

Why hospitals underreport the number of patients they infect

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Would hospitals lie? It's an important question for patients, certainly, but also for insurers, regulators, and policymakers interested in containing medical costs.

Mohsen Bayati of Stanford Graduate School of Business has examined a

version of that question in recent research on how hospitals report infections for Medicare patients.

"Before starting this project, I was reading an article that said that such data aren't always perfect," says Bayati, an associate professor of operations, information, and technology at Stanford GSB. "An infection recorded by a [hospital](#) may not actually have been an infection, because of different incentives for reporting such things." For instance, hospitals might code infections in a way that suggests that certain patients are sicker than they actually are, in order to receive higher payments for their care.

The idea that hospitals might not report medical status correctly motivated Bayati and collaborators Hamsa Bastani at the University of Pennsylvania and Joel Goh at Harvard and National University of Singapore to perform a study of how hospital-acquired infections are reported in Medicare claims.

By examining how hospitals reported infections for hundreds of thousands of Medicare patients, the researchers found that hospitals in states with lighter reporting requirements were indeed more likely to miscode, perhaps unintentionally, hospital-acquired infections (HAIs) as infections that were present on admission (POAs). In the states with less stringent reporting requirements, as many as 18.5% of all infections said to be present upon admission were actually acquired in the hospital, representing an estimated Medicare burden of \$200 million a year.

Shifting Incentives

Hospital-acquired infections are not for the faint of heart—or the cost-conscious.

"Patients may come to the hospital for a regular stay and get some

infection while there," Bayati says. "These infections are typically very bad, because if the bacteria can survive in a sterile environment, like a hospital's, they're bound to be nasty." About 75,000 patients die from HAIs in the U.S. annually, and the cost of care for those with HAIs can be as much as eight times greater than that of similar patients without such infections.

So it's no surprise that Medicare passed a 2008 regulation stating the government-based insurance program for the elderly would no longer cover care related to HAIs, and instead would place the financial burden of treating such infections on the hospitals themselves. If, on the other hand, the patient arrived at the hospital with an infection, then Medicare would cover the cost of any related interventions.

But Medicare relies on hospitals to self-report infection rates, and that 2008 policy shift potentially changed hospitals' incentives to identify and report the exact origin of infections. "If I'm a hospital, I can try hard to find out if someone came in with an infection because then I will get paid for it," Bayati says. "If I miss it, then it's considered hospital-acquired and I don't get paid. But the hospital has to have the infrastructure in place to detect these things upfront. And even then there could be errors and misclassifications."

The State of Infection Reporting

To estimate how frequently HAIs are misclassified as POAs, the researchers looked beyond raw hospital data to get a sense of the many variables that influence infection reporting.

"When you look at hospital data," Bayati says, "you may see some hospitals have a high number of POAs and a low number of HAIs, and it would be tempting to conclude they're misclassifying. But that might be incorrect." For example, such a facility may be serving an area populated

with patients who have a greater chance of acquiring infection before admission, he says.

To get around that data challenge, the researchers zeroed in on the differences among state reporting requirements. Some states require hospitals to report infection rates not for the sake of payment, but to improve the overall quality of health care, Bayati says. Massachusetts, New York, and New Jersey, for instance, require that all HAIs be reported. Other states, such as Arizona, Montana, and Texas, had no such reporting requirements.

Bayati and colleagues compared rates of infections reported by hospitals in states with and without reporting requirements for over 490,000 Medicare patients in 2009 and 2010. They found that hospitals in states requiring infection reports showed higher rates of HAIs and lower rates of POAs, after controlling for differences in patient risk, demographic factors, and hospital billing practices. That trend held true even for hospitals that had a quantifiably higher overall quality of care, he says.

In other words, even the best hospitals were reporting higher rates of HAIs when they were in states that required such reporting. Moreover, hospitals in states that didn't have such reporting requirements were more likely to misclassify HAIs as POAs to Medicare. The study estimated such misreporting in at least 10,000 cases a year, representing an estimated annual burden to Medicare of about \$200 million.

A Question of Intent

What explains this pattern of findings? The researchers used interviews with [hospital staff](#), among other information, in an attempt to understand the root cause of such misclassification.

Their hypothesis is that hospitals that are obligated to meet stringent

state-level reporting requirements are more concerned about having their records audited and thus put more resources and infrastructure into ensuring that they classify correctly the origin of all patient infections.

Of course, the darker explanation is that hospitals in states without infection-reporting requirements might be more likely to misclassify HAIs as POAs because they know they can "get away with it." Bayati likens this intentionality-based argument to one for income taxes. "If you're a resident in a state that audits taxes very carefully, then both your state and federal returns are more likely to be accurate," he says.

But he emphasizes that the research doesn't provide specific evidence for intentionality on the hospitals' part: "People might argue that hospitals are misclassifying intentionally, but we didn't test this."

Promising Policy Interventions

Regardless of motive, or lack thereof, the findings point to potential policy interventions to reduce hospitals' misclassification of infection type.

Requiring reporting of HAIs at the state level is the most obvious potential deterrent. "Stronger reporting regulation might incentivize hospitals to invest more into finding out what's really going on with these infections," Bayati says.

A second route might be to audit all [infection](#) reporting at the federal level. "The key number to look at is the ratio between POAs and HAIs at each hospital," Bayati says. "Hospitals with higher POA-to-HAI ratios would be potential targets for auditing."

"In all industries, we're moving toward using data to make better decisions," Bayati says in closing. "But it's critical to understand the

integrity of the data. If you're using data, take steps to understand if it's the correct data, because there may well be biases in it, as our study shows. When humans are inputting data, there's always room for bias."

More information: Mohsen Bayati. Evidence of Upcoding in Pay-for-Performance Programs. 2017. Working Paper No. 3396.

[www.gsb.stanford.edu/faculty-r ... are-claims-reporting](http://www.gsb.stanford.edu/faculty-r...are-claims-reporting)

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