Who Is Steering the Ship? External Influences on Infection Control Programs

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Over the past decade, hospital infection control programs have begun to face new external influences that affect day-to-day practice. The mainstream media’s interest in hospital-acquired infection sparked consumer interest, which resulted in more legislative activity and government regulation. Industry’s influence is also increasing. To meet the increased demands of external agencies, infection control programs will need additional resources, and the infection control community will need to be more proactive in educating the public and defining the priorities for practice and research.

From the 1970s through the 1990s, infection control programs in US hospitals changed incrementally in response to medical advances. However, in the past few years, hospital epidemiologists have been forced to respond to numerous pressures originating outside the hospital, demanding rapid change, greater accountability, and more transparency. Three events drove these changes. First, the Institute of Medicine of the National Academies published its report on medical errors in 1999, drawing attention to adverse events occurring during hospitalization, including infections [1]. Second, in 2002, the Chicago Tribune published an exposé on health care–associated infections (HAIs) [2], leading to increased public scrutiny and media coverage. Lastly, the report of dramatic reductions in the rate of bloodstream infection caused by standardizing catheter insertion [3, 4] proved that the preventable proportion of HAIs was much higher than most experts had believed.

Today, there are numerous external influences on hospital infection control and its research agenda. Although some of the pressures are direct and apparent (e.g., legislative mandates), others are indirect and more elusive (e.g., the role of industry). Moreover, these forces interact to create a complex web of influences that drive infection control programs (figure 1). To illustrate these dynamics, we will use methicillin-resistant Staphylococcus aureus (MRSA) as a case study.

Government agencies have long guided hospital infection control programs. Since the 1970s, the Centers for Disease Control and Prevention (CDC) has played an important role via its surveillance system, the National Healthcare Safety Network (NHSN; formerly, the National Nosocomial Infection Surveillance System) [5], and guidelines for preventing HAIs. Other agencies impacting infection control are the Occupational Safety and Health Administration (OSHA), with its focus on protecting health care workers, and the US Food and Drug Administration (FDA), primarily by its regulation of medical devices. Although OSHA and the FDA have enforcement authority, the CDC does not. The CDC’s position on MRSA control in the hospital is that the optimal surveillance strategy should be decided locally, and it does not recommend routine active surveillance cultures [6]. However, the CDC recommends contact precautions for patients known to be infected or colonized with MRSA [7]. OSHA specifically recognizes MRSA as a hazard for health care workers and offers CDC guidelines as possible solutions, but does not mandate any particular control activities [8]. Lastly, the Veterans Administration has mandated active screening for MRSA in its hospitals, which has attracted a great deal of media attention [9]. Notably, this mandate was issued without the evidence generally required for the implementation of resource-intensive interventions.

The 2 major professional organizations representing the infection control community are the Association of Professionals in Infection Control and Epidemiology (APIC) and the Society for Healthcare Epidemiology of America (SHEA). These organizations educate their members through annual meetings and the sponsorship of academic journals, and they advise stakeholders (e.g., government agencies and accreditation organi-
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Figure 1. A complex web of stakeholders influence hospital infection control programs. APIC, Association of Professionals in Infection Control and Epidemiology; CDC, Centers for Disease Control and Prevention; FDA, US Food and Drug Administration; IHI, Institute for Healthcare Improvement; NQF, National Quality Forum; OSHA, Occupational Safety and Health Administration; SHEA, Society for Healthcare Epidemiology of America; TJC, The Joint Commission.

ations) on infection control issues. With regards to MRSA, SHEA’s 2003 guideline advises hospitals to obtain surveillance cultures on high-risk patients at admission and periodically thereafter [10]. This guideline remains controversial because the effectiveness of active surveillance is disputed [11]. Moreover, some experts have expanded the guideline to recommend surveillance cultures for all patients. Although APIC has not developed a guideline on MRSA control, it has sponsored several conferences addressing the topic and a prevalence study of inpatients [12]. APIC has used the mainstream media to draw attention to its MRSA activities through press conferences and a media campaign that also promotes antimicrobial dress-

The mainstream media’s interest in HAIs has been a driving force for change in infection control through its effects on consumer advocacy groups, legislative bodies, and accreditation organizations. Consumer’s Union, the publisher of Consumer Reports, lobbied state legislatures to promote the enactment of its model hospital disclosure act [14]. Other advocacy groups include the Committee to Reduce Infection Deaths [15], the Coalition for Patients’ Rights [16], and Americans Mad and Angry [17]. In October 2007, the media focused on MRSA after the deaths of students in Virginia and New York from invasive infections [18] coincided with the release of a CDC study estimating that 19,000 Americans die yearly of these infections [19]. This resulted in school closings in at least 8 states, and the governor of Virginia issued an emergency regulation to make invasive MRSA infections a reportable disease [20].

Increasingly, infection control programs have been regulated via legislative mandates [21]. In 2003, Illinois and Pennsylvania were the first states to mandate HAI reporting. Pennsylvania initially used administrative claims data for reporting HAIs; these proved to be problematic, because most studies demon-

strate poor validity due to misclassification bias [22–25]. Recently, the Pennsylvania General Assembly passed new legis-

lation mandating the use of NHSN methodology [26]. Twenty-two states have mandated public reporting of HAIs [27]. The legislation in many of these states is based on the Consumer’s Union model [14]. Legislation at the federal level has also been introduced requiring all hospitals to report HAIs through the NHSN [28], which is already mandated in 13 states. Consumer groups and legislatures have now turned their attention to MRSA specifically. Illinois, Minnesota, New Jersey, and Pennsylvania have mandated hospital MRSA screening programs, despite the APIC-SHEA position paper opposing mandatory screening [29].

Payers have become more proactive because infections add to the cost of care. The Center for Medicare and Medicaid Services issues infection control guidelines that hospitals are required to follow. Moreover, Medicare will no longer upgrade reimbursements to cover catheter-associated urinary tract infection or catheter-associated bloodstream infection not present at the time of admission [30] and is considering using the same policy for MRSA infection. Some commercial payers are following Medicare’s lead and have initiated pay-for-performance programs that include HAI process and/or outcome metrics. As hospitals lose reimbursement for HAIs, infection control programs will be under increasing pressure to prevent them and more aggressively detect infection present on admission. This is likely to increase diagnostic testing (e.g., ordering urine cultures on admission to avoid misclassifying cases as hospital acquired) and has the potential for increasing inappropriate antimicrobial use (e.g., use of prophylactic antibiotics in pa-

ntients with urinary catheters or at the time of central line insertion). Other potential unintended consequences include a loss of focus on other infections and gaming surveillance to miss infections, thereby “lowering” infection rates [31].

Industry’s role in the infection control agenda has heightened with the push for active surveillance. Companies that produce rapid tests for MRSA detection have much to gain if hospitals implement wide-scale surveillance or if states mandate screening. Interestingly, the mainstream media has given little attention to conflicts of interest with industry. Nonetheless, it should be noted that 1 company sponsored APIC’s MRSA Grand Rounds series, which was held in several cities, featured speakers known to be strongly prosurveillance, and included a session
in which company spokespersons addressed the audience. When complaints of conflicts of interest and industry bias arose, APIC changed the format for the last conference in the series. To prevent such problems in the future, professional societies should strictly adhere to standards for commercial support promulgated by the Accreditation Council for Continuing Medical Education, the American Nurses Credentialing Center, and the FDA, even if continuing education credits are not issued. Other potential conflicts of interest involve experts in the active surveillance debate receiving consultative fees, honoraria for lectures, lobbying fees, or research funding or serving on advisory boards to companies that manufacture testing products.

For many years, The Joint Commission (TJC; formerly The Joint Commission on Accreditation of Healthcare Organizations) has had a focus on infection control. TJC has shifted its emphasis from policy and procedure to demonstration of compliance by reviewing the continuum of care delivered to randomly chosen patients (“tracer methodology”) [32]. TJC is powerful because hospitals who fail to achieve accreditation are denied payment by the Center for Medicare and Medicaid Services. Unfortunately, TJC at times promotes practices that lack strong supporting evidence. For example, TJC converted CDC and World Health Organization hand hygiene guidelines into mandates, requiring hospitals to measure hand hygiene compliance, even though no valid methodology exists [33]. Thus, hospital compliance rates lack validity and are often based on very small sample sizes.

Nonprofit organizations also provide guidance to infection control programs. Most notably, the Institute for Healthcare Improvement (IHI), through its 100,000 Lives Campaign [34] and 5 Million Lives Campaign [35], has focused on best practices to reduce adverse events. By bundling these practices [36], IHI has targeted catheter-associated bloodstream infection and ventilator-associated pneumonia. IHI has also developed a bundle to decrease MRSA infection that includes active surveillance. Although IHI has no formal control over hospitals, its influence has become strong via the targeting of hospital administrators.

Another nonprofit organization, the National Quality Forum, is a collaborative venture representing consumers, payers, employers, health care professionals, accrediting bodies, labor unions, and quality improvement organizations. Its focus is on setting national performance improvement priorities and consensus standards for measuring and publicly reporting performance [37]. The National Quality Forum is currently developing consensus standards to measure and report HAIs [38].

**IMPLICATIONS FOR INFECTION CONTROL PROGRAMS AND RESEARCH**

The numerous, interacting, external influences on infection control programs stem from changes in how Americans view health care. Increasingly, Americans perceive health care as a commodity and view themselves as informed consumers. Thus, stakeholders are pushing hospitals to higher levels of accountability, more transparency, and rapid solutions to complex problems. Unfortunately, the messages targeted to consumers fail to capture the issues’ complexity. This simplicity bias [39] leaves the consumer thinking that all HAIs are preventable and result from error and that, if health care workers and hospitals cared more about patients, HAIs would be eliminated. Similarly, the public has been led to believe that active surveillance can eliminate all MRSA infections, when in reality it can only reduce nosocomial transmission. All of this has been compounded by the failure of professional societies to adequately educate the public, and in some cases, co-opting by industry has delivered a biased message.

The primary goal of infection control has always been to protect patients, and all evidence-based practices to eliminate preventable morbidity should be implemented. However, health care epidemiologists must ensure that the fervor for new interventions is met with sufficient supporting evidence. The ORION (outbreak reports and intervention studies of nosocomial infection) statement provides an excellent framework for improving study design and research reporting [40]. Infection control programs must also look beyond the unidimensional goal of reducing HAIs towards all facets of patient safety. This is particularly true with the MRSA “search and destroy” strategy (active surveillance with contact precautions for MRSA-colonized patients) [41]. Studies demonstrate that patients in contact precautions situations exhibit increased anxiety and depression [42–44] and experience higher rates of adverse events (e.g., bedsores and falls) [45], and health care worker visits are reduced by one-half [46–48]. Interventions chosen for implementation should also be those that produce the greatest yield. Thus, interventions targeted against all pathogens should be maximized prior to using organism-specific interventions, except during outbreaks. Lastly, hospitals must still prioritize and act on local problems, which may not fully overlap with externally driven mandates.

From a societal perspective, the demand for results is not congruent with the willingness to invest in the necessary infrastructure. Although the need for hospital epidemiologists is expanding, few are being trained. Many large hospitals still lack formally trained physician epidemiologists. The establishment of health care epidemiology as a formal discipline, with standardized training leading to certification, could bring with it funding to support training. Hospitals with epidemiologists should evaluate whether the fraction of his/her time dedicated to infection control is adequate to manage the increasing mandates and expectations. Likewise, the nursing shortage has limited the supply of infection control professionals, who in most hospitals are responsible for the day-to-day operation of in-
fection control programs, and in many are also responsible for other programs, such as employee health and performance improvement [49, 50]. Moreover, infection control professionals need to acquire new skills in areas such as teamwork development and implementation of interventions. One positive outcome of the increased attention on HAIs is that some hospitals have realigned resources to provide greater support for infection control. All programs should at least annually critically examine the resources committed to infection control given the rapidity of change these programs are encountering.

The infection control research agenda has persistently been hampered by a lack of funding necessary to move the science forward. A blueprint of research priorities should be developed to guide increased funding. Industry’s role in shaping the research agenda is amplified by the dearth of federal funding, and health care epidemiologists should be mindful of conflicts of interest with industry and how industry may influence interventions.

In conclusion, hospital infection programs are under more scrutiny than ever before, and the numerous external pressures will continue. To respond optimally, programs will require new resources and the infection control community will need to more aggressively develop and apply the evidence base, as well as play a more proactive role in educating the public and defining the priorities.

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