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Infection Prevention Education: Are We Neglecting It?

To the Editor—Healthcare-associated infections pose a formidable challenge to the healthcare industry, with a significant impact on patient outcomes.¹ Preventive measures such as hand hygiene are of paramount importance in reducing healthcare-associated infections, but despite the utility of this simple procedure, compliance rates are suboptimal at many healthcare institutions.² Part of the reason for nonadherence to basic measures of infection prevention is lack of knowledge among physicians.³ Infection prevention education has the potential to be effective, but didactic teaching sessions specifically intended for physicians in training are limited.⁴ Few studies have assessed what physicians in training know about infection prevention, and the existing evidence reveals that physicians lack sufficient knowledge about this topic.^{5–8} Moreover, the data in the medical literature tend to be more reflective of norms within the United Kingdom and other European countries than of norms identified within the United States.^{4–8} Notably, there are no specific educational guidelines set by the Accreditation Council for Graduate Medical Education, which cites a need for residents to “demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences.”⁹ This broad objective would encompass education about infection prevention. However, we are not aware of any structured curricula that residency programs in the United States have adopted to educate physicians about infection prevention. We therefore conducted a cross-sectional study to gather information about how internal medicine residency programs in the United States educate house staff on these principles.

There are 381 internal medicine residency training programs in the United States and its territories. Essential contact information with regard to the programs was obtained from the Fellowship and Residency Electronic Interactive Database.¹⁰ This was done after approval from our institutional review board. US internal medicine residency program directors were sent a cover letter with a survey and a pre-addressed postcard. The program directors completed the form and returned it to us. In an effort to ensure anonymity, instructions were provided to mail the postcard separately.

The letter conveyed the intent of gathering information about the different ways residency programs educated house

TABLE. Compliance with Hand Hygiene, by Healthcare Job

Job title	No. of observations	Compliance, %
Nurse	25,234	87.4
Physician	4,511	66.3
Radiology technician	314	67.8
Respiratory therapist	829	87.5
Physical therapist	245	86.5
Other	1,267	81.7
Total	32,400	84.0

staff about basic principles of infection prevention. Specifically, the letter stated that, for the purposes of this survey:

[T]he term ‘Infection Prevention’ generally encompasses (but is not strictly limited to) the following basic principles:

Hand Hygiene: Use of antibacterial soap and water or hand sanitizer before and after patient/environment contact,

Precautions: Types of precautions (ie, contact airborne, droplet isolation, etc), and

Multi-Drug Resistant Organisms: Understanding the significance of drug resistant organisms such as MRSA and VRE.

Commonly conceivable means of educating house staff were listed on the questionnaire (Table 1). The last option, “Other (please specify),” was kept open-ended to gather additional means of education on infection prevention. The survey was prepared by the investigators and reviewed by a variety of teaching physicians and a public health professional prior to distribution.

From the 381 internal medicine residency training programs (and their respective program directors) in the United States and its territories, we obtained responses to the survey from 158 program directors (41.4%) within a 3-month period. No responses were obtained thereafter. Responses to the questionnaire survey have been tabulated (Table 1). Ad hoc responses within the “Other (please specify)” category were grouped on the basis of similar themes (not verbatim), including the following commonly conceivable means of educating house staff:

1. Activities occurring during clinical rotations (rounds on floor, morning report, intensive care rotation): 9 independent responses.

2. Incorporated into the agenda during resident meetings/conferences (meetings with faculty, non-core lectures, “continuous” reinforcement—not otherwise specified): 6 independent responses.

3. Captured by general hospital safety campaigns (Quality Improvement, Quality Assurance, preparation for The Joint Commission inspection): 6 independent responses.

4. Hand washing monitoring on floors providing direct feedback: 1 independent response.

There is increasing awareness of the importance of infection prevention in healthcare facilities. Although many states

TABLE 1. Responses to the items in survey questionnaire

Commonly conceivable means of educating house staff	No. (%) of program directors who responded (n = 158)
1. A general discussion integrated into introduction to hospital policies/safety procedures during orientation for all new hospital employees	125 (79.1)
2. A dedicated lecture during orientation specific for incoming physicians in training	122 (77.2)
3. An annual core lecture dedicated to the principles of infection prevention intended for resident physicians	90 (56.9)
4. An obligatory rotation in Infectious Diseases	72 (45.5)
5. An elective (optional) rotation in Infectious Diseases	83 (52.5)
6. An online module dedicated to the fundamentals of infection prevention	54 (34.1)
7. Other (please specify):	22 (13.9)

have required the reporting of hospital-acquired infections, we feel that the initiative on the part of hospitals to optimally educate healthcare personnel is lacking. Low rates of hand hygiene across hospitals in the United States may be partially attributable to inadequate training of resident physicians.² On the basis of the survey results, it appears that many programs (according to 79% of survey respondents) typically relegate the topic of infection prevention to a general lecture series for all new hospital employees. Physicians being taught infection prevention intended for all new hospital employees may dismiss the importance of these sessions. A significant number of internal medicine programs (according to 77% of survey respondents) rely on a dedicated lecture to new house staff, but outlines for subsequent reinforcement may not be well delineated. Even for those who are obligated to rotate in the infectious diseases department (ie, 45% of survey respondents), discussions regarding infection prevention may lack a well-defined, cohesive structure. A minority of survey respondents (ie, 34%) reported of an online module for infection prevention.

Education of residents about infection prevention relies on the discretion of individual training programs. Although residency programs may incorporate the importance of infection prevention in the curricula for resident education, this may not translate into integration into daily clinical activities. If this important aspect of patient care and safety is to become an integral component of medical education, then standardized curricula for ongoing education should be developed.

Our study has certain limitations. Less than one-half of the surveyed residency program directors responded to the survey. Moreover, the survey responses were limited to physicians in training in internal medicine. It may be possible that some programs educate physicians in ways other than those listed in the questionnaire, and therefore an open-ended choice was incorporated, to which the response was low (ie, 13.9% of survey respondents). Despite an overall low-response rate, the results of the study provide a view of the

methods of educating resident physicians in internal medicine about infection prevention in the United States.

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