



Letters to the Editor

Occupational health risks associated with use of environmental surface disinfectants in health care

*To the Editor:*

In their recent article, Weber et al¹ concluded “scientific evidence does not support that the use of low level disinfectant products on environmental surfaces by health care personnel is an important risk factor for the development of asthma or dermatitis.” They reached this conclusion after reviewing the employee medical records at University of North Carolina hospitals (2003–2012) and conducting a literature review on disinfectants and health care workers.¹ We take exception with the adequacy of the data for their study and the thoroughness of their literature review and do not find their conclusion to be supported by their data. Their conclusion diverts attention from the need for targeted cleaning and disinfection on surfaces and in situations where the risks are greatest and research has shown such intervention to be effective. The overuse of disinfectants causes health care workers to be unnecessarily exposed to substances that, we would hope the authors would agree, have at least the potential to cause or aggravate asthma or dermatitis in health care workers.

The authors listed a number of limitations in their data, such as North Carolina’s exclusion of workers’ compensation for chemical sensitization, but did not appreciate the well-documented lack of recognition of work-related injuries and, especially, illnesses by employers. Weber asserts “no episodes of acute bronchospasm or persistent asthma were reported related to germicide exposure” and only 95 incidents of splashes, inflammation, exposures, or chemical burns in 10 years for 69,075 full-time work years. This flies in the face of national surveillance data of work-related injuries and illnesses and data on asthma.

The Bureau of Labor Statistics’ Survey of Occupational Injuries and Illnesses documents a rate of 5.3 cases involving days away from work per year caused by exposure to harmful substances or environments in the health care and social assistance industry—higher than the national average for all industries.² The Centers for Disease Control and Prevention reported that the National Health Interview Survey showed the health care industry with a current asthma prevalence rate of 8.1% in hospitals and 9.5% in nursing and residential facilities, higher than in other industries.³ The National Institute for Occupational Safety and Health has documented elevated asthma and chronic obstructive pulmonary disease proportionate mortality rates in the health care industry.⁴ Over 40 articles have documented the association of cleaning products, and specifically disinfectants used in hospitals, with asthma.^{5–9} This includes antigen challenge testing with specific disinfectants, the gold standard for showing a

causal relationship for chemical-induced asthma. Self-reported asthma in epidemiologic studies, which the authors characterize as weak evidence, has been validated to correlate with physician-diagnosed asthma.¹⁰ Six disinfectants used in hospitals meet the criteria of the Association of Occupational and Environmental Clinics for substances rated as causing asthma.¹¹ Multistate surveillance has continued to document the contribution of cleaning products and disinfectants to work-related asthma (WRA) prevalence.¹² In Massachusetts, nearly 16% of all confirmed WRA cases (2003–2013) were in the health care and social assistance industry, and the leading exposures were cleaning products.¹³ The cases of WRA among health care workers from disinfectants in state surveillance systems require a physician’s diagnosis of asthma. In Michigan surveillance of work-related pesticide poisoning, disinfectants were the cause of over half the confirmed cases.¹⁴

In North Carolina, 7.8% of adults (estimated 592,279 persons) currently have asthma¹⁵; however, the authors’ analysis¹ did not identify a single employee of UNC hospitals who sought medical care in employee health, or reported an episode of asthma exacerbation from their work with or near bleach, quats, or other chlorine-based products, ammonia, glutaraldehyde, hydrogen peroxide, and so forth.

Workers in cleaning occupations frequently do not report their work-related illnesses because of discouragement by employers, job insecurity, and marginalization of this occupational category.¹⁶ Azaroff et al¹⁷ documented the obstacles to reporting work-related injuries and illnesses that prevent an accurate assessment of their true prevalence. In fact, even work-related amputations are undercounted.¹⁸

Failing to recognize the hazards of disinfectants along with blanket advice to continue to disinfect environmental surfaces leads to overuse and overexposure of hospital staff to these antimicrobial pesticides. Most hospital-associated infections are associated with venous or urinary catheters, ventilator use, antibiotic therapy, inadequate hand hygiene, length of hospital stay,⁵ surgical site infections, and antibiotic prescription. In fact, increased antimicrobial use has been associated with the emergence of resistance.¹⁹ Encouraging indiscriminate use of disinfectants on environmental surfaces may also lead to undertreatment of surfaces which do pose a real risk of microbe transfer and subsequent disease and which need targeted disinfectant application. For example, terminal room cleaning subsequent to occupancy by a patient with vancomycin-resistant *Enterococcus*, methicillin-resistant *Staphylococcus aureus*, or *Clostridium difficile* can prevent illness in the next occupant.^{5,20} The National Institute for Occupational Safety and Health’s National Occupational Research Agenda Working Group concluded that there are gaps in our understanding and there is a need to evaluate the potential of environmental surfaces to contribute to hospital-associated infections in patients and occupationally acquired infections in health care workers.⁵ The need for nuanced antimicrobial stewardship and comprehensive surveillance and prevention of work-related illnesses remain important issues for hospitals.

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Zika live Twitter chat



To the Editor:

The publication on the Zika live Twitter chat is very interesting.¹ Glowacki et al noted that “Both the public and the CDC (Centers for Disease Control and Prevention) expressed concern about the spread of Zika virus, but the public showed more concern about the consequences it had for women and babies, whereas the CDC focused more on symptoms and education.”¹ Based on an analysis of Internet communication, this difference can be seen. In general, people are concerned with the effects of the new infection but not the clinical details. For any new emerging infectious disease, the general population might panic, and this can be a problem for disease control. Control of the data in the cyber world is needed. The correct information is very important, and this is a big issue in panic management for emerging infectious diseases. According to a recent report by Venkatraman et al, Zika virus misinformation on the Internet is quite common.² There are many sources of information on the Zika virus on the Internet,³ and there are many methods for finding the information, but real-time Twitter chatting and communication seems to be the most desirable method for rapid communication.^{4,5} There is a need to develop skills for giving information via online chat. The analysis by Glowacki et al can be useful information.¹ An adjustment of the content provision for online communication is needed.

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