

ORIGINAL RESEARCH

Strategies to attract and retain infection prevention and control nurses in the era of nursing shortage

Fatoumata Binta Diallo, M.Sc, Ph. D¹, Garcin Dama, M.Sc¹, Nathalie Pigeon, RN, BSN¹,
Julie Desmarais-Trépanier, RN, BSN, MSN, DESS-PCI², Justine Hamelin RN, BSN², Sylvain Charbonneau, M.Sc., MBA¹,
Ramona Rodrigues, RN, BSN, M.Sc (A), CIC, ICS-PCI, FAPIC^{2*}

¹ Direction des affaires universitaires, de l'enseignement et de la recherche
Centre intégré universitaire de santé et de services sociaux de l'Ouest-de-l'Île-de-Montréal, Canada

² Direction du Président-directeur général adjoint – Prévention et Contrôle des Infections
Centre intégré universitaire de santé et de services sociaux de l'Ouest-de-l'Île-de-Montréal, Canada

*Corresponding author

Ramona Rodrigues, RN, BSN, MSc(A), CIC, ICS-PCI, FAPIC
Directrice déléguée à la Prévention et Contrôle des Infections
Adjointe à la Présidente-Directrice Générale Adjointe (PDGA)
Centre intégré universitaire de santé et de services sociaux de l'Ouest-de-l'Île-de-Montréal
160, avenue Stillview
Pointe-Claire (Québec) H9R 2Y2, Canada
Email: ramona.rodrigues.comtl@ssss.gouv.qc.ca

ABSTRACT

Background: One of the major challenges faced by healthcare facilities in Quebec, Canada, is the shortage of nurses specializing in Infection Prevention and Control (IPC), exacerbated by the broader nursing shortage. This survey aimed to identify effective strategies for retaining IPC nurses in Montreal, Canada, amidst the ongoing staff shortages and frequent rotations.

Methods: A descriptive cross-sectional survey was conducted with a convenience sample of IPC nurses in Montreal, utilizing both open- and closed-ended questions. The survey was developed following a literature review. A pilot testing was followed by an open-ended survey in 2023 targeting IPC and clinical managers to gather further perspectives. Quantitative analysis was applied to the closed-ended responses, while thematic analysis was conducted on the open-ended responses. Bivariate analysis was employed to explore relationships between variables.

Results: Quantitative and qualitative analyses identified five key strategies to address the IPC nurse shortage. Respondents, including IPC nurses and managers highlighted the importance of integrating non-nursing professionals into the IPC roles. A significant concern among IPC nurses was the lack of funding for specialized training and certification. Other retention challenges included inadequate salary recognition for educational qualifications, limited opportunities for career advancement, and insufficient organizational recognition of the importance of infection control. Moreover, the work environment was deemed essential for retaining IPC professionals.

Conclusions: The findings from the current study provide valuable insights for policymakers seeking to improve IPC staff retention. Addressing Quebec's nursing shortages involves integrating non-nursing professionals into IPC roles and implementing retention strategies tailored to generational needs, such as horizontal promotions linked to progressive salary scales and educational requirements. Additionally, fostering a supportive work environment with work-life and study balance, flexible scheduling, and strong organizational recognition, while cultivating a robust infection control culture, is crucial for retaining IPC staff.

KEYWORDS

Retention, infection prevention and control, turnover, staff satisfaction

INTRODUCTION

In Quebec, all Infection Prevention and Control (IPC) programs are required to comply with the Ministry's guidelines (Ministère de la Santé et des Services Sociaux, 2017) and participate in

mandatory surveillance programs. Nurses hold sole responsibility for managing these IPC programs. However, despite additional funding from the Ministry for IPC positions, high turnover rates persist. Research underscores the negative impact of poor

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staff retention, including financial losses from repeated onboarding and training, decreased service efficiency, and diminished team morale (Drake *et al.*, 2019; Fitzpatrick *et al.*, 2019). To address the critical shortage of IPC nurses amidst the broader nursing shortage in the Greater Montreal Region (Marleau & Thulier, 2022), a survey was conducted to identify effective retention strategies.

METHODS

All 14 healthcare facilities in the Greater Montreal Region were invited to participate in a cross-sectional survey conducted via Office 365 Forms. The survey collected non-identifiable data, with participation implying informed consent. No incentives were offered.

To develop and refine the survey questions, a comprehensive literature review was conducted using CINAHL, PsychINFO, MEDLINE (PubMed), and grey literature from sources such as the Institut National de Santé Publique du Québec, Statistics Québec, and international IPC associations. Relevant articles on infection control staff retention, turnover, and satisfaction were identified.

A multidisciplinary group consisting of IPC nurses, IPC managers, human resources experts, and members from the Department of Academic Affairs developed the survey questionnaire. Based on these insights, a pilot test with five IPC nurses evaluated the survey for completion time, questions clarity, and relevance, resulting in the final version with 29 closed and six open-ended questions. Closed-ended questions used predefined categories or a five-point Likert scale.

The IPC survey was administered from April to December 2022, with two email reminders sent to encourage participation. Preliminary analysis identified four key areas for potential improvement in IPC nurse retention: knowledge, support, recognition, and work organization. To further explore these areas and identify potential retention strategies, IPC managers and clinical unit managers who interact with IPC nurses were invited to complete a second open-ended survey which was conducted from January to June 2023.

Quantitative descriptive analyses were performed to the closed-ended survey variables, with results presented as frequency distributions. The qualitative data from open-ended questions were thematically aggregated but not quantified. Both data types were categorized into six key areas: socio-demographic characteristics, work organization, employee satisfaction, recognition, organizational culture, and perceptions of IPC's future.

Bivariate associations were examined using the Chi-square test (χ^2) with Cramer's V, and significance set at $p \leq 0.05$. Statistical analyses were performed using the Statistical Package for Social Sciences software, while qualitative data were manually coded and aggregated to identify recurring themes.

RESULTS

Of the 175 targeted IPC nurses from 13 of the 14 facilities, 70% (N=122) responded, with 47% (N=57) from three facilities (Table 1). The second survey involved 12 IPC managers and 11 clinical unit managers.

Table 1: Distribution of respondents by workplace

Facility	Number	%
Facility 1	19	15.6
Facility 2	19	15.6
Facility 3	19	15.6
Facility 4	13	10.7
Facility 5	13	10.7
Facility 6	11	9.0
Facility 7	10	8.2
Others*	18	14.7
Total	122	100

*Facility 8, 9, 10, 11, 12, 13

Socio-demographic characteristics of IPC nurses

The median age of participants was 44 years, with an interquartile range of 35 to 54 years. Sixty-eight percent (N=83) were aged 30 to 49, reflecting a young family life stage (Table 2). Sixty-six percent (N=81) had less than five years of IPC experience, while 30% (N=36), had over 20 years in nursing. Among those with more than five years in IPC, only 56% (N=23/41) held formal IPC training, such as Certification in IPC (CIC), a post-bachelor's certification in IPC (Microprogram-IPC) or a graduate training in IPC (Diplôme d'études supérieures spécialisées IPC (DESS-IPC)).

Table 2: Breakdown of respondents by socio-demographic characteristics

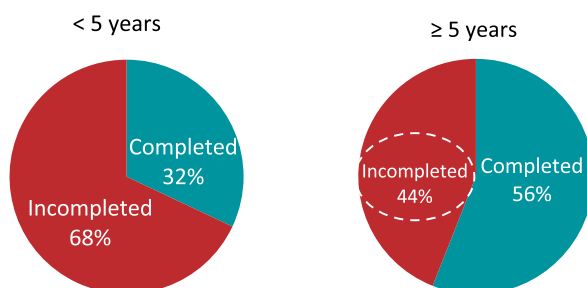
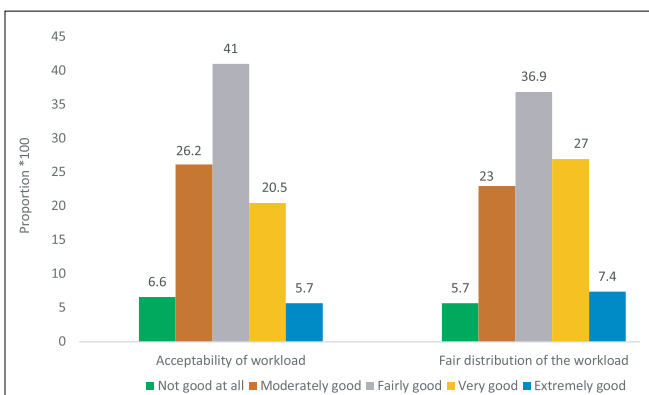
Characteristics	Frequency	%
Age		
20-29 years old	10	8.2
30-39 years old	38	31.1
40-49 years old	45	36.9
50-59 years old	26	21.3
60 years old and older	3	2.5
Education level		
College degree	2	1.6
Bachelor's degree	59	48.4
Microprogram	43	35.2
Post-Bachelor's certificate	3	2.5
Master's degree	15	12.3
Experience as a Nurse		
Less than 5 years	8	6.6
5-10 years	33	27.0

Table 2 (cont'd): Breakdown of respondents by socio-demographic characteristics

Characteristics	Frequency	%
11-15 years	25	20.5
16-20 years	20	16.4
More than 20 years	36	29.5
Experience in IPC		
Less than 5 years	81	66.4
5-10 years	20	16.4
11-15 years	12	9.8
16-20 years	8	6.6
More than 20 years	1	0.8

Work organization

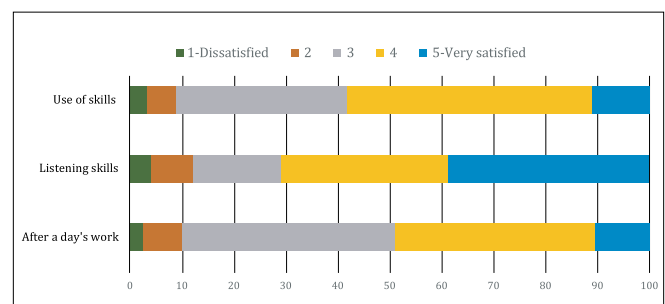
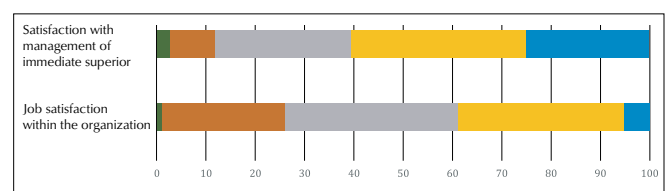
In the survey of IPC nurses, 67% (N=87) rated their workload as moderately (26%) or fairly (41%) acceptable. (Figures 1 and 2). However, 70% (N=85) suggested that administrative tasks – such as process surveillance (hand hygiene and environmental audits), data entry, and statistical analysis – could be reassigned to other roles. Respondents also recommended several strategies to improve staff retention and attraction, including redistributing tasks to reduce workload, enhancing work-life

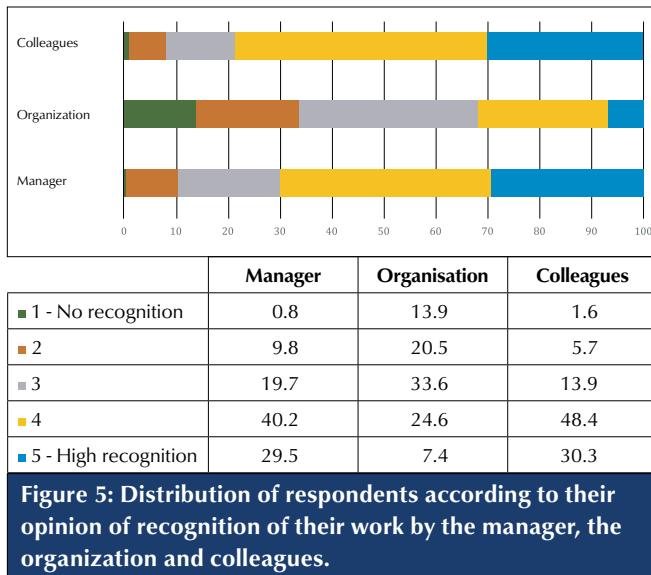
IPC education by years of experience in IPC**Figure 1: IPC education by years of IPC experience in IPC.****Figure 2: Distribution of respondents according to their opinion of IPC work organization.**

and study balance, allowing remote work, offering flexible hours, increasing staffing ratios to cover absences and manage outbreaks, and providing coverage for weekends and evenings.

Staff satisfaction

On a 1 to 5 scale (5 being extremely satisfied), 60% of IPC nurses reported being very or extremely satisfied with their manager's responsiveness and support (Figure 3). However, satisfaction with their job was evenly split (50%-50%), and only 39% (N=47) expressed satisfaction with their role within the organization (Figures 4 and 5). Feedback highlighted a need for improved team communication and patience with new IPC nurses. Both nurses and managers stressed the importance of coaching and mentoring to enhance retention. One manager suggested implementing a personalized mentoring program led by certified professionals. Yet, among 122 respondents from 13 facilities, only two had IPC certification.

**Figure 3: Distribution of respondents according to their level of satisfaction after a day's work, quality of listening and use of skills.****Figure 4: Distribution of respondents according to their satisfaction with the management of the immediate superior and the job in the organization.**



IPC nurses also expressed concerns about limited career advancement and financial growth, with one nurse commenting, "Our salaries do not reflect the responsibilities and educational requirements for IPC." IPC managers emphasized that establishing a salary scale based on educational qualifications and improving remuneration is crucial for improving staff satisfaction and retention.

Recognition at work

Recognition at work was important to 98% (N=120) of respondents. However, only 30% (N=36) felt that their organization provided a high level of recognition for their work (Figure 1). When asked to elaborate, several participants expressed a desire for their role to be better understood and valued by unit managers and the organization. Comments included: "Clearly defining our roles and responsibilities with care units, to avoid misunderstandings and unrealistic expectations by care staff" and "To be more involved in decision making."

Interestingly, clinical unit managers also acknowledged the significance of the IPC nurse's role and suggested initiatives such as holding open-door sessions and inviting IPC nurses to participate in clinical meetings to promote their work.

Organizational culture

Organizational culture was assessed based on IPC nurses' views on measures for promoting well-being (77% (N=94)), skills development (71% (N=87)), support from superior (61% (N=74)), teamwork climate (60% (N=73)), and an "IPC culture" for safety (70% (N=85)). Between 60%-77% of respondents felt these measures were implemented (Table 3). However, open responses frequently highlighted a need for greater respect, recognition, and appreciation of IPC work.

Some respondents cited barriers to continuing IPC studies or obtaining certification, such as insufficient salary recognition and lack of time and financial support for training. Suggestions to address these issues included offering scholarships and paid study time to support IPC certification. IPC managers also noted

Table 3: Distribution of respondents according to their opinion of organizational culture

Organizational culture	Number	%
Measures to encourage the well-being of employees		
Yes	94	77.0
No	28	23.0
Necessary support for skills development		
Yes	86	70.5
No	36	29.5
Have freedom in the way you do your job		
1 - No freedom	4	3.3
2	9	7.4
3	23	18.9
4	63	51.6
5 - Total freedom	23	18.9
Availability and support from immediate superior		
Not at all	2	1.6
Moderately	12	9.8
Fair	33	27.0
Very	37	30.3
Extremely	38	31.1
Working atmosphere within the IPC team		
Not good at all	1	0.8
Moderately good	9	7.4
Fairly good	39	32.0
Very good	41	33.6
Extremely good	32	26.2

that better-trained IPC nurses tend to be more collaborative and satisfied, whereas less experienced nurses often feel anxious and frustrated. Access to financial support was seen as a potential motivator for pursuing certification.

Respondents' perceptions of the future of IPC

In response to the open-ended question, "What could prevent you from leaving?" IPC nurses highlighted the need for improved work organization. They recommended addressing staff shortages, allowing remote work, offering flexible schedules for better work-life and study balance, and eliminating the requirement for permanent weekend and evening calls.

Bivariant analysis

Bivariate analysis (Tables 2, 3, and 4) evaluated the relationship between respondents' ages, decision to remain in IPC, and years of IPC experience with the retention strategies identified in this study. Only workload acceptability, organizational recognition, and job satisfaction were significantly associated with IPC experience, with a moderate association (Cramer's V). While experienced IPC nurses reported greater satisfaction with their workload and job, they felt the organization inadequately recognized their contributions.

DISCUSSION

This cross-sectional survey identified five key strategies to address the shortage of IPC nurses in the Greater Montreal Region. Diversifying roles by incorporating other professionals emerged as a critical strategy. More than 70% of respondents indicated that administrative, clerical, process surveillance and other non-specialized tasks could be delegated to other job titles, potentially reducing the workload of IPC nurses. Additionally, the lack of replacement staff for absences, vacations, and on-call duties was highlighted as a significant source of stress.

Table 4: Distribution of respondents according to their opinion on the impact of the COVID-19 pandemic

Impact of COVID-19 pandemic	Number	%
The need to forge links with the team in the context of a pandemic and remote working		
Yes	59	48.4
No	63	51.6
Concerned about the impact of the COVID-19 pandemic		
Not good at all	15	12.3
Moderately good	22	18.0
Fairly good	36	29.5
Very good	39	32.0
Extremely good	10	8.2

Integrating additional professionals into the IPC program can help alleviate workloads, reduce stress and burnout, and improve retention, while enhancing the quality of care (Kowalczyk *et al.*, 2020; Statistique Canada 2023). Role diversification also boosts productivity and allows IPC nurses to focus on tasks that require specialized skills (Smathers & Sammons, 2020; Billings *et al.*, 2019; Kowalczyk *et al.*, 2020).

Support and funding for IPC training and certification was another important retention strategy identified. Many (66%) IPC nurses joined during the pandemic with limited prior experience, leading to noticeable gaps in IPC knowledge and experience as was expressed by managers (Table 4). Reese *et al.* (2021) argue that IPC consultants need time, support, and funding to take ownership of their daily tasks and succeed in their roles and responsibilities. Despite recommendations for IPC training within two years of entry into the field (Ministère de la Santé et des Services Sociaux, 2017), only 56% received training after five years. Respondents suggested that scholarships could encourage further education, aligning with evidence that tuition reimbursement is a factor in retention (Gilmartin, Smathers, *et al.*, 2021; Gilmartin, Reese, *et al.*, 2021; Knighton *et al.*, 2018; Reese *et al.*, 2021). The shortage of certified mentors (only two certified DESS-IPC for 13 institutions), may have contributed to IPC nurses feeling unprepared and unsupported. Competent professionals are crucial for integrating and supporting novices into IPC teams via mentoring programs (Gilmartin, Smathers, *et al.*, 2021; Reese *et al.*, 2021).

Table 5: Factors associated with respondents' age

Factors	Categories	Age		X ²	V	p
		≤ 39 years old	> 39 years old			
		n (%)	n (%)			
Workload acceptance	Moderate/fair	31 (68.9)	51 (73.9)	0.34	0.05	0.560
	Very/extremely	14 (31.1)	18 (26.1)			
IPC work in a year's time	Moderate/quite likely	17 (37.8)	31 (42.5)	0.25	0.05	0.615
	Very/extremely likely	28 (62.2)	42 (57.5)			

Table 6: Factors associated with respondents' years of IPC experience

Factors	Categories	Years of IPC experience		X ²	V	p
		< 5 years	≥ 5 years			
		n (%)	n (%)			
Workload acceptance	Moderate/fair	50 (64.9)	32 (86.5)	5.75	0.22	0.025
	Very/extremely	27 (35.1)	5 (13.5)			
Likelihood of working in IPC in one year	Moderate/fair	28 (35.4)	20 (51.3)	2.71	0.15	0.099
	Very/extremely	51 (64.6)	19 (48.7)			
Organizational recognition	≤ Level 3	48 (59.3)	35 (85.4)	8.53	0.26	0.004
	> Level 3	33 (40.7)	6 (14.6)			
Satisfaction level after a day's work	≤ Level 3	36 (44.4)	27 (65.9)	5.00	0.20	0.025
	> Level 3	45 (55.6)	14 (34.1)			
Quality of listening and consideration of opinion by superior	≤ Level 3	19 (23.5)	16 (39.0)	3.22	0.16	0.73
	> Level 3	62 (76.5)	25 (61.0)			

Table 7: Factors associated with remaining in IPC one year from now

Factors	Categories	PCI work in a year's time		X ²	V	p
		Moderate/fair	Very/extremely			
		n (%)	n (%)			
Team working atmosphere	Moderate/fair	31 (64.6)	17 (24.3)	19.16	0.40	< 0.001
	Very/extremely	17 (35.4)	53 (75.7)			
Years of nursing experience	≤ 10 years	17 (35.4)	22 (31.4)	0.20	0.04	0.651
	> 10 years	31 (64.6)	48 (68.6)			

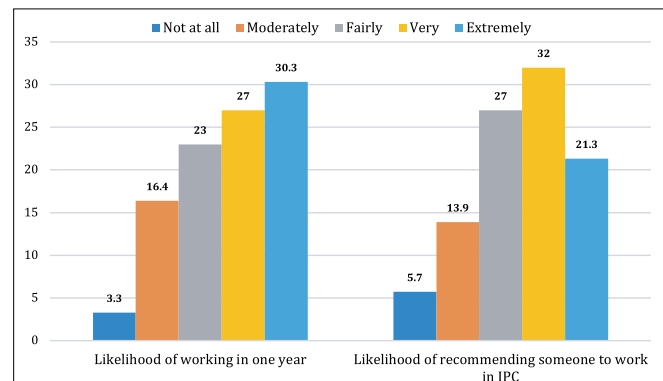
Survey respondents highlighted that salary satisfaction and recognition of IPC certification are fundamental for staff retention. They recommended offering career advancement opportunities that align with education and certification milestones as a key strategy for retaining employees. Research in organizational behaviour and human resource management consistently shows that opportunities for career growth are a significant factor in employee satisfaction and retention (Holtom *et al.* 2023; Govaerts *et al.*, 2023).

Recognition by the organization was identified as a crucial retention factor in retaining IPC nurses. Respondents expressed a need for greater respect, acknowledgment, and appreciation of their contributions. They suggested that IPC managers could improve role recognition by clearly defining roles, ensuring transparent communication, and involving staff in decision-making. Research indicates that participative leadership, involving staff in decisions, and fostering communication contribute to employees feeling recognized (Jašlan *et al.*, 2020; Jones & Gates, 2007; Létourneau, 2020; Ministère de la Santé et des Services sociaux, 2022).

Our survey found a significant association between work climate and the intention to remain in IPC ($p < 0.05$). Notably, IPC nurses with more than five years of experience felt less recognized than those with fewer years ($p < 0.05$) (Table 6). A motivating work environment is essential for workforce maintenance (Marufu *et al.*, 2021).

IPC teams feel valued when the organization demonstrates commitment to IPC (Dubé *et al.*, 2019), and recognition is a strong motivator for IPC retention (Choi & Kim, 2015; Gilmartin, Smathers, *et al.*, 2021).

Lastly, with 68% of the IPC workforce in the age range typically associated with young families, work organization emerged as a crucial retention strategy (Table 5 and 7). Flexible work arrangements, including remote work, were highlighted as essential for work-family balance. These strategies were also found to help reduce burnout and team conflict (Fitzpatrick *et al.*, 2019). Although our study did not specifically analyze generational differences, the workforce primarily consisted of Generation Y and early Generation Z nurses. The literature, along with our findings, suggest that effective retention strategies for these groups include a supportive work environment, flexible schedules, conflict management, mental wellness programs, career advancement, financial growth opportunities, organizational recognition including improved organizational

**Figure 6: Distribution of respondents according to their opinion of the likelihood of staying with or recommending someone in IPC.**

communication and inclusion (Lavoie-Tremblay, *et al.*, 2010; McClain, *et al.*, 2022; Kumar 2023).

To our knowledge, this is the first survey in Quebec to document factors influencing IPC nurse retention. The study's strengths include a high response rate (70%) and the integration of both quantitative and qualitative data, providing comprehensive insights into IPC staff retention needs (Figure 6). However, some limitations should be noted: the exclusion of former IPC nurses, whose perspectives might have further enriched the retention strategy analysis, and the timing of data collection which occurred at the end of the pandemic may have influenced our findings, particularly with respect to increased workload and stress. Additionally, the results are primarily representative of the Greater Montreal Region and may not be generalizable to the entire province of Quebec. A follow-up study in three to five years would be valuable for assessing the effectiveness of the proposed recommendations.

CONCLUSIONS

This study offers essential insights for policymakers to enhance IPC staff retention. Given the nursing shortages, it will be vital to incorporate non-nursing professionals into Quebec's IPC programs. Future retention strategies must consider generation-specific approaches, such as implementing horizontal promotion structures within the IPC framework and establishing progressive salary and educational requirements.

Moreover, fostering a supportive work environment that includes flexible working hours, promoting work-life and study

balance, and ensures organizational recognition is essential. Cultivating a strong organizational culture that emphasizes the importance of infection control will be key for retaining IPC staff.

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