CONCISE REPORT

Models of after-hours infection prevention and control staffing levels: navigating scheduling challenges across facilities

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ABSTRACT

Infection prevention and control (IPAC) staffing models vary widely across Canadian healthcare facilities. To explore this variation, a national survey was conducted in March 2025 through the IPAC Canada network. The survey explored staffing models, coverage patterns, and key operational challenges across different facility types. Most respondents reported at least some evening or weekend IPAC coverage. Increasing workload demands post-pandemic and difficulties with recruitment and retention emerged as common staffing barriers. These findings underscore the need for national guidance and strategic collaboration to support consistent, adequate, and sustainable IPAC staffing across healthcare settings.

INTRODUCTION

Infection prevention and control (IPAC) programs in Canada function within a complex, multi-level framework. National agencies such as the Public Health Agency of Canada develop evidence-informed guidance which is adapted by provincial health authorities to reflect regional policy and infrastructure (Ogunremi *et al.*, 2018). Healthcare organizations are responsible for translating this guidance into operational practices, adjusting to institutional priorities and available resources.

Although higher ratios of infection control practitioners (ICPs) have been associated with reductions in healthcare-associated infections (Bartles *et al.*, 2018; Bartles *et al.*, 2024), guidance on optimal staffing models remains sparse. IPAC staffing allocations are often based on static metrics such as bed count or facility type, rather than dynamic indicators such as acuity, time of day, or considerations for seasonality in communicable illnesses (O'Boyle *et al.*, 2002; Ontario Agency for Health Protection and Promotion, 2025). Consequently, IPAC coverage is often concentrated during weekday daytime hours despite facilities operating 24/7. Challenges in recruitment and retention of ICPs, in addition to burnout and inability to meet service requirements are well-documented (Binta Diallo *et al.*, 2024; Knighton *et al.*, 2024).

To better understand the current state of IPAC staffing and coverage practices across Canada, we conducted a national survey through the IPAC Canada network. The aim was to identify patterns, barriers, gaps in service delivery to inform future policy and practice.

METHODS

A survey was created to evaluate the structure of IPAC programs in Canada including the level of staffing (full-time equivalent (FTE) hours), coverage models for evenings and weekends, and strategies used to support these models. The survey was created using SurveyMonkey software and distributed via email to all 1,923 members of the IPAC Canada network in March 2025. IPAC program managers were the intended respondents for this survey and only one response per healthcare facility was requested. The survey included both closed- and open-ended questions which prompted respondents to identify their facility type (e.g., acute care, long-term care, paediatric, rehabilitation/other), the number of funded beds, the number of FTE ICP hours, and team unionization status. Additional questions assessed the availability of weekend and on-call coverage, remote work options, and the presence of memoranda of understanding (MOUs) or contract amendments related to ICP scheduling. Respondents were also asked to

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describe challenges with scheduling and impending changes to existing models.

A one-way ANOVA (Analysis of Variance) was used to compare the means of independent groups to determine if there's a statistically significant difference between them.

RESULTS

Links to the survey were distributed to 1,923 members of the IPAC Canada network. Responses were collected between March 12 to March 21, 2025. A total of 44 survey responses were received (2.3% response rate). After removing duplicate responses from the same facility (n=8), 36 unique responses were included in the analysis. The majority of respondents (61%) represented acute care facilities, including both adult and paediatric hospitals.

A one-way ANOVA demonstrated a strong correlation between the number of funded beds and reported full-time equivalent hours (FTE) for IPAC teams (R^2 = .78, F = 118.5, p = <0.001). Acute care facilities reported the highest ratio of ICPs to funded beds with a median ratio of 1.3 ICPs to 100 beds. On-call ICP coverage in any form was most frequently reported in community or long-term care settings (55.6%), followed by acute care (36.4%). Teams composed entirely of non-unionized ICPs were most common (47.2%), followed by teams consisting

Table 1: Facility size, staffing ratio, and coverage model by setting

	Acute care (adult and paediatric)	Community or long-term care	Other (public health, mental health, rehabilitation)
Total respondents	22	9	5
Median facility size/beds (range)	284 (70-678)	125 (48-1700)	5319 (373-13800)
Median IPAC team ratio, (FTE per 100 beds) (range)	1.3 (0.4-2.2)	0.8 (0.1-2.1)	0.6 (0.4-0.7)
On-call coverage in place (%)	8 (36.4)	5 (55.6)	1 (20)
Regular shifts can be worked remotely (%)	7 (31.8)	3 (33.3)	3 (60)
On-call shifts can be worked remotely (%)	4 (18.2)	2 (22.2)	0 (0)

Table 2: Union affiliation of infection control practitioners (ICPs) and on-call coverage

	ICPs are exclusively unionized registered nurses	ICPs include both unionized registered nurses and unionized allied health professionals (e.g., medical laboratory technologists)	ICPs include both unionized clinical staff (nurses/allied health) and non-unionized staff (e.g., analysts)	ICPs are exclusively non-unionized staff only (that is not registered nurses or allied health)
Respondents by facility type:				
Acute care	6	2	4	10
Community or long-term care	1	1	0	7
Other	3	1	1	0
Total (%)	10 (27.8)	4 (11.1)	5 (13.9)	17 (47.2)
Regular shifts include Saturday and/or Sunday (%)	3 (30)	1 (25)	2 (40)	3 (17.6)
On-call coverage:				
Weeknight coverage	1	0	2	10
Weekend day coverage	1	0	2	9
Weekend evening coverage	1	0	2	6
Memoranda of understanding in place for on-call work	9	1	3	-

exclusively of unionized nursing staff (27.8%). Regarding remote work, 36.1% of respondents (n=13) indicated that there was flexibility for regular ICP shifts and 16.7% (n=6) reported flexibility for on-call shifts to work remotely.

Routine weekend coverage was relatively uncommon, with only 25% of respondents indicating that Saturday and/or Sunday shifts were part of the regular IPAC coverage schedule. Among the 14 facilities with on-call coverage in place, 92.9% (n=13) provided weeknight coverage, 85.7% (n=12) provided weekend daytime coverage, and 64.3% (n=9) provided weekend evening coverage. Of the 19 facilities with unionized staff, 68.4% (n=13) reported having memoranda of understanding (MOU) or contract amendments in place addressing on-call work.

Responses highlighted several common challenges, including insufficient ICP staffing relative to workload, the need to balance contractual obligations with operational demands, and the sustainability of staffing models introduced during the COVID-19 pandemic. Reported strategies to address these issues included designating cross-coverage delegates in off-hours in lieu of on-call (e.g., managers, clinical operations, microbiology staff), modifying regular schedules to include weekends, and hiring staff specifically to support evening and/or weekend shifts.

DISCUSSION

This survey highlights substantial variability in IPAC staffing models particularly with respect to weekend and after-hours coverage. While some facilities have implemented formal on-call systems or seven-day service models, many continue to rely on temporary arrangements, with coverage often delegated to managers, microbiology personnel, or other non-IPAC staff. Given the established link between staffing levels and rate of healthcare-associated infection, steps towards consistency is critical for improving patient safety outcomes (Bartles *et al*., 2024).

Challenges reported by respondents were consistent and similar to those reported in the literature. Insufficient staffing relative to workload, difficulty recruiting and retaining qualified ICPs, and unpredictable and limited resources were among the most frequently reported barriers (Doran *et al*., 2025). Several respondents described ongoing pressures to sustain pandemic-era service levels, including extended hours, despite the absence of additional permanent resources. This may point to a shift in baseline expectations for IPAC programs in the post-pandemic period, where surge capacity is normalized despite a lack of revised staffing models and funding.

Efforts to address coverage gaps varied. Some facilities reported extending regular working periods to weekday evenings or weekends via memoranda of understanding sharing on-call responsibilities across institutions, or designating cross-trained staff from clinical or managerial backgrounds. Others reported hiring specifically for evenings or weekends or facility coverage expectations into new ICP role postings. However, even with these strategies, staffing models were frequently described as temporary or difficult to sustain.

A main limitation of the study was the low response rate which was likely due to the short data collection period and the timing of the distribution which included the March break school holiday. Another limitation was the fact that there were multiple responses for some healthcare facilities as confirmed by the respondent's Internet Protocol (IP) address. In these scenarios, the first complete response was accepted, and the others were removed from the response pool.

Despite these limitations, the findings highlight the need for clearer guidance and consistent investment in IPAC workforce planning across Canadian healthcare facilities. A need also identified in centres throughout the United States (Garcia R *et al*., 2022). Current staffing models largely based on bed numbers alone, fail to account for the complexity and 24/7 nature of infection prevention work (Ayukekbong J., 2024). As healthcare facilities continue to face threats from emerging pathogens, antimicrobial resistance, and infrastructure limitations (e.g., ageing buildings, lack of private rooms), strategic support for a sustainable, well-resourced IPAC workforce will be essential.

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