



Taking a proactive approach to Infection Prevention

 Investigating and managing the impacts of HAIs in health care systems

According to CDC data, it is estimated that hospital-associated infections (HAIs) make up five percent of all hospital-related admissions per year and contribute to the deaths of nearly 75,000 people in the United States.¹

Despite recent progress under a four-phase CDC guidance to reduce HAIs, 2019-2020 saw a massive resurgence, with hospital systems facing resource constraints due to the COVID-19 pandemic and rise of antibiotic-resistant bacteria.^{2,3,4}

These statistics are eye-opening and become even more concerning when looking at HAIs in nursing home residents, with an estimated 1 in 12 residents having had an HAI.⁵

Not only do HAIs affect patient outcomes, they also have a significant financial impact, with a 2019 study citing hospital system costs of over \$9 billion, and over \$200 billion in costs passed on to patients annually.⁶

That, along with other HAI-related complications like increased readmissions, reduced Medicaid reimbursements, and the risk of malpractice lawsuits⁷, it's clear that health care systems must take a proactive approach to address HAIs.

¹Epidemiology Public Health, "Diseases & Topics," NC DPH: Healthcare-Associated Infections (HAIs) (Department of Health, August 14, 2020), <https://epi.dph.ncdhhs.gov/cd/diseases/hai.html>.

²NA NA, "HAIs Review," Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, October 20, 2021), <https://www.cdc.gov/hai/data/archive/archive.html>.

³Maryn McKenna, "As Covid Cases Rise, so Do Hospital-Related Infections," Wired (Conde Nast, September 10, 2021), <https://www.wired.com/story/as-covid-cases-rise-so-do-hospital-related-infections/>.

⁴NA NA, "About Antibiotic Resistance," Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, March 13, 2020), <https://www.cdc.gov/drugresistance/about.html>.

⁵NA NA, "Hai and Antibiotic Use Prevalence Survey," Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, February 23, 2021), <https://www.cdc.gov/hai/eip/antibiotic-use.html>.

⁶Roger Douglas Scott, Steven D. Culler, and Kimberly J. Rask, "Understanding the Economic Impact of Health ... - Ceconnection," CE Connection (The Art and Science of Infusion Nursing, April 2, 2019), <https://nursing.ceconnection.com/ovidfiles/00129804-201903000-00002.pdf>, 1.

⁷Ibid, 1.

The Centers for Medicare and Medicaid Services (CMS) is moving swiftly to address what the CDC has called a “public health crisis” by encouraging hospitals to improve their infection control and prevention practices through penalties and incentives. Its actions have included:

- Lowering its payments by 1 percent for 758 hospitals with high rates of potentially avoidable infections and complications as part of its Hospital-Acquired Conditions Reduction Program.⁸
- Adding two infection measures – SSI (Surgical Site Infection, Colon Surgery & Abdominal Hysterectomy) and CAUTI (Catheter-Associated Urinary Tract Infection)– to its Hospital Value-Based Purchasing (VBP) Program, which enables hospitals to earn payment incentives based on their performance.⁹
- Penalizing hospitals (starting in 2017) for patients who contract MRSA (methicillin resistant staphylococcus aureus) infections during their stay – a move that could cost many institutions millions of dollars in Medicare revenue. A 2019 study showed that the average hospital lost \$569,000 in potential reimbursements related to HAIs.¹⁰

Despite all the attention given recently to nightmare bacteria, rising costs and mortality rates, and new guidelines that would affect a hospital’s reimbursements, hospitals were initially slow to respond. As of a 2021 CMS report only 23% of hospitals scored above “average” for total HAC (Hospital Acquired Condition Reduction Program) scores, underlying the widespread lack of expertise in hospital systems about long-term infection prevention.¹¹ Further exacerbating the problem is a high demand for infection preventionists.

With the rise of antibiotic resistant superbugs and global events leading to a steady increase in HAIs, Hospital systems are more constrained in the Infection Prevention department than ever and will be for the foreseeable future. A combination of the right expertise, technology, and best practices are the best way forward to help alleviate the growing strain on these departments.

⁸CMS, “Hospital-Acquired Condition Reduction Program,” CMS (Department of Health, August 8, 2021), <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/HAC-Reduction-Program>.

⁹Ibid, NA

¹⁰Roger Douglas Scott, Steven D. Culler, and Kimberly J. Rask, “Understanding the Economic Impact of Health ... - Ceconnection,” CE Connection (The Art and Science of Infusion Nursing, April 2, 2019), <https://nursing.ceconnection.com/ovidfiles/00129804-201903000-00002.pdf>, 67.

¹¹CDC NA, “Hospital-Acquired Condition (HAC) Reduction Program,” PQDC- CDC HAI, October 27, 2021, <https://data.cms.gov/provider-data/dataset/yq43-i98g>.

Who are infection preventionists?

A typical IP is an experienced medical professional with a long history of working in hospitals and a passion for epidemiology. More than 15,000 IPs are members of APIC, and most are affiliated with acute care health facilities.¹² An increasing number practice in ambulatory and outpatient services where they direct programs that protect patients and personnel from HAIs.¹³



Unfocused multitasking and prevention

Broadly speaking, the primary role of an IP or infection preventionists is to prevent, investigate and manage the spread of infections within health care settings. Although each facility will investigate its own policies and procedures regarding what's expected of IPs, their duties typically include:

- **Surveillance and intervention:** IPs collect, analyze and investigate health data in order to track infection trends, plan and implement appropriate interventions, measure success, and develop and submit reports to public health agencies
- **Patient assessment:** IPs monitor and report signs, symptoms, and changes in condition and initiate isolation precautions as indicated

¹²NA, Assoc. for Professionals in Infection Control & Ep, "Rise of HAIs, APIC," Apic.org, October 3, 2020, https://rise.apic.org/web/APIC/New_Join/Join_Step1.aspx?utm_campaign=join_renew&utm_source=exit_popup&utm_medium=join&utm_content=step1.

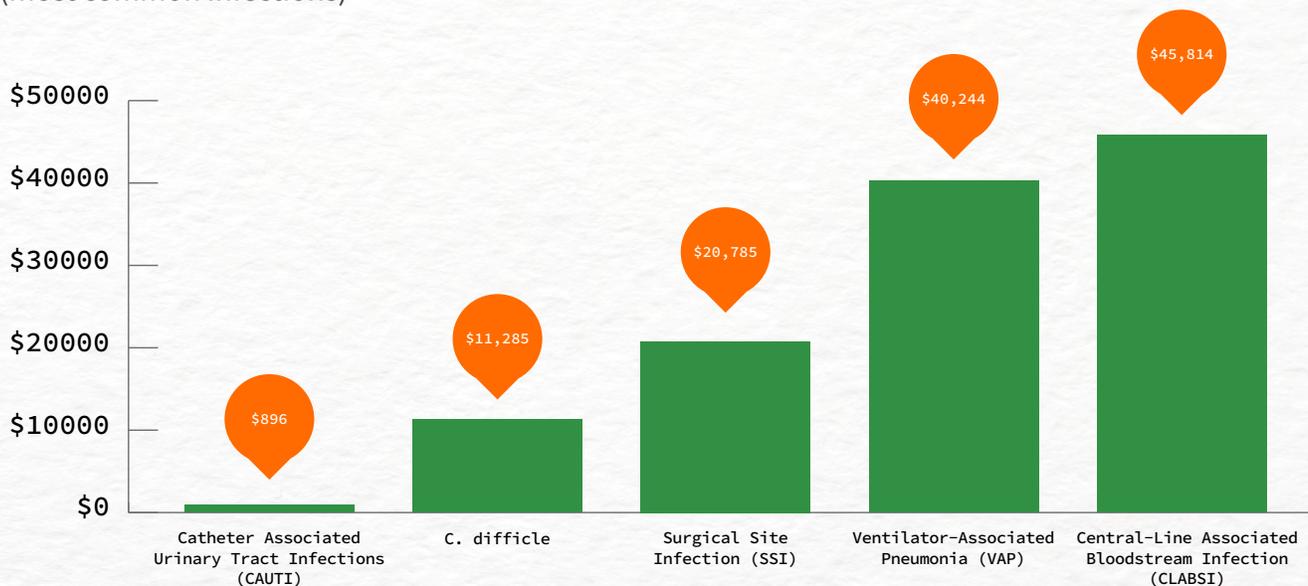
¹³APIC NA, "Who Are Infection Preventionists?," APIC (APIC, July 2, 2020), [https://apic.org/monthly_alerts/who-are-infection-preventionists/#:~:text=Infection%20preventionists%20\(IPs\)%20are%20professionals,they%20should%20to%20prevent%20infections.](https://apic.org/monthly_alerts/who-are-infection-preventionists/#:~:text=Infection%20preventionists%20(IPs)%20are%20professionals,they%20should%20to%20prevent%20infections.)

- **Prevention practices:** IPs teach and promote scientifically-based infection prevention practices and collaborate with other health care personnel to ensure compliance. These practices include:
 - Isolating sources of infections and limiting their transmission
 - Monitoring staff compliance with basic infection control practices such as hand washing and the use of personal protective equipment such as gloves and gowns
 - Monitoring, reviewing and reporting antibiotic usage and relevant information regarding antibiotic resistant microorganisms
- **Education and training:** IPs constantly educate the staff, patients, families and the public on limiting the spread of infectious diseases and train health care personnel on best practices in infection control
- **Policies and procedures:** IPs must revise and update these to maintain compliance with current recommendations from the CDC (NHSN), OSHA, The Joint Commission and other federal, state, and local health agencies

The cost of infection

Total annual costs of HAIs in America: **200+ billion USD¹⁴**

Cost per infection:
(most common infections)



¹⁴Roger Douglas Scott, Steven D. Culler, and Kimberly J. Rask, "Understanding the Economic Impact of Health ... - Ceconnection," CE Connection (The Art and Science of Infusion Nursing, April 2, 2019), <https://nursing.ceconnection.com/ovidfiles/00129804-201903000-00002.pdf>, 1.

Overburdened and resource constrained

More than 40 years ago, the CDC conducted its Study on the Efficacy of Nosocomial Infection Control project (SENIC), which surveyed 338 U.S. hospitals to examine the effectiveness of their nosocomial infection surveillance and control programs. SENIC found that hospitals reduced their nosocomial infection rates by approximately 32% if their infection surveillance and control program included four components:

1. Emphasis on surveillance activities and robust control efforts
2. Follow the WHO recommended WISN method to determine the number of beds and specialists needed¹⁵
3. Trained Infection Prevention Specialist(s)
4. Feedback of surgical wound infection (SWI) rates to practicing surgeons¹⁶

After two decades APIC and the Society for Healthcare Epidemiology of America (SHEA) updated and expanded recommendations for effective infection prevention and control programs:

- Managing critical data and information
- Developing and recommending policies and procedures
- Intervening directly to prevent infections
- Educating and training health care workers, patients, and non-medical caregivers
- Having sufficient resources¹⁷

As their responsibilities expand into new areas, IPs also must make certain their facilities are prepared to identify and respond to new viruses such as the COVID-19 pandemic, which has stretched IP resources thin. Despite the CDC reporting a general year-over-year decline in HAIs from 2014 onward, the emergence of the COVID-19 pandemic proved that progress is fragile, with HAIs increasing over 300% between the end of 2019 and 2020 directly as a result of the pandemic.¹⁸

While the IP profession continues to evolve amidst the emergence of ever-more lethal and resistant infections, many hospitals have not kept pace with the need for appropriate staffing and resources. Remember, four decades ago, when an IP's life was much simpler, APIC recommended one fulltime IP for every 250 beds. Yet, with the increasingly complex health care landscape, a 2020 CMS survey found that most facilities were understaffed in terms of infection prevention expertise and were not up to par with SHEA recommendations. An increasingly volatile and complex healthcare landscape has led to resource constraints and unsupported multitasking that has severely affected the ability of infection prevention experts to do their work in an efficacious and effective manner.

¹⁵Frank Diamond, "New Method Needed to Determine Infection Preventionist Staffing Levels," *Infection Control Today* (Infection Control Today, November 14, 2020), <https://www.infectioncontroltoday.com/view/new-method-needed-determine-infection-preventionist-staffing-levels>.

¹⁶CDC NA, "Public Health Focus: Surveillance, Prevention, and Control of Nosocomial Infections," Centers for Disease Control and Prevention (Centers for Disease Control and Prevention), accessed November 4, 2021, <https://www.cdc.gov/mmwr/preview/mmwrhtml/00017800.htm>.

¹⁷CMS NA, "Hospital-Acquired Condition Reduction Program," CMS (Department of Health, June 6, 2019), <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/HAC-Reduction-Program>.

¹⁸Maryn McKenna, "As Covid Cases Rise, so Do Hospital-Related Infections," *Wired* (Conde Nast, September 10, 2021), <https://www.wired.com/story/as-covid-cases-rise-so-do-hospital-related-infections/>.

Technology solutions key to improving efficacy

IPs spend more than five hours a day collecting, mining, and reporting infection data. As a result of an increasing demand for publicly reported infection data and reimbursement policies that penalize or incent payments based on these rates, many health care executives are forcing IPs to focus on data management. A recent APIC IP Core Competency Model developed in 2020, reflects this shift by designating technical proficiency as one of its four key domains for professional development.²⁰

To maximize efficiencies and provide real-time data to help IPs detect and control infectious diseases, APIC and other organizations have encouraged health care facilities to invest in infection tracking and monitoring technology, especially in light of events such as the global COVID-19 pandemic.²¹ Various infection surveillance software and other automated electronic tools are now available to assist IPs in:

- Identifying and validating potential HAIs in real time
- Expediting analysis of large numbers of medical records to identify infection clusters and outbreaks of high-risk pathogens
- Spotting trends that indicate the need to improve infection control practices
- Eliminating errors associated with manual infection surveillance

Infection surveillance software and applications are critical to achieving data integrity. Having no or even older technologies, can slow down clinical analysis and prevent concurrent review of data. Many health care systems also integrate data from multiple source systems to further simplify and expedite reporting, one of an IP's most time-consuming responsibilities. Most importantly, these technology tools, which can include customized alerts, can speed up interventions to keep patients safer and prevent the spread of infections.

Hospital systems spend more than \$9 billion on HAIs annually.

²⁰ APIC NA, "Applying APIC's Competency Model," APIC, June 6, 2018, <https://apic.org/applying-apics-competency-model/>.

²¹ Christi Grim, "Hospitals Reported That the COVID-19 Pandemic Has Significantly Strained Health Care Delivery," oig.hhs.gov (U.S. Department of Health and Human Services Office of Inspector General, February 26, 2021), <https://oig.hhs.gov/oei/reports/OEI-09-21-00140.pdf>, 4.

Solutions to the shortage of qualified IPs

Improved technology provides a foundation for a strong IP program, but in order to achieve the best results, an experienced and well-trained team of IP specialists is needed as well. APIC in 2014 noted that HC workers should be trained to follow protocol 100 percent of the time, a recommendation that the CDC echoed in 2020.²²

A recurring issue has been the lack of time, expertise, and resources to follow compliance standards by hospital systems. Even with better technology the lack of expertise can hamstring a hospital's efforts to improve. Several studies have shown investing in resources to follow compliance standards are key to an infection prevention department's success. One study from 2020 found that compliance was key to an infection prevention department's financial health as well, noting, "24 hospitals in the US in 2020 noted that by following compliance principles nurses could reduce costs by 108 million dollars per year."²³ Another study from 2017 shows that nurses who follow a standardized model of compliance reduced hospital readmission rates at one hospital from 32% in 2011 to 7.9% in 2016.²⁴ Having expertise to guide a system through compliance is just as critical as having the right technology.

Though CNOs and other hospital executives recognize the increasing importance of improving infection control, many face budget constraints and are reluctant to add FTEs to their IP staffs, or even worse – they're unable to find qualified

candidates. Hospital systems, as a result, have turned to coupling trained remote employees with a technology solution in addition to partnering with experts and technology they would otherwise not be able to access.

Third-party partners who follow best practices can provide invaluable insight when coupled with cutting-edge technology. Hospital systems embarking on this suggested solutions pathway need to consider the qualifications of who they ultimately choose to partner with. Partner provided experts should have on average a decade or more of experience in infection control and the majority of the experts should be certified with APIC. Outside partners using data supplied by hospitals and/or their technology partners, review and analyze positive cultures for evidence of HAIs. Results should be formatted and reported based on the hospital's specific requirements, including submission to NHSN. Medical professionals note that many current EHR platforms and case abstractions performed use clunky and outdated technology, leading to more time on administrative tasks than with patients. One article notes that up to 37% of "active time" by physicians or other specialists is spent on EHRs and cases.²⁵ By partnering with experienced outside partners, the hospital's own teams can focus on other aspects of their work that are likely to contribute to preventing HAIs and improving best practices.

²² Gary Evans, "CDC Offers Healthcare Workers Online Infection Control Training," Relias Media - Continuing Medical Education Publishing (Relias Media, December 1, 2020), <https://www.reliamedia.com/articles/147169-cdc-offers-healthcare-workers-online-infection-control-training>.

²³ Mojtaba Vaismoradi et al., "Nurses' Adherence to Patient Safety Principles: A Systematic Review," International journal of environmental research and public health (MDPI, March 19, 2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7142993/>, 1.

²⁴ Dana Nelson, "NEC Ja 17 - American Academy of Ambulatory Care Nursing," aaacn.org (American Academy of Ambulatory Care Nursing, July 7, 2018), https://www.aaacn.org/sites/default/files/documents/misc-docs/NEC_JA_17_p205.pdf, 207.

²⁵ Bruce Y. Lee, "How Doctors May Be Spending More Time with Electronic Health Records than Patients," Forbes (Forbes Magazine, January 14, 2020), <https://www.forbes.com/sites/brucelee/2020/01/13/electronic-health-records-here-is-how-much-time-doctors-are-spending-with-them/?sh=12ad31ed5172>.

Conclusion

Even the best-prepared hospital systems can be caught off guard by a volatile health care landscape. With HAIs recently on the rise and negatively effecting quality patient care, reimbursements, and stretching resources thin, hospital infection prevention departments are increasingly looking for opportunities to become more efficacious and effective. Key to all this is high-quality clinical data management, data integrity, and the updated technology and expertise to support the data by implementing important IP protocols. As time, resource constraints, and world events exacerbate already overburdened IP departments, using outside partner is key to reducing HAIs and reaping benefits.

About Q-Centrix

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