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Infection preventionists' experiences during the first nine months of the COVID-19 pandemic: Findings from focus groups conducted with Association of Professionals in Infection Control & Epidemiology (APIC) members



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Introduction: A novel human Coronavirus (SARS CoV-2) was identified in January, 2020 and developed into a pandemic by March, 2020. This rapid, enormous, and unanticipated event had major implications for health-care. Infection preventionists (IP) have a critical role in worker and patient safety. IPs' lessons learned can guide future pandemic response.

Methods: Seven focus groups were conducted with APIC members in September and October, 2020 via Zoom to elicit IPs' experiences during the COVID-19 pandemic. Sessions were recorded then transcribed verbatim. Major themes were identified through content analysis.

Results: In total, 73 IPs participated (average of 10 IPs per focus group) and represented all geographical areas and work settings. Participating IPs described multiple challenges they have faced during the COVID-19 pandemic, including rapidly changing and conflicting guidance, a lack of infection prevention recommendations for nonacute care settings, insufficient personal protective equipment, healthcare personnel complacency with personal protective equipment and infection prevention protocols, and increases in healthcare associated infections and workload.

Conclusions: The identified gaps in pandemic response need to be addressed in order to minimize healthcare associated infections and occupational illness. In addition, the educational topics identified by the participating IPs should be developed into new educational programs and resources.

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INTRODUCTION

SARS-CoV-2, the virus that causes the disease COVID-19, first emerged in late 2020 and was officially declared a pandemic in March, 2020.¹ COVID-19 quickly overwhelmed healthcare facilities and workers.^{2,3} Infection preventionists (IPs) are essential healthcare personnel who play a critical role in pandemic planning and response. They also face the unique challenge of responding to frequent changes in requirements and recommendations as science evolves.^{4,5} The purposes of this project were to evaluate IPs'

experiences during the first nine months of the COVID-19 pandemic and assess their preferences regarding the COVID-19 related infection prevention education and reference materials they believe would be most helpful.

METHODS

Seven focus groups were conducted with Association of Professionals in Infection Control & Epidemiology (APIC) members in September and October, 2020. Recruitment occurred through a member newsletter. All United States-based APIC members were eligible to participate, regardless of size, type, or location of their employer. The seven focus groups consisted of the following areas or groups of APIC members: outpatient settings, long-term care (LTC), acute care, rural areas/settings (2 focus groups), new IPs (ie, ≤ 3 years of experience),

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and experienced IPs (ie, ≥ 10 years of experience). Participants self-identified into one of the focus group sessions. All focus groups took place via Zoom. APIC staff and the APIC COVID-19 Task Force developed the focus group questionnaire and methodology. Open-ended questions were used during the focus groups to prompt IPs to describe their experiences during the COVID-19 pandemic. In addition, participants were asked to complete a brief survey consisting of demographic questions and three items asking about the COVID-19 related infection prevention topics, products, or reference materials they believe would be most helpful for pandemic response. Zoom sessions were recorded and then transcribed verbatim. Data analysis consisted of identifying, coding, and categorizing IPs' statements using content analysis. Major themes were identified and reported. Quotations that demonstrate the major themes are reported. Words in parentheses within quotes were used to explain the IPs' quotes and are not the participants' words. The Saint Louis University Institutional Review Board deemed this project to not be human subjects research.

RESULTS

In total, 73 IPs participated (average of 10 IPs per focus group) from across all geographical regions of the United States (Table 1). Almost all (95.9%, $n = 70$) were female. About half (54.8%, $n = 40$) had a Bachelor's degree; just under half (43.8%, $n = 32$) hold the CIC credential (Table 1). Two-thirds (67.1%, $n = 49$) worked in a hospital; about a third (35.6%, $n = 26$) worked in LTC either primarily or covered both acute care and LTC. The remainder worked in outpatient or other settings (9.6% and 5.5%, respectively; Table 1). Participant demographics are outlined in Table 1. The participants' demographics were similar to the demographics of APIC members as a whole.⁶

Personal protective equipment (PPE) and infection prevention supply challenges

Some of the most frequently mentioned challenges to pandemic response included issues related to PPE, such as a lack of PPE access. Some described placing an order, but only receiving a fraction of what had been promised by the vendor. Others described the logistical challenges of getting PPE to different facilities when their traditional distribution center lacked the supplies to accommodate all sites. A little more than half (54.8%, $n = 40$) reported having run out of at least one type of PPE during the pandemic, despite the fact that 89% ($n = 65$) had implemented PPE crisis standards of care (Table 2). N95 respirators were the most frequently reported PPE shortage; 28.8% ran out of N95s at some point (Table 2). IPs who work only in LTC were significantly more likely than IPs in all other settings to report having run out of N95s at some point during the pandemic (53.8% vs 46.2%, $\chi^2 = 4.9$, $P < .05$).

PPE and supply theft issues were mentioned frequently. IPs stated, "People were coming in off the street, taking handfuls of masks and gloves," and "Staff had to sign out what [PPE] they took for the day and then somebody would actually check the counts daily to make sure that we weren't losing PPE unnecessarily". Many IPs described needing to order PPE from different vendors due to a lack of availability. Some reported receiving faulty or questionable PPE and discussed the need to verify the quality of PPE before it could be given to staff. Others described challenges in needing to train healthcare personnel on the new PPE.

Disinfectant product and hand sanitizer challenges were common. Some IPs reported not being able to access sufficient supplies, while others described obstacles to using available products. As one IP explained, "At one point we had to use pool shock, which our pharmacists diluted into bleach to make a bleach spray when we didn't have wipes." Others had access to supplies, but the product had an

Table 1
Focus group participants' demographic characteristics

	N = 73 % (n)
Focus group	32.9 (24)
Rural (2 focus groups)	12.3 (9)
New infection preventionists	12.3 (9)
Experienced infection preventionists	17.8 (13)
Acute care setting	9.6 (7)
Long-term care setting	15.1 (11)
Outpatient setting	
Gender	
Female	95.9 (70)
Male	4.1 (3)
Age	
21 – 30 y	5.5 (4)
31 – 40 y	11.0 (8)
41 – 50 y	37.0 (27)
51 – 60 y	31.5 (23)
≥ 61 y	15.1 (11)
Highest education level	
Associate's degree	6.8 (5)
Bachelor's degree	54.8 (40)
Master's degree	38.4 (28)
Certification status	
CIC	43.8 (32)
Not certified in infection prevention	56.2 (41)
Years of work experience as an infection preventionist	
< 1 y	13.7 (10)
1 – 2 y	16.4 (12)
3 – 4 y	20.5 (15)
5 – 10 y	24.7 (18)
≥ 11 y	24.7 (18)
Work setting	
Primarily or only acute care	54.8 (40)
Long-term care and acute care	17.8 (13)
Long-term care only	17.8 (13)
Ambulatory care/outpatient only	9.6 (7)
Hospital bed size	N = 49
≤ 50 beds	30.1 (22)
51 – 99 beds	4.1 (3)
100 – 199 beds	4.1 (3)
200 – 299 beds	9.6 (7)
300 – 399 beds	6.8 (5)
400 – 499 beds	1.4 (1)
≥ 500 beds	11.0 (8)
Location of employer	
Rural	52.0 (38)
Urban	27.4 (20)
Suburban	20.5 (15)
United States census region	
West	28.8 (21)
Midwest	27.4 (20)
South	24.7 (18)
Northeast	19.2 (14)

extended dwell time (ie, 10 minutes). Many IPs described difficulty in obtaining sufficient hand sanitizer. One IP explained, "We had to rely on alcohol from our local distilleries to use as hand sanitizer."

Many IPs discussed the challenge of managing healthcare personnel's pandemic fatigue, especially related to wearing PPE. As one IP said, "In the beginning of the pandemic, our staff wanted to wear everything...max PPE, but by the time we were actually treating cases and dealing with significant community spread, many of the staff were no longer interested in wearing appropriate PPE...They are just over it." As another described, "We were heroes at first, bringing in the PPE that everyone wanted, but then we were the much-hated enforcers making people wear PPE, especially the face shields and goggles." Others described "mask fatigue," "eye protection fatigue," and "practice change fatigue" they are witnessing among staff. The IPs also discussed how the overall sense of pandemic fatigue has led

Table 2
Personal protective equipment (PPE) access reported by participants who identified as working in long-term care

	All N = 73 Yes % (n)	Long-term Care Only N = 13 Yes % (n)	Long-term Care & Acute Care* N = 13 Yes % (n)	All other Settings N = 47 Yes % (n)
Implemented PPE crisis standards of care [†]	89.0 (65)	84.6 (11)	76.9 (10)	93.6 (44)
Ran out of any type of PPE during the pandemic	54.8 (40)	53.8 (7)	46.2 (6)	42.6 (27)
Ran out of N95 respirators	28.8 (21)	53.8 (7)	30.8 (4)	21.3 (10)
Ran out of isolation gowns	16.4 (12)	15.4 (2)	23.1 (3)	14.9 (7)
Ran out of masks	13.7 (10)	23.1 (3)	7.7 (1)	12.8 (6)
Ran out of eye protection	9.6 (7)	15.4 (2)	7.7 (1)	8.5 (4)
Ran out of gloves	5.5 (4)	7.7 (1)	0	6.4 (3)

*Participant identified as covering both long-term care and acute care settings.

[†]PPE crisis standards of care = respirators, masks, and/or isolation gowns had been used for extended periods of time, reused, and/or rationed in some way.

to staff complacency with PPE and other public health safeguards, both at work and in the community. As the IPs explained:

Staff first let down their guard in the break room and then they completely shut down their guard. We just had a case of seven emergency room residents who all went to a brewery together and we saw transmission to all of them. They were like, "Oh, I only need to wear my PPE at work".

I am seeing carelessness with masking, like in the break rooms. Or somebody is at the nurse's station and they take their mask off while they're getting report.

Staff say, "We don't want to [wear PPE when not at work]. We don't want to have to change our personal life. It's bad enough to change it to work, but to change it at home...it sucks."

Lack of setting-specific guidance

A major and consistent challenge identified was the lack of guidance available for various topics or that was targeted to specific sites. This lack of guidance left many IPs struggling to answer staff questions, train personnel, or develop evidence-based policies. As IPs explained:

I feel like I'm kind of making it up as I go. You're really coming up with answers right there on the spot because nobody else has the answers.

I think the scariest thing is just people trusting what I say when I'm not 100% sure that what I'm saying is correct.

One of the most commonly mentioned areas of need was site-specific guidance, such as COVID-19 guidelines for specific outpatient procedures or sub-specialties. As one IP stated, "The CDC or the state didn't always have recommendations that were tailored to all the different specific care settings, particularly in the outpatient setting. And so you kind of had to make an educated logical guess in terms of what the best course of action was going to be." Ambulatory surgery centers (ASCs), oncology centers, and home health were mentioned as particularly needing site-specific guidance. As one IP stated, "We had to do our own videos and guidelines relative to when to don PPE outside of a patient home, where to doff, how to do disinfection." Many IPs discussed frustration with the lack of guidance specific to aerosol generating procedures (AGPs), including lack of a list of medical procedures considered to be AGPs. As one IP stated, "There's so many different specialties and they each have their own procedures that they consider aerosol generating." IPs' suggestions for COVID-19 related educational programs or guidance for specific sites are outlined in [Table 3](#).

Table 3
Infection preventionist participants' suggestions for COVID-19 related educational programs or products

Topic	Details
Guidance for Specific Sites	Guidance for specific subspecialties or sites was lacking. Examples: ambulatory surgery centers, home health, long-term care facilities, imaging centers, physical therapy, rehab, spine centers, infusion centers, sleep lab, oncology centers, urgent care, wound care, behavioral health, outpatient clinics, group homes, and K-12 school-based nursing
Requested Educational Programs & Trainings	Occupational health issues and procedures related to COVID-19: Screening staff for symptoms of COVID-19 vs other conditions, managing staff exposures, testing, and follow-up, and when to allow to return to work Contact tracing How and when to set up temporary negative pressure rooms How to use and disinfect powered and controlled air purifying respirators (ie, PAPRs & CAPRs), and elastomeric respirators between uses Donning and doffing PPE in nonhospital settings, specifically home health How to safely reuse and reprocess PPE Influenza & COVID-19 Information on testing: Types of COVID-19 tests, when to use which, and how to interpret results Guidance on gaining and maintaining buy-in when recommendations are quickly changing How to encourage and/or gain compliance with PPE recommendations Information on transition between pandemic procedures and standard protocols Masking guidance for long-term care facility residents How to write and read a response plan

PPE, personal protective equipment.

Frequent changes and conflicting guidance

The rapid change in guidelines posed many challenges to IPs. As one IP said, “CDC comes out and says “Use N95s,” and then a couple weeks later they say, “Oh, if you just wear face masks you’re okay, but N95s are preferred.” It was very frustrating.” Many IPs also described the challenges in trying to develop protocols when organizational guidance conflicted. As one IP described, “I’m in [state], but we have ASCs in different states, and when the Department of Health guidelines from [state] are different than the guidelines in [a different state], it was very challenging to keep up with them and to have different practices in different locations.” Some IPs even described receiving conflicting information from different parts of the CDC website.

Many IPs discussed experiencing a lack of staff trust and/or staff fear throughout the pandemic due to the frequent protocol changes and conflicting guidance. IPs felt as though they lost or could not gain credibility among the staff, and staff distrusted new protocols, such as when and how to isolate infected patients or implementing respirator decontamination procedures. As IPs described:

With the information changing and conflicting from different agencies, it goes a lot towards our own credibility. Staff questioned the credibility of the CDC and the state and me, and that combination is not conducive to doing things well or right.

The frontline staff, they just did not trust what we were telling them, nor what CDC was telling them about how to reuse and decontaminate respirators safely.

Even if you’re keeping up with [CDC guidance], staff think you’re just making up the rules and they don’t trust you.

Work overload & lack of IP involvement

The IPs discussed how the pandemic has left them with too much work, resulting in the need to drop some routine duties. The relentless workload has also caused a loss of work life balance for many IPs. As one explained, “There is no Monday through Friday. It is literally 24 hours a day, seven days a week.” Despite the challenge of too much work, some IPs described the frustration of not being involved in COVID-19 planning or response decisions. As one IP said, “Decisions were being made in organizations without their infection preventionists, which were resulting in extreme difficulties in coordinating throughout the county.” Another discussed how their system-wide incident command center did not involve an IP nor ask for IP input on policy decisions.

Healthcare associated infections (HAIs)

The impact of the pandemic on HAIs was found to be conflicting. A few IPs reported that they had not seen any change in HAIs. However, most reported seeing an increase in HAIs, such as CLABSIs, CAUTIs, ventilator associated pneumonias (VAP), and *C. difficile*, which they attributed to a variety of clinical practice changes implemented during the pandemic. Many said that standard infection prevention practices had to be set aside to focus on pandemic response. Multiple IPs mentioned that staff turnover contributed to HAI development. As one described, “We’ve had a lot of nurses quit during the whole COVID era, so we’ve recruited a lot of new nurses. Those seasoned nurses could have trained these new nurses coming on.” IPs also described how visitor restrictions contributed to HAI increases. As one IP stated, “The lack of visitors means there is a lack of people coming in and advocating saying, ‘Hey grandma’s dressing doesn’t look right, can somebody change that?’” As another described,

“Before the pandemic, we didn’t realize how much families had been helping, like with turning them or helping them get up to the bathroom or sitting in a chair.”

Some IPs discussed how pandemic fatigue has led to healthcare personnel requiring re-education and/or reminders about basic infection prevention to prevent HAIs. As one IP described, “As the fatigue goes on, we realized that staff are getting a little bit lax. So, on top of all the COVID stuff, we have to re-educate everybody on basic bundle elements for preventing infections.” In other situations, healthcare personnel were intentionally making clinical decisions that they believed would decrease COVID-19 exposure, but posed a risk to HAI development. As one IP described, “Physicians started trying to put central lines in the groin because they thought it would be safer for nurses, so they didn’t have to be up by the patient’s head.” Another explained, “Staff were trying to limit the number of healthcare workers going in the rooms, both to preserve PPE and also to limit healthcare worker exposure, and that left a lot of things that weren’t occurring like daily bathing, oral care, changing IVs.”

Unique challenges faced by IPs in long-term care facilities (LTCFs)

Many IPs in LTC expressed unique challenges and frustrations related to PPE that were not described by IPs in other settings, such as reporting that PPE had been prioritized for acute care settings in their region, leaving their facility with inadequate PPE supplies. Others discussed frustrations with ordering PPE that turned out to be unusable. As one IP explained, “Just yesterday we were contacted that we had bought some counterfeit N95 masks and had to dispose of them, and that broke my heart to have to throw away 100 masks that were no good.” Some LTCFs could find PPE, but the price was incredibly high. Despite this, they reported still purchasing the expensive PPE. As one IP explained, “I think I spent \$46,000 yesterday on PPE, but I had to. We finally found supplies and you can’t wait.” The IPs working in non-LTC settings did not mention similar challenges with PPE, though they acknowledged the inequities in PPE access, and were able to help in some situations. As one LTC IP said, “Our acute care hospital IPs have really done a great job of helping our long term care facilities when they can. It was just awesome how they stepped up and convinced their hospitals to provide PPE to some of the long term care facilities.” However, other IPs felt helpless to do much. As one IP stated:

I was emotionally devastated by the phone calls that I had with long term care facilities, because most of them I just listened to them crying because they did not have the PPE, yet they wouldn’t leave their residents. And their health care workers were getting infected.

In addition to unique PPE challenges, IPs in LTCFs faced COVID-19 related testing issues not reported by IPs in other settings. For some, the biggest challenge was the increased workload caused by testing requirements. As one IP stated, “We have to test all staff depending on county incidence rates. If it’s less than 5%, you have to test them monthly. If it’s more than 5%, you have to test them weekly. And that’s 200 staff that I have to test. So that’s taking a lot of time.” IPs in LTCFs described a testing challenge specific to their setting when residents are admitted to a hospital. As one IP explained, “A major challenge is when a [LTCF] resident goes out to the emergency department, they will be tested. But they are already being tested regularly at the facility. So, it’s a struggle interpreting those results in a past positive or even if it’s day 91 post their previous positive test.”

A lack of access to and/or guidance about testing was a common challenge among LTC IPs. As one IP described, “One of the biggest challenges we saw was that we had very limited testing capabilities. We didn’t have any in house testing when we started seeing COVID-

19 patients and even the state capacity was very small.” As another mentioned, “There were pretty strict criteria that the state was using at the beginning to even get approval for testing. It could take an hour, could even take two hours to even get the appropriate approval for testing.” Turnaround times were reported to be so long as to be basically useless. As one IP said, “Some of our turnaround times were seven plus days out.” Some IPs reported a lack of testing supplies, such as swab kits. IPs also described challenges with interpreting rapid antigen test results and/or having staff believe the findings. As one IP explained, “We recently got the rapid test and we have a lot of employees that are saying, ‘well, it’s not accurate.’ They get a test result and they don’t believe it.” As another IP explained, “CMS is saying you can [use a rapid antigen test] for everybody and follow up with a PCR, but there are several states that are saying no, just use that for symptomatic people because you get a more reliable answer. Other are only going through outside laboratories to do PCR. So, yeah. It can get very complicated, very quickly.”

The LTC IPs discussed the low staff morale and burnout they are seeing among their healthcare colleagues. As IPs explained, “Keeping up staff morale right now is one of the biggest challenges and keeping people on track with what we need to do to stay safe” and “Everybody’s burned out.” Another IP agreed and added, “We also have had a lot of burnout. We’ve had a lot of turnover.” One difference identified by LTC IPs compared to those who cover other areas included the inability to focus on survivors. As one LTC IP explained, “In the hospitals, they’ve been able to focus on survivors. ...you know, how many people have been cared for and left healthy. We can’t have that kind of a focus in the nursing homes.” Instead, suggested boosters of morale for LTCFs included “heroes bulletin boards” with thank you notes, allowing staff to wear blue jeans/casual clothing, and free staff meals once a week.

Recognition of importance of IPs in long-term care

Many IPs in LTC described a change in practice, awareness, and perceived importance of infection prevention in LTCFs. They believe that the pandemic has shone a light on the critical role of infection prevention in LTC, and that it is allowing some IPs in LTC the time to focus strictly on infection prevention instead of wearing multiple hats. LTC IPs also discussed changes in CMS during the pandemic that they believe will benefit IPs in the long run. As IPs explained:

I think the best thing that will come out of COVID pandemic is that infection prevention in long term care facilities has gotten the attention that it didn't get...deserved for a long time, but has been overlooked.

I've been in long term care for almost 20 years and that was the first time the IPs have ever really been called out. You know, like, hey, this is something that we think is important.

Now that other people see what we do and that we don't necessarily have time to do human resource [work] and staff development and all of those things. ...[we can] focus solely on preventing infections in long term care.

DISCUSSION

This study found that IPs have faced multiple challenges responding to the COVID-19 pandemic. One of the biggest challenges was the frequently changing and conflicting guidance. Changing infection prevention protocols mid-way through a pandemic is not unique to COVID-19; this occurred during the 2009 H1N1 pandemic and had

also drawn criticism and mistrust.⁵ However, changing practice to reflect current science is simply evidence-based practice and should be expected. One unique challenge to this pandemic was the reported conflicting guidance issued by federal, state, and local public health authorities. The IPs in this study struggled with implementing evidence-based protocols, because they did not know which guidance to follow. They also reported challenges in communicating the rapidly changing and conflicting guidance to healthcare personnel in a way that would engender support and compliance. The lack of PPE and use of PPE crisis protocols also contributed to challenges. Similar findings were reported from two national studies examining PPE availability and crisis protocols implemented during the pandemic.^{7,8} These PPE shortages need to be addressed to minimize occupational exposure and illness among healthcare personnel.

Another noted challenge was a lack of infection prevention practice guidance for some healthcare settings, specifically outpatient, home care, and long-term care facilities (LTCF). This same lack of guidance for non-acute care settings was seen during the H1N1 pandemic.⁵ It is imperative that infection prevention guidance be developed for non-acute care settings. COVID-19 can be transmitted in any healthcare setting unless evidence-based protocols are followed. This is particularly critical for LTCFs given the tremendous morbidity and mortality seen in these facilities during the COVID-19 pandemic.^{9,10} In addition, previous studies examining PPE availability¹¹ and staffing levels¹² found that non-acute care settings were significantly less likely than hospitals to have adequate PPE and adequate staffing. Historically, there has also been little to no IP coverage in many LTCFs.¹³ The combined insufficient PPE and healthcare staff, lack of IP coverage, and lack of guidance for these practice settings could result in increased in HAIs and occupational illness in LTCFs and other non-acute care settings. These gaps in pandemic preparedness need to be addressed.

IPs in this study described challenges with healthcare personnel PPE complacency. PPE noncompliance can contribute to disease transmission during patient care activities and in staff support areas, such as breakrooms and cafeterias. Multiple healthcare personnel COVID-19 clusters and outbreaks have been reported due to the lack of social distancing and mask use in breakrooms/non-patient care areas, and community exposures.^{14–16} Lapses in masking and physical distancing in breakrooms/eating areas have led to COVID-19 spread in non-healthcare industries as well, including meat and poultry processing plants.¹⁷ Healthcare personnel screening and reminders about remaining vigilant about PPE use have been recommended to minimize COVID-19 spread in healthcare settings.^{14–16}

Similar to other studies, many IPs in this study reported an increase in HAIs during the pandemic. A review of CLABSI data reported to the National Healthcare Safety Network identified a 28% increase in CLABSI when comparing the second quarter of 2020 to the same quarter in 2019.¹⁸ Another study found that both CLABSI and blood culture contamination rates increased during the pandemic.¹⁹ The IPs in this study noted several factors they believed contributed to the increase in HAIs, including frequently changing protocols, staff turnover, lack of resources for training new staff, and visitor restrictions. Some IPs also described an increased placement of femoral central lines, which could increase risk for CLABSI.^{20,21} Increased workloads reported by the IPs to address the pandemic may have also adversely affected routine surveillance and practice observation, which could have contributed to higher HAIs rates.²¹ A previous study found that a significant drop in surveillance occurred in the second quarter of 2020 compared to the same time period in 2019¹⁸, coinciding with CMS temporarily waiving reporting requirements during the pandemic.²² It should be noted, though, that the IPs in this study talked in general terms about HAI increases they were experiencing. They were not asked to provide quantitative HAI data. Therefore, published studies such as the above that examined HAI

rates pre- versus mid- pandemic provide a more robust analysis of HAI impacts from the pandemic.

This study found the IPs in LTCFs faced unique challenges not identified by their colleagues in acute care and outpatient settings. They were significantly more likely to run out of N95 respirators, reported challenges with COVID-19 testing not seen in other settings, experienced low staff morale, and saw high staff turnover. All of these factors exacerbated existing challenges to safe LTCF healthcare. For example, a 2019 study found that about a third of all LTCF registered nurses (RNs) experienced burnout and/or job dissatisfaction.²³ Many LTCFs also frequently experienced staff shortages, including among RNs²⁴ and IPs²⁵, even prior to the pandemic. During the pandemic, LTCFs were devastated by COVID-19 outbreaks among staff and residents, resulting in high morbidity and mortality rates even after vaccination was available.^{10,26} The LTC IPs' experiences with PPE and staffing shortages reported here are similar to other research indicating these deficiencies existed throughout the COVID-19 pandemic and need to be addressed to aid in COVID-19 response as well as preparing for future outbreaks and pandemics.^{7,11,27,28} In this study, counterfeit or expensive PPE, staff burnout, and low morale were only mentioned by IPs in LTC, but this may be because the focus group interview questions did not specifically ask about these issues. Therefore, it is not known if these issues are truly unique to LTC or simply more prominent in the minds of the LTC IPs. Future studies could help clarify.

A unique finding in this study was the LTC IPs' newfound perceived importance of infection prevention in LTCFs. The 2016 CMS rule change indicating that nursing homes must have a designated IP staff underscored the essential role IPs play in LTC, and this regulatory mandate was found to be associated with some improvements in LTCF infection prevention programs.²⁹ Despite this, a 2020 study reported that IP staffing levels in LTCFs had not changed significantly after the rule was implemented, though staffing was found to vary depending on facility size and profit status.¹³ Future studies should examine the impact of COVID-19 on IP staffing levels and infection prevention program quality in LTCFs.

This study identified multiple challenges IPs faced during the COVID-19 pandemic, and the focus group methodology helped elicit rich details about these experiences. However, some limitations must be noted. Only APIC members were invited; therefore, findings may not be generalizable to non-APIC members or to APIC members who chose not to participate. In addition, about two-thirds of participants reported working in acute care; therefore, these findings may be less generalizable to other practice settings.

CONCLUSION

Infection preventionists play a critical role in pandemic planning and response, and are essential to the United States's public health infrastructure. This study identified challenges IPs faced during the COVID-19 pandemic, including rapidly changing and conflicting guidance, lack of recommendations for non-acute care settings, insufficient PPE, PPE complacency, and increases in HAIs and workload. The identified gaps in pandemic response need to be addressed in order to minimize HAIs and occupational illness. In addition, the educational topics identified by participating IPs should be developed into new educational programs and resources.

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