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Brief Report

International responses to the 2015 APIC MegaSurvey

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The prevention of health care–associated infections is an international concern. Infection preventionists across the world play a key role in assessing, planning, implementing, and evaluating infection control policies. In 2015, the APIC launched the MegaSurvey to establish the state of the infection preventionist workforce. This brief report will describe and compare responses from the United States, Canada, and "other" countries to establish a professional baseline and set an agenda for future international collaborations.

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The prevention of health care–associated infections (HAIs) is an international concern. HAIs are common adverse events in care delivery, with 7% of patients in developed countries and 15% in low- and middle-income countries reportedly suffering from at least one HAI at any given time.[1] Further, the endemic burden of infectious diseases that have the ability to become epidemics or global pandemics are major public health concerns that often highlight gaps in international applications of infection prevention and control (IPC). Although significant progress has been made to reduce HAIs in many parts of the world, there is an ongoing need to support countries in the development and strengthening of IPC programs to ensure safe, high-quality health service delivery.[2]

Infection preventionists (IPs) play a key role in IPC programs worldwide. The IP role requires competence in surveillance, infectious disease epidemiology, implementation of evidence-based interventions, and leadership skills to improve patient and system-level outcomes.[3] The Association for Professionals in Infection Control and Epidemiology (APIC) is a US-based professional society. APIC reports more than 13,000 members from 48 countries. In 2015, all members were invited to participate in a workforce survey, called the APIC MegaSurvey, to gain an understanding of IP professional backgrounds, organizational roles, and key aspects of their practice.[4] The purpose of this brief report is to describe and compare responses from the United States, Canada, and "other" countries to establish a professional baseline and set an agenda for future international collaborations.

METHODS

The data for this report comes from the 2015 APIC MegaSurvey. The survey background and methods have been published.[4] Descriptive statistics including frequencies and percentages were used to describe the sample. To examine respondent and IPC program characteristics by region (United States, Canada, "other"), bivariate analyses were conducted using the χ^2 tests.

RESULTS

Of the 13,050 active APIC members in 2015, 4,079 completed the survey (31% response rate). The majority worked in the United States (n = 3,680; 91%). There was representation from Canada (n = 200; 5%) and "other" countries (n = 164; 4%). The "other" country category includes responses from 46 APIC member countries. The gender of IP respondents differed significantly by region ($P < .001$). The vast majority of respondents from the United States and Canada were women (94% and 96%). This proportion was lower for "other" countries (70%). We found significant differences in IP age across the 3 regions ($P < .001$) with a higher proportion of United States and Canadian IPs reporting being 46 years and older (vs ≤45) than IPs in "other" countries (70%, 83%, 60%, respectively). The level of certification was also found to differ significantly by region ($P < .001$), with half of IPs in the United States and "other" countries certified in infection control (46% and 45%), whereas two-thirds of Canadian IPs reported being certified (67%). Respondents also differed by education in that 33% of US IPs and

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36% of Canadian IPs reported earning a master's degree or higher, whereas this level of education was earned by 55% of IPs in "other" countries ($P < .001$).

IPs in "other" countries reported greater years of health care experience (59% reported ≥10 years), compared with US (33%) and Canadian IPs (39%) ($P < .001$). However, two-thirds of US IPs (66%) reported having ≤10 years of IPC experience. Less than 10 years of IPC experience was not as prevalent in Canada and "other" countries (51% and 59%; $P < .001$). We found statistically significant differences in professional background by region ($P < .001$). The majority of respondents reported a nursing background (United States = 83%; Canada = 78%; "other" countries = 74%). Few US IPs reported a microbiology background (5%). The proportion was doubled in Canada and in "other" countries (9% and 10%).

Characteristics of the IP role and IPC departments are presented in Table 1. Overall, the majority of respondents (61%) work at the coordinator/practitioner level. The proportion of IPs dedicating ≥75% of their job to IPC was highest in Canada (72%) and "other" countries (67%). Two-thirds of respondents practiced in an acute care setting (United States = 68%; Canada = 71%; "other" countries = 66%). The proportion of respondents practicing in ambulatory surgical centers, behavioral and outpatient settings, long-term care, long term acute care, and other settings differed significantly by region ($P = .001$). We found that where the IPC program resides in the organizational structure differed significantly by region ($P < .001$). Half of IPs reported that the IPC department was under the umbrella of the quality improvement/performance improvement department. This proportion was lower among respondents from Canada and "other" countries (38% and 37%). We found statistically significant differences by region in the availability of secretarial ($P < .001$) and data entry support ($P = .025$), but no difference in use of electronic medical records ($P = .288$). Overall, 82% of respondents reported that they expected to be employed in IPC in the next 5 years with no significant differences by region ($P = .149$).

DISCUSSION

This report describes and compares US, Canadian, and "other" country responses from the 2015 APIC MegaSurvey. The results indicate that IPs in this sample are predominantly women, 46 years and older, and with a nursing background. Participating IPs primarily reported 10 years or less IPC and health care experience and a primary work setting in urban, acute care facilities. US IPC programs largely resided in quality improvement departments and reported the lowest amount of secretarial and data management support.

Statistically significant differences between regions were noted. Respondents in the "other" country category reported greater male representation, were younger, and were more likely to have earned a master's degree than their US and Canadian counterparts. Canadian respondents were more likely to have earned certification in infection control. A larger proportion of IPs from Canada and "other" countries reported having microbiology backgrounds, spending >75% of their

Table 1
Comparison of respondents by region (N = 4,044)

	Overall	United States N = 3,680 (91%)	Canada N = 200 (5%)	"Other" Countries N = 164 (4%)	*P* value
Job level					
Senior management	160 (4)	136 (4)	8 (4)	16 (10)	.009
Director	609 (15)	552 (15)	32 (16)	25 (15)	
Manager	815 (20)	754 (21)	34 (17)	27 (16)	
Coordinator/practitioner	2,434 (61)	2,123 (63)	125 (63)	96 (59)	
Percent job dedicated to infection prevention and control					
≤75%	1,734 (43)	1,624 (44)	56 (28)	54 (33)	<.001
>75%	2,298 (57)	2,044 (56)	144 (72)	110 (67)	
Type of setting					
Acute care	2,752 (68)	2,502 (68)	141 (71)	109 (66)	.001
ASC/behavioral/outpatient	455 (11)	432 (12)	13 (7)	10 (6)	
LTC and LTAC	307 (8)	282 (8)	17 (9)	8 (5)	
Other	522 (13)	456 (12)	29 (15)	37 (23)	
Job role					
Infection prevention and control	3,154 (78)	2,866 (78)	167 (84)	121 (74)	.041
Nursing administrator/executive	163 (4)	155 (4)	4 (2)	4 (2)	
Quality/process improvement	165 (4)	153 (4)	7 (4)	5 (3)	
Other	539 (13)	484 (13)	21 (11)	34 (21)	
Facility location					
Urban	1,653 (41)	1,453 (40)	96 (48)	104 (63)	<.001
Suburban	1,275 (32)	1,176 (32)	62 (31)	37 (23)	
Rural	1,101 (27)	1,037 (28)	41 (21)	23 (14)	
Infection prevention and control department resides in:					
Department of nursing	893 (23)	816 (23)	47 (24)	30 (20)	<.001
Quality/performance improvement	1,902 (50)	1,773 (51)	73 (38)	56 (37)	
Other	1,041 (27)	901 (26)	74 (38)	66 (43)	
Primary responsibility					
Single facility	2,525 (65)	2,321 (66)	113 (58)	91 (58)	.029
Multiple facility	916 (24)	822 (23)	54 (28)	40 (25)	
Other	431 (11)	378 (11)	27 (14)	26 (17)	
Infection control committee	3,263 (90)	2,960 (89)	171 (94)	132 (97)	.003
Infection control committee leadership					
Infection preventionist	1,387 (43)	1,292 (44)	55 (33)	40 (32)	
Health care epidemiologist	399 (12)	355 (12)	32 (19)	12 (9)	
Infectious disease physician	871 (27)	784 (27)	45 (27)	42 (33)	.001
Other	595 (18)	525 (18)	37 (22)	33 (26)	
Support available to department					
Secretarial support	1,236 (31)	1,080 (29)	93 (47)	63 (38)	<.001
Data support	945 (23)	840 (23)	61 (31)	44 (27)	.025
EMR support	1,684 (42)	1,522 (41)	94 (47)	68 (42)	.288

ASC, ambulatory surgery center; *EMR*, electronic medical record; *LTAC*, long-term acute care; *LTC*, long-term care.

time on IPC activities and working within a nursing or other department. The large majority of responding IPs planned to stay in their current role. Why these differences exist is an important line of inquiry for future studies.

Previous survey studies have investigated the state of IPC programs in Canada,[5] Thailand,[6,7] the Republic of Korea,[8] Japan,[9] Australia, and New Zealand.[10] Most of these studies were conducted over a decade ago, limiting the comparison of findings with these results. However, the Australia and New Zealand study reported similar gender, age, and professional background trends.[10] Limitations of this study include the inability to link an "other" category response to a specific APIC member country and the small number of responses from Canada and "other" countries. Although the APIC MegaSurvey is the largest international IP workforce survey to date, future studies would benefit by engaging diverse IPC associations, such as the Asia Pacific Society of Infection Control, the Infection Prevention Society, and the Infection Control Africa Network. This would provide a comprehensive picture of the state of the international IP workforce and identify current and future international workforce needs that could impact IPC programs and patient safety worldwide.

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References

1. Allegranzi B, Bagheri Nejad S, Combescure C, Graafmans W, Attar H, Donaldson L, et al. Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis. Lancet 2011;377:228-41.
2. Storr J, Twyman A, Zingg W, Damani N, Kilpatrick C, Reilly J, et al. WHO Guidelines Development Group. Core components for effective infection prevention and control programmes: new WHO evidence-based recommendations. Antimicrob Resist Infect Control 2017;6:6.
3. Murphy DM, Hanchett M, Olmsted RN, Farber MR, Lee TB, Haas JP, et al. Competency in infection prevention: a conceptual approach to guide current and future practice. Am J Infec Control 2012;40:296-303.
4. Landers T, Davis J, Crist K, Malik C. APIC MegaSurvey: methodology and overview. Am J Infect Control 2017;45:584-8.
5. Zoutman DE, Ford BD, Bryce E, Gourdeau M, Hébert G, Henderson E, et al. Canadian Hospital Epidemiology Committee; Canadian Nosocomial Infection Surveillance Program; Health Canada. The state of infection surveillance and control in Canadian acute care hospitals. Am J Infect Control 2003;31:266-73.
6. Tantisiriwat W, Danchaivijitr S. Roles of infection control nurses in regional hospitals. J Med Assoc Thai 2005;88:107-9.
7. Apisarnthanarak A, Khawcharoenporn T, Greene MT, Kennedy E, Krein S, Saint S. National survey of Thai infection preventions in the era of patient safety. Am J Infect Control 2013;41:362-4.
8. Oh HS, Chung HW, Kim JS, Cho SI. National survey of the status of infection surveillance and control programs in acute care hospitals with more than 300 beds in the Republic of Korea. Am J Infect Control 2006;34:223-33.
9. Sekimoto M, Imanaka Y, Kobayashi H, Okubo T, Kizu J, Kobuse H, et al. Japan Council for Quality Health Care, Expert Group on Healthcare-Associated Infection Control and Prevention. Factors affecting performance of hospital infection control in Japan. Am J Infect Control 2009;37:136-42.
10. Hall L, Halton K, Macbeth D, Gardner A, Mitchell B. Roles, responsibilities and scope of practice: describing the 'state of play' for infection control professionals in Australia and New Zealand. Healthc Infect 2015;20:29-35.