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Editorial

APIC and AJIC through the decades, 2010s

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Medical anthropologists have studied the evolution of health and medicine. For example, Porter¹ noted Hippocrates emphasized an individual's susceptibility and bad air to explain the origins of disease. The idea of bad air, or "miasma," would continue to dominate across science and public opinion, until finally in 1861 the germ theory work of Robert Koch and Louis Pasteur ignited the idea of contagionist theory. It wasn't till the mid-19th century that Semmelweis became the pioneer of antiseptic procedures and understood the importance of hand washing when he realized the medical students were coming direct to Ward One from autopsies "with soiled hands and instrument." His intervention ordered handwashing with chlorinated water before deliveries, and as Porter noted mortality dropped in both wards. However, the success of this intervention in reducing mortality was met with skepticism and resistance from colleagues—so much so that Semmelweis relocated from Vienna to Budapest, where he introduced chlorine disinfection and seemingly made a positive impact on reducing childbed fever to less than one percent mortality.

Fast forward to the 2010s: Personally, my career in infection prevention and control began at a time when the H1N1 pandemic reached the postpandemic phase and was in the rearview mirror. Ebola outbreaks emerged in West Africa and through air travel reached the United States, ultimately resulting in transmission and infection to two nurses caring for the index US patient. The Affordable Care Act advanced to implementation, including the Centers for Medicare and Medicaid Services Hospital-Acquired Condition Reduction program (Centers for Medicare and Medicaid Services,²). At this time, APIC had been around for nearly 40+ years to serve as an organization to spread knowledge and prevent infection. Centuries of scientific groundwork, both accepted and dispelled, serve as the foundation for the body of evidence in infection prevention and control.

A number of peer-reviewed articles published in this decade by the *American Journal of Infection Control* continued to add to the body of evidence to help inform how infections are thought to occur and how to break the chain of transmission. Through a systematic review of the literature, Weber et al.³ synthesized evidence that explains the role of hospital surfaces in the transmission of what were seen as emerging healthcare-associated pathogens: Norovirus, *Clostridium difficile* (now *Clostridioides difficile*), and *Acinetobacter spp.* The results

of this systematic review led the authors to recommend the implementation of enhanced cleaning and disinfection of surfaces in a room when encountering these three pathogens, as well as multi-drug resistant organisms such as methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant *Enterococci*. Andersson et al.⁴ examined the role of intraoperative traffic on air quality and its potential in the development of surgical site infections in orthopedic surgery demonstrated that air can become contaminated (an illustration of modern-day "miasma"), which can lend itself to increased risk of surgical site infections. Recommendations for improved ventilation in operating suites and interventions targeting reduced traffic flow in these spaces emerged from this important research.

Success in infection prevention and control is not just about identifying a microbiological source and an intervention to eliminate or reduce the risk of disease. Throughout the years, peer-reviewed research has also realized other influencing factors can make, break, challenge, or enhance success in preventing infection. Cimiotti et al.⁵ authored one of the *American Journal of Infection Control's* most highly-cited articles of this decade, examining the impact of nurse staffing on healthcare-associated infections. In this study, the authors found significant associations between patient-to-nurse ratio and urinary tract infection and surgical site infection (even after controlling for patient severity as well as nurse and hospital characteristics). This important study underscores the critical need of adequate resourcing to prevent healthcare-associated infections.

Finally, this decade saw social media anchor itself as a platform for many to send, receive, and synthesize valid and invalid information, allowing for near instantaneous movement to millions of platform users and exhibiting a strong position to shape public opinions. Scamfeld et al.⁶ examined the influence of Twitter a few years after its inception, specifically looking at the content, utility, and consequences of antibiotic misuse that could inform future interventions. The authors noted potential opportunities to leverage social media platforms to promote positive behavior change, dissemination of valid information, and identifying misuse of antibiotics.

Through observations and robust research, disease transmission and interruptive strategies have been realized, tested and retested, and accepted, disproven, or left the door open to more research for centuries. Alongside of evolving pathogens, disease outbreaks, and changes in healthcare delivery and reimbursement, the 2010s fostered tremendously rich research and offered new perspectives to systems and human factors that create challenges and successes in infection prevention and control. As the last decade ushered in the current with

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a new pandemic, it also ushered in a world of opportunities for new research to inform how infection preventionists, industry, healthcare leaders, and other stakeholders can create a safer world through the prevention of infection. As we move through the 2020s and beyond, APIC and the *American Journal of Infection Control* continue to serve as important resources for building, shaping, and advocating for evidence-based practice in infection prevention and control.

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