




Letter to the Editor

Integrating an industrial hygienist into the infection prevention and control program

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Background

Infection preventionists (IP) are pivotal in mitigating healthcare-associated infections (HAI) and upholding the standard of care. The scope of IP practice is expanding beyond the initial focus on surveillance for HAIs, outbreak identification, and device-associated HAI reduction. It's grown to include increased surveillance for multidrug-resistant pathogens, recognition and mitigation of emerging infectious diseases, environmental monitoring, and an involvement with construction and facility infection-related issues among others.¹ According to a nationwide survey, the median IP staffing is 1.25 IP per 100 inpatient census.² Notably, however, IP staffing should align with the institutional needs rather than solely on inpatient bed ratios.

Infection prevention programs play an essential role in hospital design, construction and renovation, water management, mold mitigation, and heating-ventilation-air-conditioning (HVAC) maintenance. Yet most IPs have a nursing background, followed by backgrounds in public health and laboratory science.³ This creates an opportunity to enhance infection prevention programs by introducing professionals with backgrounds in industrial hygiene, and health and safety. The University of Iowa Health Care is an 860-bed Academic medical center with a level 1 trauma designation and over 200 ambulatory clinics. It includes various specialized units including adult and pediatric bone marrow transplant units, a level IV neonatal intensive care unit (ICU), and an American Burn Association-verified Burn Center. A free-standing orthopedic facility is under construction and will house an ED, 12 ORs, a 36-bed inpatient unit. Design processes have begun for a new adult inpatient tower that will house additional ORs, two ICUs and will add an additional 80 beds.

The UI Health Care Infection Prevention and Control (IPC) Program consists of 6 IPs with nursing backgrounds, and one each with lab sciences and public health backgrounds. From October 2018 through October 2019, the IPC program calculated the time spent visiting construction sites and a conservative estimate was an average of 7.5 hours per week to observe all sites.⁴ As the institution continues to expand, maintaining this level of involvement has become increasingly challenging. To optimize IP resources and

integrate health and safety expertise, the IPC program aimed to adopt an integrated model and hired an industrial hygienist (IH).¹

Program development

A job description for an IH position was created (see [Supplementary Material](#)). Industrial hygiene is the anticipation, recognition, evaluation, and control of environmental hazards. Traditionally, industrial hygienists use their understanding of the occupational environment to identify potential health risks to workers. They use tools such as monitoring devices and analytical methods to evaluate exposure risk to environmental hazards including physical (radiation and noise), biological (bacteria, viruses, and fungi), chemical, and ergonomic hazards. In addition, they provide specific recommendations on how to mitigate risk using the CDC Hierarchy of Controls.⁵

Historically, industrial hygiene has been the province of occupational health and safety (OHS). However, the multidisciplinary nature of industrial hygiene elicits the opportunity to collaborate with experts beyond OHS, including infection prevention and control. The recent SARS-COV-2 pandemic confirmed the benefit of an industrial hygiene perspective in addressing both worker and patient safety in healthcare settings.⁶ Long before the pandemic, construction and maintenance activities were identified as the probable or possible source of almost half of investigated nosocomial outbreaks.⁷

An important distinction between IHs and IPs is the IH training in aerosol technology, exposure science, and hazard controls. Topics such as these can be valuable when identifying isolation procedures, recommending personal protective equipment, and evaluating ventilation and other engineering controls (e.g., airborne isolation rooms). In addition, many IHs have additional experience in the industrial setting (e.g., construction and manufacturing). Familiarity with the trades is advantageous because similar activities are performed in healthcare facilities.

Integration of role

Within our organization, the IH role currently reports to the Director of Infection Prevention and partners with IPs as needs are identified. The IH plays an integral part in reviewing Infection Control Risk Assessments, collaborating with design and construction teams to reduce patient risk from infectious hazards, and conducting frequent audits of construction and renovation areas. As needed, the IH evaluates the environment for

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opportunistic pathogens using analytical and sampling methods. Additionally, they co-direct the water management program, contributing significantly to its development for a new healthcare facility.

Their role continues to evolve as opportunities to capitalize on IH expertise unfold. They have performed device and environmental assessments, for example, conducting qualitative evaluations of UV light disinfection efficacy, evaluation of Heater/Cooler devices in the OR, and assessments of HVAC performance in high-risk units. Future expansion of IH scope outside of infection prevention may include staff safety measures relating to other indoor air quality concerns and occupational exposure to radiation and chemicals.

Conclusion

The integration of industrial hygiene expertise into the IPC program at UI Health Care represents a proactive approach to addressing environmental health and safety concerns in the healthcare setting. The inclusion of industrial hygiene expertise within our team has proven beneficial, allowing for dedicated attention to environmental concerns while freeing up IP time from construction site visits and facility work. As a result, it has allowed the rest of the IPC team to focus on other pressing infection prevention matters.

Supplementary material. To view supplementary material for this article, please visit <https://doi.org/10.1017/ice.2024.123>

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