

2018 Results Demonstrate a 36% drop in CAUTI Rates at 23 Hospitals

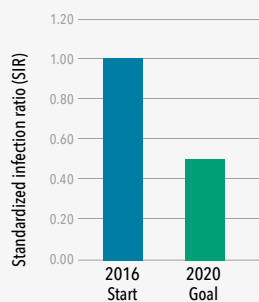
Research findings by Morgan Ryan | Bethany Thompson | Matthew Hays, PhD

About 30 million Foley catheters are inserted each year, leading to nearly 1 million catheter-associated urinary tract infections (CAUTIs). These infections are the most commonly reported hospital-acquired condition (HAC). Studies regularly find that as many as 50% of patients' indwelling catheters are unnecessary and should not have been ordered. Even properly ordered catheters result in many infections that are avoidable if guidelines are strictly followed.

Rates for every kind of hospital acquired infection (HAI) were reduced between 2009 and 2014—except CAUTI. Despite all efforts, CAUTI has been resistant to improvement.

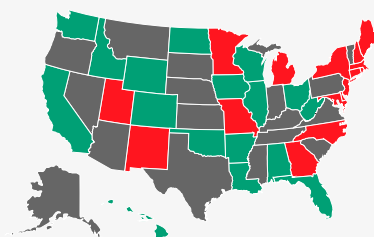
A major US health system employed the Amplifire training platform to acquire data on what its nurses knew and didn't know about managing urinary catheters, and to find and fix any misinformation. Could the nurses identify when catheterization is indicated? Did they know how catheterization tubing and equipment should be handled? Were they confident in their knowledge? Was their confidence justified? Most importantly, could the Amplifire knowledge engineering platform actually reduce CAUTI rates. The answer to that question turned out to be yes with a 36% reduction that has held for seven months.

Despite all efforts, CAUTI has been resistant to improvement.



Proposed CAUTI Reductions:

In October 2016, the National Action Plan to Prevent Health Care Associated Infection set a new goal: Reduce CAUTI rates 25% by 2020, using year 2015 as a baseline.



CDC 2016:

However, according to the CDC's 2016 HAI Progress Report, only 17 states saw a significant decrease in CAUTIs. 16 showed an increase, and all others showed no statistical change.

CAUTI Study: Findings and Takeaways

CAUTI Crisis

- There are nearly 1 million CAUTIs every year
- 50% of indwelling catheters are unnecessary
- CAUTI rates saw no reduction in 2009–2014

The Puzzle

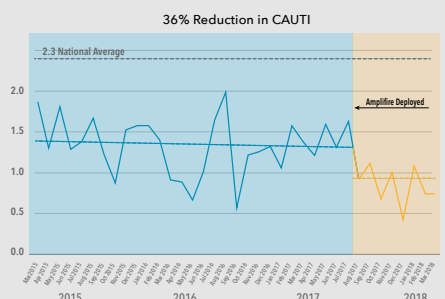
- Evidence-based guidelines for proper catheter use are long-established
- CDC estimates CAUTI rates could be reduced by ~70% if best practices and guidelines were followed
- So why aren't national CAUTI rates at 0%?

The Study

- Major US health system
- 4,511 participating nurses
- Based on Amplifire, a learning tool that finds and fixes the misinformation that impacts performance

The Results

- 25,826 instances of confidently held misinformation found and remediated
- 23,752 instances of doubt or uncertainty remediated
- Analytic reports identified productive interventions for Nurse Supervisors and Managers
- 36% drop in CAUTI rates



Confidently Held Misinformation (CHM) –The most important healthcare metric you've never heard of...

Confidently held misinformation lives in the minds of all clinicians and is one of the largest contributors to costly medical error.

CHM exists when a clinician is sure they are right, but they are wrong. It creates misjudgments and mistakes. Misplaced confidence can be perilous—especially in patient care.

Amplifire has the unique power to detect and correct CHM. The platform requires learners to state their certainty when they answer questions.

The system then classifies which answers were answered confidently but incorrectly—representing confidently held misinformation—and customizes a module in real time that will lead the learner to rapid mastery of the topic.

The cognitive science behind the platform has proven itself in over one billion learner interactions.

Finding and Fixing the CHM that Affects Performance

Knowledge and Confidence about CAUTI Before and After Amplifire

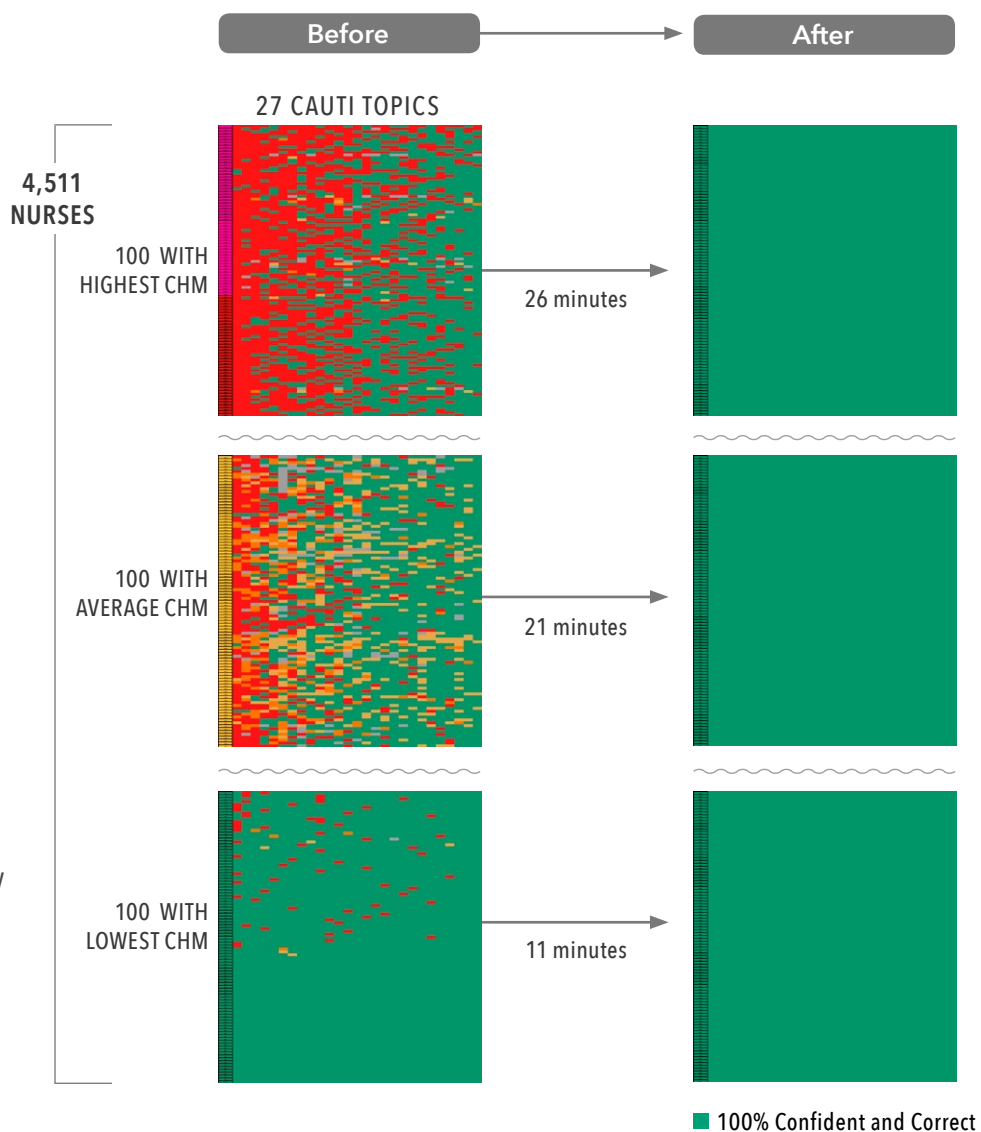
OVERALL RESULTS

Knowledge before Amplifire

- 21% CHM
- 20% Uncertainty
- 59% Confident and Correct

Observations

- 25,826 instances of CHM were found and fixed.
- 23,752 instances of uncertainty were found and fixed.
- The variation of CAUTI knowledge was high, with some nurses extremely misinformed and others showing confident mastery of the topic.
- Nurses who were most misinformed spent almost half an hour in the module, while nurses who were most knowledgeable about CAUTI spent only 11 minutes.
- By the end of the course, 100% of the nurses who completed were confident and correct on all the information.



The Study: Confidently Held Misinformation and Implications

The Amplifire e-learning platform probes the accuracy of a learner's knowledge and the confidence with which it is held. Confidence leads to action, and action to outcomes. When people know that they don't know a correct action for a given situation, they do nothing. When they are uncertain, they hesitate. When they are confident, they act. High-quality outcomes result when clinicians are both confident and correct in their knowledge.

This study specifically identified the confidently held misinformation about urinary catheters. The study ran from early September through mid-October 2017 and included 4,511 nurses across 25 locations in a single health system. The nurses were a mix of RNs, Charge RNs, LPNs, NPs, and RN Educators.

Amplifire revealed key areas where accurate knowledge and justified confidence would improve practice and reduce unreimbursed care:

AREAS OF HIGH CHM REMEDIATED

Equipment Maintenance

Only 11% of nurses knew that every part of the drainage tube leading from the patient must be lower than any preceding portion. Most of the nurses (86%) believed that the only required configuration was to keep the collection bag lower than the patient's bladder.

Clinical Implication: Failure to eliminate dependent loops can result in urine accumulation, stagnation, and back flow—all of which contribute to CAUTI.

Catheterization and Incontinence

What is the most common WRONG reason for placing a catheter? Almost a third of nurses (30%) did NOT know that the answer is urinary incontinence. This suggests a lack of awareness about one of the leading CAUTI prevention techniques (no inappropriate catheters). It also suggests that these nurses thought catheter placement for urinary incontinence is appropriate. In most cases, it is not.

In a related finding, more than half of the nurses (58%) did not know that catheters ARE indicated for incontinence in the presence of a pressure injury.

Clinical Implication: Infection risk accompanies the use of urinary catheters. Clinicians must know when they should—and should not—be used in order to prevent patient harm.

Antimicrobial Stewardship

Less than half of nurses (46%) knew that bacteriuria at day 30 of catheterization is predictably very high (approximately 100%). Bacteriuria is NOT diagnostic of CAUTI unless symptoms of infection are present and does not, by itself, call for the use of antibiotics. Only 22% of nurses indicated awareness that asymptomatic bacteriuria is strongly associated with the overuse of antibiotics.

Clinical Implication: Bacteriuria is routine for catheters after 30 days but does NOT indicate an infection that requires antibiotics. Inappropriate antibiotic use promotes the emergence of antimicrobial-resistant strains of bacteria.

Results

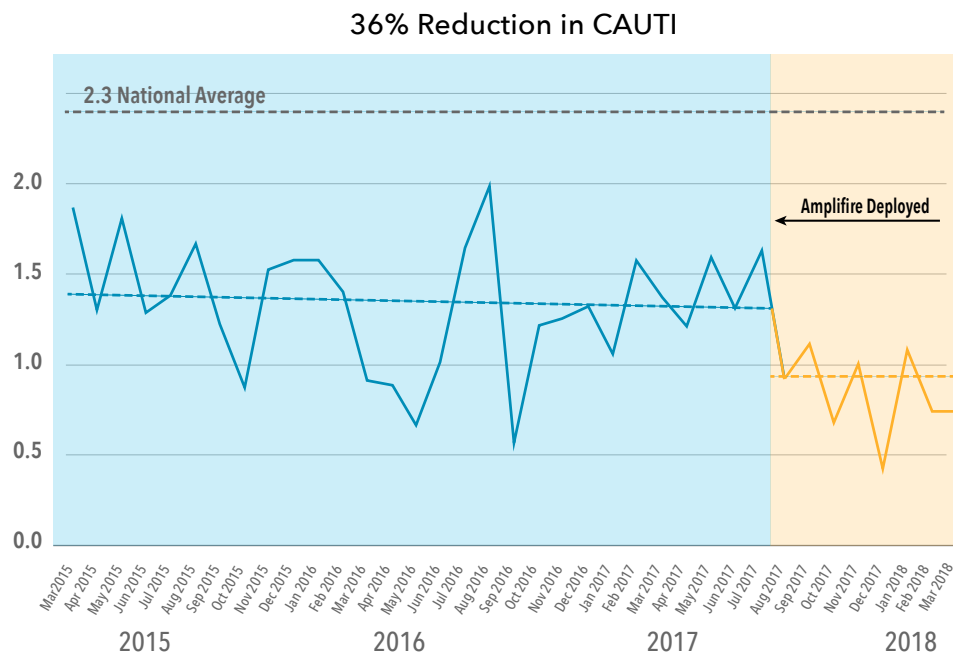
Incident Reduction

Nurses use their sense of confidence to make decisions and then act upon them. Theoretically, if Amplifire were to fix the confidently held misinformation seen on the previous pages, then the rate of mistakes made with confidence should go down. And that is precisely what has been observed for seven months beginning in September, 2017.

- 29% reduction in CAUTI rates over prior 12 months
- 36% reduction over prior 32 months

Interestingly, prior to the Amplifire deployment, this healthcare system had already obtained a fairly low CAUTI rate below the national average of 2.3 incidents per 1,000 catheter hours.

Note: Training of techs not yet complete



About Amplifire

This study was conducted using Amplifire, an e-learning platform built on the latest discoveries in cognitive science. The Amplifire learning algorithm detects and corrects the knowledge gaps, doubts, and misconceptions that exist in the minds of clinicians in every healthcare organization. The platform adapts to the needs of individual learners as they take an Amplifire course until mastery of each topic is achieved.

Healthcare organizations have adopted Amplifire as a core operating asset. They have transformed training from a rote activity, where managers can only hope for results, into a strategic, measurable tool that delivers a clinical workforce aligned with the latest evidence-based medicine.

After the platform finds and fixes CHM and uncertainties held by clinicians, it delivers advanced analytics to organizations and managers that pinpoint where learners struggled, from the organization and unit level down to the individual learner.

With more than a billion learner interactions, Amplifire harnesses research, learner feedback, and artificial intelligence to provide a faster and more engaging path to mastery. This powerful combination has made Amplifire an innovative leader in the learning industry.

Amplifire has been deployed in multiple healthcare initiatives focusing on sepsis, CLABSI, CAUTI, SSIs, pressure injuries, C. difficile, patient falls, and other causes of avoidable patient harm. Additional courses are currently under development.

To learn more about the platform and its application in healthcare, contact us at:

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