. 2010; 38(9):694–700. S0196-6553(10)00459-1 [pii]. 10.1016/j.ajic.2010.03.011 [PubMed: 20605268]
- Frølich A, Talavera JA, Broadhead P, Dudley RA. A behavioral model of clinician responses to incentives to improve quality. *Health Policy*. 2007; 80(1):179–193. [PubMed: 16624440]
- Hartmann CW, Hoff T, Palmer JA, Wroe P, Dutta-Linn MM, Lee G. The Medicare policy of payment adjustment for health care-associated infections: Perspectives on potential unintended consequences. *Medical Care Research and Review*. 2011; 69(1):45–61. 1077558711413606 [pii]. 10.1177/1077558711413606 [PubMed: 21810797]
- Hoff T, Hartmann CW, Soerensen C, Wroe P, Dutta-Linn M, Lee G. Making the CMS payment policy for healthcare-associated infections work: Organizational factors that matter. *Journal of Healthcare Management*. 2011; 56(5):319–335. [PubMed: 21991680]
- Hoff T, Soerensen C. No payment for preventable complications: Reviewing the early literature for content, guidance, and impressions. *Quality Management in Healthcare*. 2011; 20(1):62–75. 00019514-201101000-00009 [pii]. 10.1097/QMH.0b013e31820311d2
- Hooton TM, Bradley SF, Cardenas DD, Colgan R, Geerlings SE, Rice JC, Nicolle LE. Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. *Clinical Infectious Disease*. 2010; 50(5):625–663.
- Klevens RM, Edwards JR, Richards CL Jr, Horan TC, Gaynes RP, Pollock DA, Cardo DM. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. *Public Health Reports*. 2007; 122(2):160–166. [PubMed: 17357358]
- Krein, S.; Saint, S. Preventing catheter-associated urinary tract infection in U.S. hospitals: From ideas to action. *FORUM: Translating Research into Quality Health Care for Veterans*. 2010. Retrieved from <http://www.hsrd.research.va.gov/publications/forum/may10/may10-5.cfm>
- Kurtzman ET. The contribution of nursing to high-value inpatient care. *Policy, Politics, and Nursing Practice*. 2010; 11(1):36–61. 11/1/36 [pii]. 10.1177/1527154410371381
- Lee EA, Malatt C. Making the hospital safer for older adult patients: A focus on the indwelling urinary catheter. *The Permanente Journal*. 2011; 15(1):49–52. [PubMed: 21505618]
- Lo E, Nicolle L, Classen D, Arias KM, Podgorny K, Anderson DJ, Yokoe DS. Strategies to prevent catheter-associated urinary tract infections in acute care hospitals. *Infection Control and Hospital Epidemiology*. 2008; 29(Suppl 1):S41–S50. 10.1086/591066 [PubMed: 18840088]
- McHugh M, Van Dyke K, Osei-Anto A, Haque A. Medicare's payment policy for hospital-acquired conditions: Perspectives of administrators from safety net hospitals. *Medical Care Research and Review*. 2011; 68(6):667–682. 1077558711408326 [pii]. 10.1177/1077558711408326 [PubMed: 21602197]

- McNair PD, Luft HS, Bindman AB. Medicare's policy not to pay for treating hospital-acquired conditions: The impact. *Health Affairs (Millwood)*. 2009; 28(5):1485–1493. 28/5/1485 [pii]. 10.1377/hlthaff.28.5.1485
- Mehrotra A, Sorbero ME, Damberg CL. Using the lessons of behavioral economics to design more effective pay-for-performance programs. *American Journal of Managed Care*. 2010; 16(7):497–503. doi:12680 [pii]. [PubMed: 20645665]
- Polit, D.; Beck, C. *Nursing research: Generating and assessing evidence for nursing practice*. 9. Philadelphia: Wolters Kluwer/Lippincott, Williams & Wilkins; 2012.
- Saint S. Clinical and economic consequences of nosocomial catheter-related bacteriuria. *American Journal of Infection Control*. 2000; 28(1):68–75. S0196-6553(00)90015-4. [pii]. [PubMed: 10679141]
- Saint S, Kowalski C, Banaszak-Holl J, Forman J, Damschroder L, Krein S. The importance of leadership in preventing healthcare-associated infection: Results of a multisite qualitative study. *Infection Control and Hospital Epidemiology*. 2010; 31(9):901–907.10.1086/655459 [PubMed: 20658939]
- Saint S, Kowalski CP, Forman J, Damschroder L, Hofer TP, Kaufman SR, Krein SL. A multicenter qualitative study on preventing hospital-acquired urinary tract infection in US hospitals. *Infection Control and Hospital Epidemiology*. 2008; 29(4):333–341. [PubMed: 18462146]
- Saint S, Kowalski CP, Kaufman SR, Hofer TP, Kauffman CA, Olmsted RN, Krein SL. Preventing hospital-acquired urinary tract infection in the United States: A national study. *Clinical Infectious Disease*. 2008; 46(2):243–250.10.1086/524662
- Saint S, Lipsky BA, Baker PD, McDonald LL, Ossenkop K. Urinary catheters: What type do men and their nurses prefer? *Journal of the American Geriatrics Society*. 1999; 47(12):1453–1457. [PubMed: 10591242]
- Saint S, Meddings JA, Calfee D, Kowalski CP, Krein SL. Catheter-associated urinary tract infection and the Medicare rule changes. *Annals of Internal Medicine*. 2009; 150(12):877–884. [PubMed: 19528567]
- Saint S, Olmsted RN, Fakh MG, Kowalski CP, Watson SR, Sales AE, Krein SL. Translating health care-associated urinary tract infection prevention research into practice via the bladder bundle. *The Joint Commission Journal on Quality and Patient Safety*. 2009; 35(9):449–455.
- Stone PW, Glied SA, McNair PD, Matthes N, Cohen B, Landers TF, Larson EL. CMS changes in reimbursement for HAIs: Setting a research agenda. *Medical Care*. 2010; 48(5):433–439. [PubMed: 20351584]
- Stone PW, Pogorzelska M, Graham D, Jia H, Uchida M, Larson EL. California hospitals response to state and federal policies related to health care-associated infections. *Policy, Politics & Nursing Practice*. 2011; 12(2):73–81.
- Straube B, Blum JD. The policy on paying for treating hospital-acquired conditions: CMS officials respond. *Health Affairs (Millwood)*. 2009; 28(5):1494–1497. 28/5/1494 [pii]. 10.1377/hlthaff.28.5.1494
- Uchida M, Stone PW, Conway LJ, Pogorzelska M, Larson EL, Raveis VH. Exploring infection prevention: Policy implications from a qualitative study. *Policy, Politics & Nursing Practice*. 2011; 12(2):82–89. [pii]. 10.1177/152715441141772112/2/82
- Wachter RM, Foster NE, Dudley RA. Medicare's decision to withhold payment for hospital errors: The devil is in the details. *The Joint Commission Journal on Quality and Patient Safety*. 2008; 34(2):116–123.
- Wald HL, Kramer AM. Non-payment for harms resulting from medical care: Catheter-associated urinary tract infections. *The Journal of the American Medical Association*. 2007; 298(23):2782–2784.

Table 1

List of Hospital-Acquired Conditions Affected by the 2008 CMS Payment Policy

• Foreign Object Retained After Surgery
• Air Embolism
• Blood Incompatibility
• Stage III and IV Pressure Ulcers
• Falls and Traumas
• Manifestations of Poor Glycemic Control
• Catheter-Associated Urinary Tract Infection
• Vascular Catheter-Associated Infection
• Surgical Site Infection <ul style="list-style-type: none"> • Following Coronary Artery Bypass Graft (Mediastinitis) • Following Bariatric Surgery for Obesity • Following Certain Orthopedic Procedures
• Deep Vein Thrombosis/Pulmonary Embolism Following Certain Orthopedic Procedures

Source: CMS, 2012a.

Table 2

Sample of Interview Questions

Could you tell me what you think about the new policy?
What do you think of the infections that are included in the CMS policy? Do you think they all make sense?
Were there certain types of infections included in the CMS list that the hospital was more concerned with?
What effects has the policy had on what infection control or other stakeholders do in the hospital?
How are physicians reacting to this new Medicare policy?
Do you think the organization has a sense of the financial implications of this new policy?
With regard to surveillance, have things always been pretty much the same or have some things changed with the new nonpayment policy?

Table 3

Characteristics of Participants* †

Characteristic	Mean (SD)
Age	55.10 (5.8)
Years at Current Hospital	15.90 (11.2)
Years Working in Infection Control	18.12 (11.6)

* $N = 18/36$; only 50% of the sample provided demographics information for these three variables.

† This demographic information comes from the overall sample of infection preventionists from the parent study about targeted health care-associated infections in the CMS payment policy rather than from the subsample of this sub-study about CAUTIs in particular.

Table 4

Characteristics of Participants' Facilities*

Characteristic [†]	n (%)
Facility region [‡]	
South	12 (33.3%)
Northeast	9 (25.0%)
Midwest	8 (22.2%)
West	7 (19.4%)
Facility teaching affiliation [§]	
Graduate teaching	8 (22.2%)
Major teaching	10 (27.8%)
Minor teaching	3 (8.3%)
Non-teaching	15 (41.7%)
Facility size [‡]	
Small (less than 100 beds)	7 (19.4%)
Medium (100 to 400 beds)	17 (47.2%)
Large (more than 400 beds)	12 (33.3%)
Facility bed size [#] , mean (range)	388.7 (40–1501)
Facility adult ICU bed size [#] , mean (range)	44.2 (6–222)
Facility RN hour per patient day ⁺⁺ , mean (range)	14.8 (7.9–26.8)
Facility hospital discharges paid by Medicare (%), mean (range)	43% (24%–70%)

* N = 36

[†] This facility information comes from the overall sample of the parent study about targeted health care-associated infections in the CMS payment policy rather than from the subsample of this sub-study about CAUTIs in particular.

[‡] Specified in the American Hospital Association (AHA) database.

[§] Please see <http://www.ahadataviewer.com/glossary/> for definitions of teaching affiliation categories.

[‡] Total percentage equals 100%; due to repeating decimals, these individual percentages add to 99.9.

[#] Excludes burn care, neonatal ICU, and pediatric ICU.

⁺⁺ According to AHA variables: $FERN \times 2080 \div IPDTOT$ (Full-time equivalent RN multiplied by standard number of hours in a work year all of which is divided by total facility inpatient days).

Table 5

Analytic Themes

Theme 1: Attitudes Toward Policy's Inclusion of CAUTIs
Focuses on a Relatively Minor Complication
May Divert Resources away from Other Prevention Activities
May Have Minimal Financial Impact on Hospitals' Bottom Line
Theme 2: Behaviors in Reaction to Policy's Inclusion of CAUTIs
Less Frequent Use of Catheters for Staff "Convenience"
Improved CAUTI Prevention Activities
Little Culturing for CAUTIs upon Admission
Mixed Impact on Surveillance of CAUTIs