

# Infection Prevention and Control in Nursing Homes in the COVID Era: Research, Stakeholder Perspectives and Best Practices

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# INTRODUCTION

The COVID-19 pandemic has prompted those within the aging services network, and those outside of it, to deeply consider the safety and well-being of those who reside and work in nursing homes (NH). The outsized impact of the pandemic on one of society's most vulnerable populations has brought to the fore the range of challenges facing NH systems and the inequities that exist in long-term care services. After the first confirmed case of COVID-19 was reported in the United States on January 21, 2020, challenges in obtaining sufficient supplies of personal protective equipment (PPE) for hospitals and NHs were already emerging by mid-February. Then, on February 28, came the first U.S. report of a NH resident who had contracted COVID-19. From that point, SARS-CoV-2 swept through NHs because of the many vulnerabilities in the long-term care setting, including residents requiring complex medical care, shared and congregate spaces, and the infrastructure and supply challenges facing staff and facilities trying to respond to the rapidly spreading pandemic.

With an estimated 1.2 million people living in NHs in the United States, a well-rounded understanding of the multiple factors that led to the unparalleled infection and mortality rates in NHs is critical to preparing for future outbreaks.<sup>1</sup> Residents of NHs typically have physical characteristics and diagnoses that put them at an elevated risk for infection including fragile skin, depressed immune systems, malnutrition, dehydration, incontinence and reliance on catheters.<sup>2</sup> These patient traits, along with other structural characteristics common in long-term care settings, accelerate the spread of infection in NHs across the globe. Estimates of total infections in this setting run as high as 2 million per year.<sup>3</sup> Decades of disinvestment and disinterest in these care communities left them wholly unprepared for the devastating realities of a highly contagious respiratory disease. A keen understanding of how and why NHs were so disproportionately affected is critical to seeing NHs through the remainder of the pandemic and to building equitable solutions that prevent future pandemics from having a similarly devastating impact.

# GOALS AND ORGANIZATION OF THE REPORT

## **The aim of this report is to better understand:**

- Current infection prevention and control (IPC) best-practices.
- Barriers to effective IPC implementation.
- The varied personnel roles in the IPC ecosystem.
- The role of federal agencies in surveilling and remedying the pervasive threat of infectious disease.
- The challenges and strategies associated with the ongoing management of the COVID-19 pandemic and other infections common within NHs.

## **The report focuses primarily on the role of frontline nursing staff in the IPC process and incorporates three distinct initiatives:**

- An environmental scan of the infection prevention literature.
- A qualitative study of structured interviews with frontline NH staff perceptions during the COVID-19 pandemic.
- A virtual summit of international IPC experts held on December 2 and 8, 2020.

## **The report is organized into five thematic areas:**

- Staffing and resource availability.
- Training and knowledge of IPC practice.
- Quality of life impact.
- Organizational culture.
- External influences including regulations and reporting.



# METHODOLOGIES

## Environmental Scan

The environmental scan included a literature search and expert consensus based on a virtual summit of leaders in IPC in long-term care settings. Published studies were included if they were written in English, published between January 2000 and November 2020, and examined any aspect of IPC in long-term care facilities. International research from nine member-states of the Organization for Economic Co-Operation and Development (OECD) was included. We also monitored relevant listservs from infectious disease societies, CDC webpages and digital media through several waves of the pandemic.

## Qualitative Study

The [Forgotten Frontline](#) qualitative study consisted of 14 semi-structured key informant interviews with frontline staff members in long-term care facilities serving older adults in order to explore their professional experiences related to infection prevention and control. Questions explored staff perspectives on infection prevention practices, safety and administrative actions, both before and during the pandemic.

Given the sensitive nature of discussing professional experiences in long-term care during the pandemic, participants were recruited via channels external to their workplaces. The interview opportunity was shared via publicly available job posting websites (i.e., Craigslist) as well as targeted industry listservs, including long-term care coalitions and alumni networks of training programs. Advertisements included brief details about the opportunity, and interested participants provided information on their workplace and role via an online screening survey. Applicants were eligible if they were employed as a direct care staff member in a long-term care setting (nursing home or assisted living community) within New York City and had been in that role prior to March 2020. Researchers invited select applicants for a second screening by phone with the goal of recruiting participants who were diverse in terms of location of facility and professional role.

Interviews took place between October and December 2020 and were conducted until consistent themes began arising in the data. All participants provided verbal consent prior to the interview and received a \$50 gift card after the interview was completed as compensation for their time. Each interview was audio recorded and professionally transcribed, and transcripts were managed using NVivo 12.0, a software package for

qualitative data analysis. Researchers developed a coding scheme according to both preexisting and emergent themes, which was applied to transcripts systematically. Data analysis involved reviews of the coded data by multiple staff members. The protocol and all instruments were reviewed and approved by The New York Academy of Medicine's Institutional Review Board.

## Virtual Summit

The [Virtual Summit for Infection Prevention in Nursing Homes](#) brought together IPC experts in research, clinical practice and policy from around the world for a two-day webinar series in December 2020. The ten presenters covered a range of topics from addressing staffing and resource challenges to bringing a human rights lens to NH visitation policies. We identified experts in the field of epidemiology and NH regulation through consultation with our professional networks and other agencies and societies dedicated to infection control and NHs.



It's the risk, but the job I'm doing,  
it has to get done because if I  
don't do it, who will do it?

– CNA

# Nearly One-Third of U.S. Coronavirus Deaths Are Linked to Nursing Homes

## STAFFING AND RESOURCE AVAILABILITY

### STAFFING AVAILABILITY

Nurses play a critical staff role in both the care of NH residents and the implementation of IPC protocol within the facility. A resident may encounter any number of NH personnel throughout a typical day, including social workers, activity leaders, food service attendants, physicians, plant operations and housekeeping staff, administrators, occupational/physical therapists, medical imaging specialists, speech language pathologists and volunteers. Nurses, though, play a central role in the ecosystem of care. Licensed nurses and certified nursing assistants (CNAs) are the primary providers of hands-on and life-sustaining services to nursing home residents. CNAs support activities of daily living (ADLs) to varying degrees depending on the functional status of the resident, including grooming, dressing, bathing, feeding, transporting and toileting. Licensed nurses, including licensed practical nurses (LPNs) and registered nurses (RNs), implement more advanced medical treatments such as obtaining specimens (e.g., blood samples), inserting catheters, treating bedsores, administering medication, changing bandages and overseeing the provision of care to their respective units. This routine and prolonged proximity to residents and the accompanying exposure to biological and mechanical vectors of pathogen transmission put nursing staff in a consequential position in the infection control regime.

#### *Nurse staffing challenges and relationship to infections*

Adequate nurse staffing levels are pivotal to the delivery of high-quality care and have been found to play an important role in reducing the transmission of healthcare-associated infections (HAIs) in the NH setting. HAIs are infections acquired in a hospital or other healthcare setting.<sup>4</sup> Numerous nursing workforce studies have indicated that there is a shortage of nurses, which is projected to worsen as the baby boomer generation reaches advanced age.<sup>5-7</sup> The increasing number of retiring nurses coupled with a growing turnover

rate has led to an estimated 80,000 nurses in the United States leaving the field in 2020—a two-fold increase over the previous decade.<sup>8</sup> This presents an alarming situation for NH IPC efforts as a higher nurse–resident ratio has been found to be strongly correlated to reduced infection rates.<sup>9</sup> High turnover has been linked to a variety of infection-related negative health outcomes for NH residents including higher rates of urinary tract infections (UTIs), incontinence, pressure ulcers, falls, and dehydration as well as lower overall quality of life.<sup>10</sup> Furthermore, a study of NH work environments found a significant association between adequate nursing staff and a reduction in resident transfers to hospitals, a leading cause of infection in older adults.<sup>11</sup>

Inadequate nurse staffing in NHs has been identified as a primary driver of job dissatisfaction and interference with the provision of quality care. Qualitative interview participants echoed this idea. Nurses acknowledge the role of facility budget constraints, excessive paperwork and documentation, and the stress of covering work absences as reasons for high turnover. They also report that this overload limits their ability to spend necessary time with the residents in their care.<sup>12</sup> Licensed nurses are responsible for monitoring major physical and psychological changes and symptoms and communicating these changes to staff physicians since the NH resident population is often unable to effectively communicate their needs and symptoms due to cognitive, physical or neurological deficits. Improved nurse tenure in a facility allows for more accurate monitoring of the often-subtle presentation of infection symptoms.<sup>10</sup> It is not surprising then that NHs better able to retain licensed nurses have been associated with better resident outcomes. RNs and directors of nursing (DONs) with over one year of tenure in a facility are associated with improved outcomes on falls, weight loss, incontinence and UTIs.<sup>10</sup> Similarly, the tenure of skilled nurses has been shown to play a critical role in IPC as these nurses tend to exhibit a more detailed and comprehensive picture of the residents on their unit and are thus better able to identify symptoms sooner and initiate actions to limit the spread of contagious disease.<sup>13</sup> In short, RN tenure translates to fewer adverse health outcomes.

### *Cost-cutting measures and effect on infections*

*“ Understaffed, underpaid, overworked, underappreciated...  
– CNA ”*

Despite the overwhelming evidence linking adequate and experienced licensed nurse staffing to improved IPC, NHs often substitute CNAs to cover for RNs in order to maintain adequate staff presence while reducing staffing costs.<sup>10</sup> This reliance on part-time, rather



than full-time, staff produces regional NH network challenges. Low pay, scarce hours and an absence of benefits have led many nurses to seek concurrent employment from multiple NHs in neighboring communities. This interchange of staff between facilities and the growing reliance on agency contracts has been found to increase the likelihood of transmission of HAIs as nurses work back-to-back shifts at different local facilities.<sup>14</sup> Additionally, this reliance on per-diem and part-time CNAs creates barriers to facility-wide IPC implementation and complicates efforts to ensure uniform educational standards while ultimately increasing the risk of transmission among the facilities at which they work.<sup>15</sup>

Most recently, these staffing trends have played a significant role in the rapid spread of COVID-19 in NHs. Early in 2020, the CDC identified NH staff members that work in multiple facilities as a likely source of infection spread because they could contract the virus in facility A and carry the pathogen to facility B where they are scheduled for another shift. On average, U.S. nursing homes have staffing exchanges to seven facilities and eliminating these connections could have resulted in a 49% decrease in COVID-19 infections.<sup>16</sup> Virtual Summit speaker Evelyn Cook shared that many DONs, citing their awareness of the financial hardships facing their staff, felt unable to direct their staff to discontinue the practice of working in multiple facilities.

## ***Workforce challenges and effects on hand hygiene***

One cornerstone of an effective IPC program is staff training in the basics of hand hygiene. The importance of hand hygiene in healthcare settings and its connection to reduced infection spread has been discussed in the scientific literature since as early as the mid-1800s. For just as long, proper hand hygiene habits among direct care providers have been a challenge to establish and maintain.<sup>17</sup> Hand hygiene has been shown to play one of the most important roles in reducing the transmission of infectious diseases in NH communities, and has been linked to reduced mortality and a decrease in the use of antibiotics in NHs.<sup>18</sup> Yet despite the wealth of evidence regarding the importance of proper hand hygiene practices, NHs struggle to maintain high-enough levels of hand washing to limit the spread of infection within facilities. Ultimately, this constellation of workforce challenges impedes, among other things, this most critical step in IPC. The stress from an ever-increasing workload and the rush to fulfill the basic provisions of care during shifts interferes with the ability to adhere to this most critical of IPC standards. A 2019 examination of factors influencing hand hygiene recorded nurses performing necessary IPC hand hygiene precautions roughly 36% of the time before entering a room and 57% after exiting a room. CNAs were recorded at 24% and 49%, respectively, and other NH personnel displayed even lower adherence.<sup>19</sup> In the case of a NH influenza outbreak, residents with

high levels of care dependence and low mobility [those who were bed-bound] were at particular risk, suggesting that one explanation for higher infection rates in this group was associated with staff's poor adherence to hand hygiene.<sup>20</sup> These measures demonstrate the continued need for improved adherence to hand hygiene practices in long-term as well as acute care settings.

## Staffing and Infection Preventionists

When the Centers for Medicare and Medicaid Services (CMS) implemented Section 483.80 of the Code of Federal Regulations in October 2016 (see section External Influences), the description of NH IPC programs expanded to include an antibiotic stewardship program and a designated individual to serve as an Infection Preventionist (IP) to oversee the IPC program and participate on the quality assessment and assurance committees.<sup>21</sup> Maintaining a dedicated IP on staff has been found to drastically improve infection control outcomes. Nursing homes with IPs that have received some specialized IPC training were 5 to 13 times more likely to have a stronger IPC program than those with IPs lacking specialized training.<sup>22</sup> However, IPs in NHs are more likely to have multiple organizational responsibilities (employee health director, director of nursing, etc.) as compared to their acute hospital counterparts and dedicate less than half of their working hours to IPC.<sup>23</sup>

The implementation of antimicrobial stewardship programs in NHs is further challenged by factors such as the reduced immune response of older residents (limited fever response, asymptomatic infection, and communication difficulties), communication lapses, and off-site laboratory delays. A diminished immune response may make it more likely that a resident's illness will go undiagnosed and potentially lead to spread throughout their unit. IPs play a critical role by promoting interdepartmental coordination and leading facility-wide education and communication efforts.<sup>19</sup> Multidisciplinary IPC committees are needed to provide a systems-level perspective on surveillance and treatment in NHs to avoid some of these pitfalls.<sup>24</sup>

## COVID-19 and the workforce

*“ Was it different [before the pandemic]? Yeah. Basically, it was not me and 25 other patients. It was probably me and 10 or 12, so definitely I have to look after a little bit more patients. ”*

– CNA

The coronavirus pandemic has exposed the NH staffing crisis in stark terms and a variety of emerging studies have examined the role of staffing in the management of the

COVID-19 response. In this context, NHs with higher total CNA hours had better containment of the virus and decreased mortality among residents.<sup>25</sup> In addition, NHs with higher RN staffing and higher CMS Nursing Home Compare quality ratings<sup>1</sup> have the potential to better control the spread of the virus and limit deaths. In fact, in facilities with at least one confirmed case, every 20-minute increase in RN staffing per resident day was associated with 26% fewer cases.<sup>26</sup>

In a survey of 56 U.S. NHs, 83% of respondents expected significant staff shortages due to staff fears of contracting the illness and the high number of positive COVID-19 cases amongst nursing staff. Strategies for combating these shortages included volunteering for extended hours (55%), non-clinical staff temporarily filling clinical roles (45%), hiring agency staff (19%) and mandating extended hours (16%).<sup>32</sup> Additionally, NHs with higher ratings on nurse staffing were likely to have fewer COVID-19 cases, further suggesting that poorly staffed NHs may be at increased risk of disseminating COVID-19.<sup>27</sup>

*"I know some people were really afraid of the pandemic, so they just said they couldn't work anymore."*

– CNA

*"I just wanted to do part-time for my safety, and that was okay."*

– CNA

*"With the virus, there were changes to staffing or some people weren't willing to come in anymore."*

– Other Staff Member

## **Sick leave and hazard pay**

*"The morale of the staff went down because ... the administration never cared about how their workload has increased. ... The pay still remains the same. The workload has gone up."*

– Nurse

In the qualitative study (n=14), frontline staff reported a range of responses from administration regarding sick-leave and hazard pay. Most reported that sick leave policies did not change during the pandemic, but a few noted changes related to staff who contracted COVID-19 or who exhibited COVID-like symptoms. These policies typically offered sick staff members time off and required them to quarantine before returning to work. Time-off accommodations varied between full-time and part-time staff with the

<sup>1</sup> A [CMS-operated service](#) that allows consumers to view NH ratings on a variety of metrics including health inspections, staffing, and quality of resident care.

former often receiving some paid sick leave and the latter typically receiving shorter and/or unpaid time off. One participant in the Forgotten Frontline qualitative study explained that her facility's sick leave policies created a "hostile" environment because employees were expected to work even if they had COVID-19 symptoms or felt sick.

The vast majority of participants were not offered hazard pay or other financial incentives to work during the pandemic or with COVID-19 patients. Some staff noted that they knew people working similar roles in other facilities who received additional compensation and felt that such inconsistency across facilities was unfair. Participants suggested that a pay increase would not only alleviate the financial burden of new expenses during the pandemic such as the increased need for childcare while NYC schools were fully remote but would also show employees that the difficult work they do was valued and appreciated. Two participants did report receiving a pay increase as a result of the pandemic. One of them stated that staff were also promised a Christmas bonus, though the interviews were completed before the holiday season arrived, making it unclear if the supplemental payments were dispersed.

## RESOURCE AVAILABILITY

Access to necessary PPE including gloves, gowns, masks/respirators and face shields, as well as topical antiseptics such as antibacterial hand rubs, soaps and hand washing stations, are critical to maintaining an effective IPC program. Yet, nurses have reported to varying degrees that their facilities struggle to provide enough equipment for staff to protect themselves and the residents in their communities, especially in the context of emergency pandemic responses like COVID-19. Even before the pandemic, the most frequent theme to emerge from a qualitative interview analysis of barriers to proper hand hygiene was "poor infection precautions related to poor hand washing [and] lack of soap or alcohol-based hand cleansing solution at site."<sup>28</sup> A 2019 examination of nurse hand hygiene in NHs found that while alcohol-based hand rubs were "generally available," 15% of nurses were unable to disinfect their hands during active care as hand rubs were unavailable in the residents' rooms.<sup>29</sup> Adequate access to antimicrobial soaps and an increase in the number of handwashing sinks have been shown to reduce the spread of a variety of infections in NHs.<sup>9</sup> The availability of private rooms for proper isolation and/or cohorting (i.e., the group isolation of individuals infected with the same pathogen) have also been recognized as critical resources in IPC.<sup>30</sup> Adequate financial investment in robust prevention measures is necessary to curtail the ballooning annual cost of infections, estimated to be as high as \$137 million for antimicrobial therapy and \$2 billion for hospital transfers due to infection.<sup>31</sup>

## COVID-19 and PPE

The COVID-19 pandemic exposed the critical need for PPE and other resources for effective IPC. In a Spring 2020 survey of NHs from across the United States, 72% of respondents (40/56) reported inadequate supplies including N-95 respirators (90%), gowns (90%), face guards/eye protection (88%), alcohol-based sanitizer (67%), surgical masks (64%) and gloves (39%). Forty-three percent of respondents reported “lack of supplies” as their greatest concern.<sup>32</sup> A separate analysis of the CMS COVID-19 Nursing Home Data database completed in June and July 2020 found 20.7% and 19.1% of respondents reporting shortages in PPE, respectively.<sup>33</sup> These data suggest that most NHs were vastly unprepared for the onset of an emergent pandemic and that while some NHs recovered, one out of five nursing homes were still under-resourced three months into the pandemic. For-profit nursing homes had substantially higher rates of PPE shortages.<sup>33</sup> Of particular note, NHs that had healthcare worker union representation had a 30% relative decrease in COVID-19 mortality compared to NHs without union representation.<sup>34</sup> Dr. Michael Wasserman, Virtual Summit presenter, noted “sufficient and properly used PPE” as the first of the California Association of Long-Term Care Medicine’s “quadruple aim” of COVID-19 policy recommendations and stressed that without sufficient PPE, “the virus wins.” The other aims include readily available testing of staff and residents, stellar infection prevention, and emergency preparedness/incident command mode.

The findings from the Forgotten Frontline qualitative study revealed similar resource challenges. Nearly all participants reported PPE shortages but did not report shortages of cleaning supplies. Some participants reported being required to reuse single-use PPE or even purchase their own materials either to conserve resources for the facility or because they felt the quality of the provided PPE was poor. Nearly every participant reported sufficient access to PPE after the initial spring surge in New York City, but some were doubtful of their facility’s preparation for subsequent waves.

*“Basically, there was just a shortage on masks, so we were being told to either buy our own masks or—yeah, that was our only option, to buy our own masks.”*

**– CNA**

*“We had everything we needed ... I would say on that basis, management really cared about that.”*

**– Other Staff Member**

*“They did a great job at providing us with the things that we needed ... any time we needed gloves, they had fresh gloves, fresh masks.”*

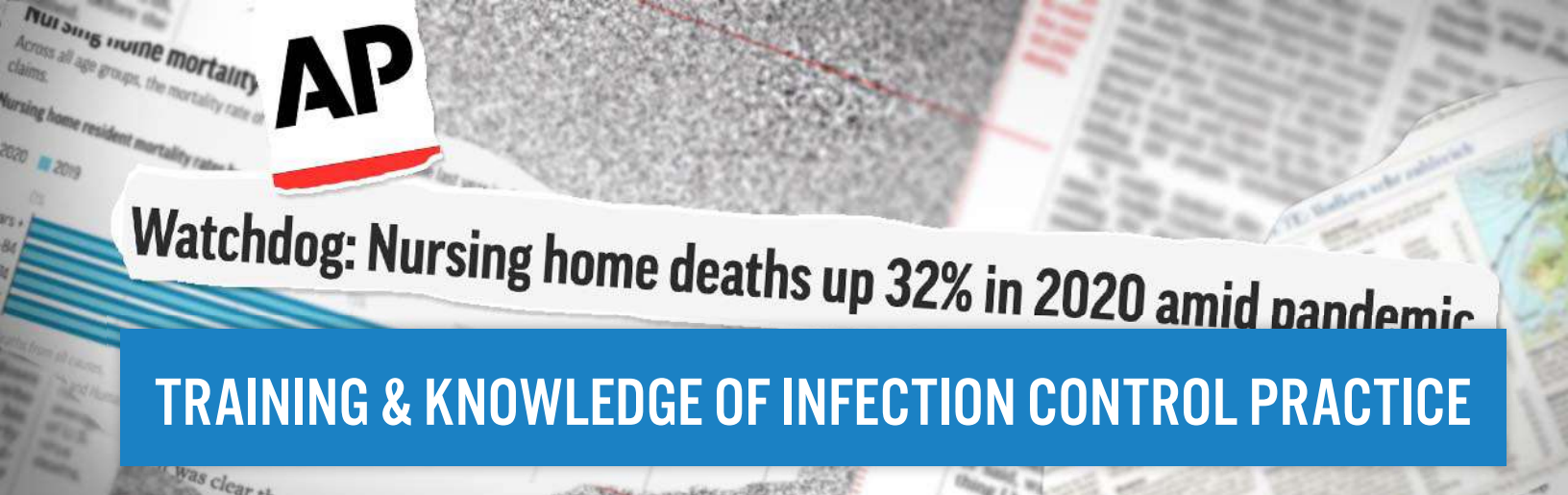
**– CNA**



“

But definitely that added pressure [from caring for vulnerable patients] is something, and you can feel it. It's tense, you know? Because we're working with human souls, and if we're not careful ... one false step or one missed move and things can go really bad.

– CNA



## Watchdog: Nursing home deaths up 32% in 2020 amid pandemic

### TRAINING & KNOWLEDGE OF INFECTION CONTROL PRACTICE

#### Timing, frequency and content

“ Before, there wasn’t really anyone to [provide oversight] or make sure these rules were being implemented. I just think some people just naturally knew—‘Oh, I work in the medical field; I need to do this, this, and this’—and some people just didn’t care, in a sense, and had to be told.

– CNA ”

Training in the foundations of IPC is arguably the most critical element of an effective IPC practice. Yet, training protocols in NHs vary widely. There exist no uniform recommendations for the content and regularity of trainings for NH direct care staff. Findings from Forgotten Frontline qualitative study found similar variation. Some participants reported that their facilities held regular infection prevention trainings (ranging from twice per month to once per year) prior to the COVID-19 pandemic; others explained that training occurred while they were in school and upon being hired. Most participants felt these trainings were sufficient and effective.

“I think my [nursing] home did a great job even before [the pandemic] telling them ways to stay safe and talking to them about that.”

– CNA

“It wasn’t hard most of the time. We do have our patients in mind and also our staff because we do have family that we don’t want to carry anything to.”

– CNA

#### Knowledge gaps

The inadequate understanding of IPC processes and protocol among NH staff is well documented in the literature. In interviews with direct care workers, Cohen et al. identified “lack of understanding” as one of four primary themes that impact the IPC decisions made by NH staff—specifically, “Not all statements and practices were aligned with current evidence or guidelines and may represent misunderstanding of infection concepts.”<sup>30</sup>

Misunderstandings of key infection control concepts such as cohorting, isolation, the risk of bacterial colonization, and proper PPE use have been documented among NH staff, including IPC leaders for their facilities.<sup>30</sup> One qualitative study examining perceived barriers to IPC for CNAs in NHs found “knowledge/training” to emerge as a theme in staff interviews. Specifically, the lower educational requirements for CNAs compared to other NH personnel and lack of a uniform educational approach were identified as an impediment to information delivery. One respondent, an RN in charge of staff development, highlighted the importance of stressing basics such as hand hygiene rather than focusing on higher-level IPC constructs, while another respondent remarked that training focuses too much on how to perform hand hygiene while neglecting to educate on the actual consequences of poor practice.<sup>15</sup> These varied opinions underscore the challenges to implementing uniform educational standards for IPC in NHs.

In addition to the barrier of lower education standards for CNAs, language and culture have been found to play a significant role in the success of training efforts since a large proportion of NH staff members may be non-native speakers who are unable to fully comprehend available resources designed to aid in their hand hygiene and other IPC practices. To add to the confusion, IPC terminology used within different training tools and by various agencies is often inconsistent or even contradictory. For example, the Minimum Data Set 3.0, the standardized assessment tool for all Centers for Medicare and Medicaid Services (CMS) certified NHs, includes infection definitions that do not align with the HAI terminology recommended by the CDC.<sup>35</sup> For this reason, pictures and color-coded messaging have been suggested as a means of reaching diverse staff populations.

Gaps in IPC knowledge have been documented in quantitative as well as qualitative studies. A 2018 knowledge assessment of licensed nurses (439 RNs, 378 LPNs) and 624 CNAs throughout the U.S. reported limited knowledge of even the most basic of hand hygiene best practices. Only 25.2% of unlicensed personnel correctly identified how long to rub hands while washing and even fewer (10.6%) knew which cleansing agent was most effective at killing germs on one's hands. For these measures, licensed personnel provided correct answers only 28.5% and 11.7% of the time, respectively. Knowledge was also limited amongst unlicensed personnel as to whether blood-glucose meters should be shared between multiple residents (44.4% correct) and the application of standard precautions (16.5% correct). On these measures, licensed personnel offered correct responses 31.1% and 26.1% of the time, respectively. With licensed nurses performing only marginally better than CNAs in this study, it raises questions as to what extent staff education levels impact IPC knowledge and outcomes. It is of particular note that these low numbers of correct answers were recorded despite 100% of the participating NHs providing hand hygiene-specific training programs to staff.<sup>36</sup>

Before the IP-specific educational standards set forth in the 2016 Final Rule [see section External Influences] came into effect, IP staffing and education varied widely throughout the country. Not surprisingly, the quality and extent of an IP's own training impacts the facility-wide education they provide. Even prior to the implementation of the Final Rule, NH-specific training for IPs had been linked to fewer infection-related deficiency citations for NHs.<sup>37</sup> Beyond managing the burden of multiple facility responsibilities, IPs had reported lacking formal training or certification in IPC and having learned through on-the-job experience and from peers. Despite these limitations, IPs were nonetheless viewed by peers as IPC experts.<sup>38</sup>

## Approaches to IPC education

*“ You have to be qualified to work here, so they expect you to know a lot of stuff when you come in. ”*  
– CNA

A number of factors have been found to influence the effectiveness of IPC training and should be considered when IPs are developing education plans. The timing (e.g., during new-hire orientation) and frequency of staff training has been found to have an impact on quality measures. Tailored and continuous training programs are more effective than single interventions, especially for direct care providers who are often responsible for the identification and reporting of infection symptoms.<sup>39</sup> In fact, infrequent, irregular and non-standardized training has been identified as an environmental risk factor for infection.<sup>24</sup>

In a national study of catheter-associated urinary tract infections (CAUTI), NHs that used both a technical and socioadaptive education bundle had a 54% rate of reductions in CAUTI, with 75% of all facilities showing an improvement of 40% or more.<sup>40</sup> The technical bundle included clinical skills training on the improvement of catheter care and maintenance, aseptic insertion and antimicrobial stewardship, and the socioadaptive bundle addressed leadership, effective communication and team building. Notably, the educational sessions were interactive, regularly scheduled (monthly webinars) and included content reminders such as infographics, simplified train-the-trainer materials, and pocket cards. This study demonstrates the value of a multidimensional and multidisciplinary training approach that includes sustained repetition and reminders.

Innovative ideas for training have been explored in the literature. Efforts to employ nursing students in observational roles within actual NH units have demonstrated a wide array of benefits. Nursing students' reflections on their observations of real-world clinical scenarios have increased their awareness of and mindfulness toward their hand hygiene

habits as well as other competencies.<sup>28,41,42</sup> Students' reflections included insight into the value of moving from theoretical concepts to real-life situations as well as observing what clinical scenarios present challenges to following through on critical IPC steps. Furthermore, students noticed that some employees became more conscious of their hand hygiene in the presence of a student-nurse and became more attentive to and mindful of their IPC actions.<sup>42</sup> These studies suggest that building more immersive, clinical learning opportunities into nursing curricula may aid in developing habits that are conducive to improved IPC practices. However, it is important to note the limitations of observational approaches to gaining insight into HCW hand hygiene behavior. The Hawthorne effect explains the phenomenon of observed individuals modifying their behavior in response to the presence of an observer and may not translate into long-term behavior change. A number of studies have found that data gathered through direct observation may not be an adequate performance indicator for accurately assessing hand hygiene compliance.<sup>43,44</sup>

*"We usually just had the typical universal precautions training program that we would watch, like videos on the computer, and then take a test."*

**– Other Staff Member**

*"When you get hired, it's training how you should clean things and how you should go about things. Your first couple weeks here, you're in a deep training. And then, every other month, there's also a training ... they did a great job at just always communicating with us what we should and shouldn't be doing."*

**– CNA**

## ***Training amidst the pandemic***

The rapid spread of the COVID-19 pandemic brought with it tremendous urgency in staff training. The novel nature of the coronavirus meant that the course of SARS-CoV-2, and the best practices in preventing and treating it, were poorly understood early in the pandemic. Critical and rapidly changing information was communicated through channels from federal and state agencies and disseminated to NH staff by administrators through updates to policies and frequent trainings.

In New York City, the epicenter of the pandemic during April 2020, frontline staff encountered these morphing recommendations and the educational initiatives that accompanied them. The vast majority of respondents in the Forgotten Frontline interviews reported receiving additional training and policy updates on COVID-related IPC as well as information about the virus, PPE and its appropriate use, handwashing and sanitation, and



updates to policies and regulations within their facilities. The type, rigor and frequency of the trainings varied. Some were implemented in person, others online via computers and mobile devices. Some facilities offered routine monthly trainings while others were less frequent. Some respondents reported that supervisors would provide real-time coaching and feedback on proper PPE donning and doffing during the trainings.

However, respondents also reported a range of enforcement in their facilities. Some respondents reported that, without adequate supervision, staff could exercise any degree of adherence that they wished when it came to hand hygiene and PPE use while others stated that administration would send home staff found without proper PPE or would implement disciplinary write-ups. Dr. Patricia Stone, a Virtual Summit presenter, identified “focus on hand hygiene” as a core theme that emerged in response to the pandemic but, in alignment with the findings of the Forgotten Frontline report, highlighted that the monitoring of staff compliance with hand hygiene policies was often informal.



**I always emphasize, you know, the way you want your parents to be treated is the way you treat your residents. That's my philosophy.**

**– CNA**

# Covid-19 outbreaks up to 20 times more likely in large care homes, study finds

The Guardian

## QUALITY OF LIFE IMPACT ON RESIDENTS

*“ Sometimes I think it’s not even the COVID that actually kills a lot of them, but the lack of not seeing [their] relatives and being able to talk to them. I think a lot of them died of a broken heart. ”*

– CNA

Many IPC practices for NH care have been imported from acute care models for all ages without consideration of the specific needs of an older, more vulnerable population receiving long-term care or the capabilities of long-term care facilities. Shared and congregate spaces, including bathing areas, dining rooms, therapy and treatment rooms, and activity areas are characteristic of NHs and contribute to the social well-being of residents. By definition, the NH serves a dual role of primary residence and care provider, which brings with it a unique set of clinical and lifestyle challenges concerning quality of life (QOL). Tension often exists between effective facility IPC procedures and the maintenance of the home-like community living experience inherent to NHs. Nursing staff navigate this tension by managing HAIs through a range of techniques, such as restricting colonized residents from shared spaces, engaging them in one-to-one interactions and using bedside commodes rather than shared bathrooms.<sup>38</sup> In interviews conducted with nurses, nursing directors and IPC specialists, Cohen et al. identified conflicts with QOL goals as one of four primary factors in the decision-making process for when a resident should be placed in isolation, weighing it against the perceived risk of transmission, availability of resources (private rooms, staff, etc.) and a general misunderstanding of proper IPC protocol.<sup>39</sup> This underscores the centrality of QOL in care planning decisions within the NH environment.

*“These people work hard all their life, and they are entitled to dignity...You have to be good to those residents.”*

– CNA

Three of the top four reasons for transfers from NHs to hospitals among Medicare beneficiaries are for different types of infections. The effects of these hospital admissions

on residents are particularly burdensome; an elevated risk of contracting multidrug-resistant organisms (MDROs), disorientation, disruption of care plans, and unnecessary medical interventions all contribute to decreased QOL.<sup>45</sup> There remains a general lack of understanding of the natural history of certain infections and of contact precaution best practices that often leads to unnecessarily prolonged isolation, which can have a stigmatizing effect on residents.<sup>46</sup> Despite this, isolation and cohorting remain critical elements of limiting the spread of infectious diseases in NHs.<sup>47</sup> In the global response to the COVID-19 pandemic, the ethical implications of long-term isolation and visitation restrictions must be carefully weighed by clinicians to maximize QOL while ensuring the broader safety of staff, families and other residents.<sup>48,49</sup>

Relatedly, the pandemic radically altered many aspects of long-term care that have, until recently, been largely taken for granted. Strict isolation procedures have given rise to touch starvation, the limiting or complete elimination of skin-to-skin touch, which can compound the negative effects of isolation and increase stress, anxiety and depression among NH residents.<sup>50</sup> Additionally, COVID-19 has exposed the digital divide, a previously under-recognized form of social inequality. This gap in digital access and digital literacy in the NH population has interfered with multiple aspects of typical NH experiences, most notably the routine visits from loved ones.<sup>51</sup>

Virtual Summit presenter Dr. Donald Macaskill suggests that NH resident quality of life should be framed within a human rights perspective when considering NH policies and regulations around the COVID-19 pandemic. The PANEL framework that he discussed links five distinct aspects of human rights into a cohesive structure that places the resident at the center of all decisions and promotes the dignity and welfare of the individual. The five elements are:

**P** – Participation recognizes that interventions into another person's life should never be taken without that person's participation, involvement and ownership.

**A** – Accountability calls for clear lines of accountability, not just within facilities but to the residents who live in those facilities.

**N** – Non-discrimination asks whether older individuals have been treated in a manner that recognizes their full humanity, their capacity and their citizenship.

**E** – Empowerment implies that not just professionals but also residents should be empowered to control the measures they take.

**L** – Legality refers to whether human rights law has been observed in COVID-19 responses.

Macaskill suggests that the root of these human rights challenges may be found in the widespread adoption of “acute-sector health setting IPC measures into what is essentially somebody’s home.” He advocated for a human rights-based charter that balances risk, connection and keeping people safe. He also emphasized that human rights are not solely about legality and law, but about relationships and what it means to be fully human.

Responses from the Forgotten Frontline study also addressed the decline of QOL among residents during the pandemic response and the effect that restrictive policies had on their physical and mental health. Beyond the fear and distress of contracting the virus, facility policies that prohibited all visitation and canceled social and congregate programming worsened residents’ QOL. Some frontline staff discussed the alternatives that emerged, such as outdoor visits and video conferencing sessions, but these methods were seen as insufficient to meeting residents’ needs. Many frontline staff reported taking on the added responsibility of providing emotional and social support for residents. Inadequate staffing and social distancing, however, remained persistent obstacles to providing this important dimension of care.





**We were the forgotten frontline workers, and we still are. I don't think anybody realized what we had to deal with.**

**– CNA**

# 'Where people come to wait to die': COVID-19 in US nursing homes

## ORGANIZATIONAL CULTURE

Organizational or institutional culture has been defined as the accumulation of invisible and often unspoken ideas, values and approaches that permeate organizational life.<sup>52</sup> Beyond resources, staffing and training, organizational culture has been found to play an important role in the success of IPC programming within NHs. A growing area of research has indicated that educational reinforcement measures alone do not necessarily result in sustained changes in behaviors such as hand hygiene nor do they lead to improved antimicrobial stewardship. A greater focus on teamwork and shared responsibilities, as opposed to a blame-and-shame style of management, are elements key to reframing organizational culture. The importance of role modeling and interdisciplinary collaboration has also been explored in recent literature. In essence, a systems approach to IPC measures may prove more fruitful than placing responsibility solely on individual clinicians. In this context, a systems approach examines the interdisciplinary and relational nature of all elements that influence IPC, with particular attention to executive, mid-level and local leadership within these systems.<sup>53</sup>

### *Moving beyond education and repetition*

While hand hygiene has been identified as a primary factor in reducing HAI spread, a variety of facility-level influences are proving instrumental to the maintenance of IPC standards. A mixed-methods study from a German NH suggested that “isolated interventions aimed at improved hand hygiene in nursing homes will demonstrate little effect if not supported by a shared attitude by nurses and nursing managers that hold[s] hygiene management as a priority for resident safety.”<sup>29</sup> These findings are consistent with the role of a broader, facility-wide adoption of the importance of IPC protocol that seeks to change the attitudes of NH direct care providers toward hand hygiene and related practices. The qualitative nurse interviews portion of the study revealed the ongoing pursuit of maintaining a “home-like,” as opposed to a clinical, environment within the NH as an impediment to instituting cultural change. The authors conclude that shifting staff nurses’ conceptualization of NHs from that of purely a home-like environment to one of a healthcare setting where infection spread is an ongoing and common threat will aid in

establishing better adherence to hand hygiene in these settings. Dr. Patricia Stone spoke of this inherent tension that exists between maintaining commitment to IPC standards and the need to respect the environment as the primary residence for the individuals who are being treated.

### ***Teamwork, leadership and shared accountability***

Other studies identified an interdisciplinary approach to IPC as critical to establishing and sustaining a culture change and attitudinal shift. Uchida et al., in a qualitative study of staff perceptions of IPC policy changes, found the theme “organizational climate” and subthemes “interdisciplinary collaboration,” “communication” and “environment” to be essential to the maintenance of an effective IPC program. Respondents cited infection control meetings as an opportunity for effective communication between departments, with the majority of respondents citing the need to “engage everybody” in a shared value of prevention.<sup>54</sup> Dr. Nimalie Stone, a featured presenter at the Virtual Summit, echoed this by highlighting the importance of organizational culture and communication in sustaining prevention efforts and clinical operations. Dr. Stone underscored the significance of having engaged facility leadership coordinating with multidisciplinary teams on COVID-19 prevention and response strategies and how these “systems” approaches can help leaders better understand and address staff fears and effective means of communication throughout the organization. Additionally, Dr. Michael Wasserman cited leadership as the binding agent that holds together the other elements of the “quadruple aim” COVID-19 response [see sub-section COVID-19 and PPE].

The notion of shared accountability and a growing emphasis on teamwork has been endorsed across disciplines. Raveis et al. found both the breaking down of departmental silos and the development of an ethos of shared accountability to be critical steps in establishing effective teamwork in the implementation of IPC protocol. Four sub-themes of institutional culture identified through staff interviews included “[a] linking IC adherence to patient outcomes, [b] generating group accountability and ownership, [c] taking action for the collective good, and [d] facilitating teamwork.”<sup>52</sup> Notably, these themes eschew a narrow, purely individual focus on IPC behaviors and instead seek to broaden the understanding and impact of their decisions on the organizational culture as a whole. Respondents spoke of the importance of empowering staff by communicating that their behaviors have real-world effects on patient outcomes. Additionally, respondents viewed IPC compliance as a form of advocacy for their patients. For example, because they perceived their roles as patient advocates, they expressed more comfort with correcting lapses in a colleague’s IPC practices. However, the existence of institutional and social power differentials within the care environment were reported as barriers to the concept

of shared accountability, as some staff may feel uncomfortable correcting or redirecting a colleague of higher authority. High-level endorsement from facility administration was seen as a foundational element for the success of IC policy implementation.

Several respondents in the Forgotten Frontline report remarked on the need for administrators and managers to communicate their support and commitment to the direct care staff by increasing their presence on units and being more honest and transparent with them. The phrase ‘in this together’ emerged when discussing ways in which leaders could improve staff morale and communicate their appreciation for the risks taken by staff. Others expressed a loss of trust and respect for management for the perceived lack of transparency.

## ***Environmental stress and burnout in the nursing home***

“

*I try to tend to everyone's needs, but I can't. ... I just feel like it's too many people.*

– CNA

”

“

*Honestly, I've questioned my safety at work. I think this is a big wake-up call.*

– CNA

”

Work environment, a major component of organizational culture, is also significantly related to quality outcomes, nurse burnout and job satisfaction. Reductions in nurse burnout have been associated with decreases in HAIs in hospital settings.<sup>55</sup>

However, research into the effect of work environment on HAIs in LTC settings has not been as robust. Nurses working in NH settings in particular have higher rates of job dissatisfaction and burnout than any other setting that employs nurses.<sup>56</sup> The ability of nurses to fulfill their multiple responsibilities relies heavily on a healthy and supportive

*"I was already making beds, keeping rooms clean, one patient room a day, and instead of that, it was maybe two or three times a day ... so that was definitely a big thing."*

– CNA

*"I remember one housekeeping guy, he was very upset. He was like, 'I don't want to jeopardize my children's health'. Some people [got] anxious from it. I was anxious."*

– CNA

work environment, one in which nurses have “adequate staff and resources, supportive managers, strong nursing foundations underlying care, productive relationships with colleagues, input into organizational affairs, and opportunities for advancement.”<sup>11</sup>

Burnout within the nursing profession has been described as having three facets: “emotional exhaustion, depersonalisation, and a reduced sense of personal accomplishment.”<sup>57</sup> In a survey of nurses working in NHs, 95% of those experiencing burnout and 83% of those experiencing job dissatisfaction reported at least one missed care event during their most recent shift compared to 72% among those not experiencing burnout.<sup>58</sup> Examples of missed care events include, among other things, poor patient surveillance of early symptoms of an infection, forgetting to document a change in a patient’s status or neglecting to change a wound dressing—errors that could unintentionally contribute to infection spread.

*“A lot of people—I wanna say at least 90% of the CNAs and nurses—have children, which means none of these kids are in school. So, they all have to pay for childcare.”*

— CNA

## ***Just culture & role modeling***

All of this suggests the need for a model of health care culture described in the landmark Institute of Medicine medical error report *To Err is Human: Building a Safer Health System*.<sup>59</sup> This paradigm—just culture—seeks to eliminate the punitive structures that have long existed in quality improvement processes and replace them with new, systems-based solutions. Addressing medical errors relies, first and foremost, upon accurate reporting. Frontline staff who fear punishment or penalty for reporting their own or a colleague’s error will be less inclined to share this information with managers or supervisors.<sup>60</sup> Just culture emphasizes shared accountability between leadership and staff and the subsequent organizational learning from mistakes that arise in the system. Findings from a just culture learning collaborative have indicated that eliminating the perception and communication gaps between direct care workers and leaders was the most important step in developing a sense of shared priority for patients.<sup>61</sup> Just culture systems minimize blame for individual transgressions and instead place accountability for safe systems on the leaders. The dimensions of leadership identified for study were excerpted from the Agency for Healthcare Research and Quality Hospital Survey on Patient Safety Culture<sup>62</sup> and included the following items: “open communication, feedback and communication about errors, frequency of error reported, manager expectations/actions promoting patient safety, management support for patient safety, nonpunitive response to errors, organizational learning, and overall perceptions of safety.”<sup>61</sup>

The first of the CDC's seven core elements of antimicrobial stewardship in hospitals and NHs is leadership commitment.<sup>63</sup> Beyond the supervisory elements of their work, leaders are also responsible for being role models for the continued adherence to proper protocol and procedures for effective IPC. A survey of nurses and CNAs found that both groups look to their nurse managers as role models for antimicrobial stewardship and hand hygiene. Nurse managers, however, underestimated the extent to which they were viewed as role models.<sup>29</sup> IPC efforts would therefore benefit from nurse managers gaining a deeper awareness of the impact of their actions on their supervisees. This also confirms that clearer and more transparent communication between staff and leaders is needed to narrow the perception gap between staff and supervisors and to promote the building of a more cohesive IPC strategy. In Hammerschmidt's interviews, simply asking leaders about their perceptions of their own role modeling prompted self-reflection and the realization of several of their own gaps in hand hygiene practices. Their behaviors tended to reflect their own personal conceptualization of infection risk rather than their organization's written policies and procedures. Effective clinical nurse leadership and role modeling have been shown to translate to real improvements in resident care including reduced hospitalizations and fewer bedsores.<sup>11</sup> However, in a study of thirty-six South Korean NHs, nurses in administrative leadership positions had no detectable impact on resident outcomes.<sup>10</sup> This suggests that clinical role modeling during direct patient care may have a major role in influencing behavior change among co-workers (even though clinicians may



## EXTERNAL INFLUENCES: REGULATIONS AND REPORTING

underestimate the impact of their own behavior) whereas the influence of administrators may be more indirectly influential (e.g., by helping to create the work culture and environment). Clearly, these are important issues for which further research is necessary to better understand these effects and identify effective behavior change strategies.

This section provides an overview of the last decade of regulatory initiatives for NHs, including CMS site surveys, the CMS “final rule,” the expansion of the National Hospital Safety Network to include NHs, and other database and surveillance programs. These initiatives require the coordination of federal, state and regional stakeholders. Finally, a cursory look at four international regulatory summaries provides a global context for IPC efforts in response to the COVID-19 pandemic.

### *Recent regulatory developments*

Nursing home IPC programs are impacted by a number of external factors that influence the treatment, surveillance and reporting necessary for adequate disease prevention. The ongoing challenges of HAIs and MDROs in LTC settings have necessitated the creation of comprehensive and coordinated plans for NHs. In response to CDC and WHO reports published in 2013 that identified antimicrobial resistance and HAIs as major growing global threats, the federal government created the Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria to generate policy and program recommendations<sup>64</sup> and a National Action Plan for Combating Antibiotic-Resistant Bacteria.<sup>65</sup> The action plan was “designed to guide action by public health, healthcare, and veterinary partners in a common effort to address urgent and serious drug-resistant threats that affect people in the U.S. and around the world.” This plan served as a significant step in aligning the U.S.’s antimicrobial stewardship with the goals of international agencies.

### *CMS, final rule, and survey inspections*

CMS plays a critical role in holding NHs accountable for maintaining effective IPC programs. In addition to setting payment rates for diagnostics, testing and antibiotic prescriptions,

CMS has made significant efforts to promote IPC and antibiotic stewardship by setting qualifying standards that NHs must implement in order to receive reimbursement for services provided to residents. The most significant of these Requirements for Participation was the 2016 final rule that outlined three mandatory requirements for IPC programs in NHs:

- November 2016: an infection prevention and control program in place.
- November 2017: an antibiotic stewardship program.
- November 2019: an infection preventionist with specialized IPC training.<sup>21</sup>

To qualify, an IPC program must have a “system and policies and procedures in place to identify, report, investigate, and control infections and communicable diseases among residents, staff, and visitors.” A qualifying antibiotic stewardship program “must include the use of antibiotic use protocols and a system to monitor antibiotic use.”<sup>66</sup>

Prior to the 2016 final rule, IPC activities in NHs consisted of a patchwork of initiatives and policies that varied between facilities across the country. A baseline national assessment of IPC programs before the implementation of the final rule found the most common IPC policies to be “guidelines ... for antibiotic use and collection of data on antibiotic utilization.”<sup>2</sup> This study also showed that of staff members who were fulfilling a facility role of IP, only 40% had any specialized training and only 3% maintained certification in IPC. The final rule was designed to significantly improve the quality of IP leadership and championing by setting minimum educational requirements for these positions.

Annual inspections by CMS are also designed to contribute to IPC quality assurance measures. The federal government relies on coordination with state health departments to implement on-site NH surveys to assess the degree to which a facility is upholding the standards of care outlined by CMS. Failure to comply with these standards can result in federal enforcement actions or correctional remedies such as termination of the provider agreement, financial penalties, transfer of residents, and denial of payment for all Medicare and/or Medicaid recipients. As featured Virtual Summit presenter Karen Hoffman pointed out, barriers to monitoring best practices in NHs exist in the surveying process. She explained that surveyors often do not have any expertise in IPC and they must assess 21 different regulations, of which IPC is just one. To further complicate matters, CMS and the CDC do not always work in a perfectly complimentary fashion. To illustrate this, Hoffman explained that CMS is responsible for assessing IPC compliance with “minimum health and safety standards,” though it does not automatically adopt the evidence-based guidelines developed by the CDC as they are thought to be too burdensome for NHs. To assist NHs and IPs with the implementation of these complex policies, significant changes

are accompanied by interpretive guidelines that offer clarifying support to NHs as they endeavor to meet the updated standards.<sup>21</sup>

While the pandemic has elevated the awareness of NH IPC in the national healthcare dialogue, the LTC industry's struggle to reduce infection spread has been ongoing for years. A May 2020 report by the Government Accountability Office for the U.S. Senate Committee on Finance found that 82 percent of CMS-certified NHs had at least one infection-related deficiency between 2013–2017 and nearly half of those had received infection-related deficiencies for multiple consecutive years, indicating a pervasive problem.<sup>67</sup> Furthermore, this report found corrective actions for IPC deficiencies were virtually nonexistent with only 1% of NHs receiving an enforcement action. Ninety-nine percent of all IPC deficiencies were designated “not severe,” meaning they were deemed to have caused “no harm” to the resident. This designation ignores the reality that the onset of infection symptoms is typically delayed after exposure and severe illness could develop in the days post-survey.

### ***National Healthcare Safety Network (NHSN) expansion***

The CDC's NHSN is “the nation's most widely used healthcare-associated infection tracking system” and enables healthcare organizations, states and regions to better monitor problem areas, measure the effectiveness of interventions and continue a coordinated effort to push for the elimination of HAIs.<sup>68</sup> The network, initially designed for acute hospitals, added a Long-Term Care Facility Component in 2012 with the goal of tailoring its surveillance to the unique needs of LTC facilities and residents. This component includes three focus areas:

- HAI: Urinary Tract Infections.
- Multidrug-resistant Organism (MDRO) and Clostridium difficile Infection (CDI).
- Prevention Process Measures.<sup>69</sup>

Despite the well-documented need for improved surveillance and coordination, only 1.9% (301 of 15,700) of NHs in 2016 had enrolled in the NHSN network.<sup>70</sup> However, after partnering with CMS's Clostridium Difficile Infection Reporting and Reduction Project and with the regional Quality Innovation Network–Quality Improvement Organizations (QIN–QIOs), enrollment increased to 19% by September 2017. The partnership provides “individualized support for NH enrollment in the NHSN and reporting of CDI, educational resources on CDI prevention and antibiotic stewardship, and opportunities for sharing lessons learned” with other network members.

The causes of persistent low membership in the NHSN Long-Term Care Facility Component have been examined. Dick et al. identified NH size (total number of beds) to be a consistent

characteristic of early adopters of the NHSN program.<sup>71</sup> This seems to suggest that larger facilities may have benefited from increased institutional resources that enabled early engagement with the NHSN. A qualitative study of NH personnel's perception of the NHSN network found mixed responses in terms of perceived support in the NHSN enrollment process, the degree of burden from reporting expectations, and a general lack of knowledge of NHSN amongst non-enrolled and enrolled NHs alike.<sup>72</sup> The authors identified several themes through qualitative interviews including benefits, barriers, risk adjustment and data integrity. All respondents who worked in already-enrolled NHSN NHs stated that the quality of care in their institutions had improved, with many reporting that the process of reporting alone improved their awareness of HAIs. Some respondents shared concerns regarding acquiring a negative regional reputation if their facility reported HAIs without appropriate risk adjustment of rates. Others mentioned that differences in IPC definitions between CDC and CMS could lead to discrepancies in reported data which, if tied to reimbursement, could negatively impact a facility's commitment to valid and reliable reporting.<sup>72</sup> Definitional discrepancies in CDC and Minimum Data Set infection diagnoses have been identified as an area of concern in studying long term trends in NHSN reporting<sup>35</sup> since uniform definitions are critical to gathering meaningful and accurate data.

## ***International Regulatory Examples***

Infection prevention and antimicrobial resistance are global concerns with critical implications for global health, food security and development throughout the world. In May 2015, the World Health Assembly of the WHO designated antibiotic resistance as a high priority item for global health.<sup>73</sup> This designation included the endorsement of a global action plan with five strategic objectives:

- To improve awareness and understanding of antimicrobial resistance.
- To strengthen surveillance and research.
- To reduce the incidence of infection.
- To optimize the use of antimicrobial medicines.
- To ensure sustainable investment in countering antimicrobial resistance.

Below are four brief examples that highlight the wide variation in the implementation of IPC policies and regulations around the world and the role these efforts may have played in the outcomes seen in long-term care institutions:

## Brazil

The beginning of Brazil's HAI programs can be traced to the development of the first Infection Control Committee in the 1960s. In the early 1990s, the development of Brazil's universal health coverage program, called the Unified Health System, resulted in increased integration of HAI programs into hospital systems and heightened policy support from the federal government. In the late 1990s, following several outbreaks, these programs benefited from further regulatory development by the National Sanitary Agency. By 1998, the Ministry of Health had defined surveillance guidelines and monitoring system requirements at the national, state and local levels.<sup>74</sup>

Despite this established IPC infrastructure, lapses in leadership and internal disputes at the federal level contributed to Brazil's mismanaged response to the pandemic.<sup>75</sup> One study calculated a 22% case fatality rate among care home<sup>2</sup> residents during the period from April to August 2020. Attaining accurate COVID-19 incidence and mortality data in long-term care has been complicated by a reliance on self-reporting by care home owners; the federal government's lack of data stratification by place of residence; and the designation of care homes as social, as opposed to medical, institutions.<sup>76</sup>

## Canada

In 2016, Infection Prevention and Control Canada (IPAC Canada) issued the Infection Prevention and Control Program Standard. The Program Standard, containing 90 individual standards, was developed to “describe the culture, scope and foundational framework necessary for the development of a successful IPAC program, synthesizing best practices, guidelines and recommendations from Canadian (national and provincial) bodies and international agencies.”<sup>77</sup> Section 1 of the Program Standard outlines six core ideas that create a culture of safety in Canadian healthcare organizations: 1) IPAC Culture; 2) IPAC Program, Mission, and Values; 3) IPAC Program Champions and Role Models; 4) IPAC Culture of Learning in the Organization; 5) IPAC Work-life; and 6) Patient Safety. Other sections of the Program Standard include IPAC Education; Surveillance Program; Hand Hygiene Program; Patient Flow; and IPAC Program Governance and Leadership. This Standard applies to all healthcare organizations, including long-term care. Nonetheless, Canada saw a nursing home resident case fatality rate of 34% during the initial wave from March 2020 to August 2020.<sup>78</sup>

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2      Care homes provide 24-hour care most often through a social model and do not require medical specialists to be on staff.

## Italy

In Italy, uniform IPC regulations have lagged behind other countries. Based on a 2018 national survey, there was considerable variation in IPC protocols for hospitals and other healthcare facilities, most likely due to the absence of national legislation, rules or regulations concerning HAI prevention.<sup>79</sup> This survey highlighted the “lack of human and economic resources; overlapping of roles, particularly in the area of patient safety; lack of hospital networks in this field ... and lack of specific training in undergraduate and postgraduate courses” as critical issues in the prevention of HAIs throughout the country. While there exists an awareness of the threat of HAIs, the lack of a cohesive, coordinated approach to effectively managing them and maintaining patient safety has complicated IPC efforts. The absence of these structures may indicate why Italy struggled to adequately contain the COVID-19 pandemic and why municipalities with NHs were likely to have double the mortality rates of municipalities without NHs.<sup>80,81</sup>

## South Korea

In 2003, South Korea passed a medical law amendment that set IPC staffing and committee guidelines for hospitals of 300 beds or more.<sup>82</sup> The national response to the Middle East Respiratory Syndrome (MERS) in 2015 prompted even more stringent protocolization of IPC processes and led to the wide cultural acceptance of mask-wearing and social distancing.<sup>83</sup> Furthermore, South Korea implemented mandated staffing ratios for Infection Control Advanced Practice Nurses (similar to Infection Preventionists) in hospital ICP departments.<sup>82</sup> South Korea's robust educational and financial response to MERS seems to have contributed to the nation's preparation for and successful containment of COVID-19. A study of five NHs in the city of Gyeongsan-si that reported high levels of COVID-19 cases found a combined case fatality rate of 12.2%, much lower than estimates for other nations.<sup>84</sup>



# DISCUSSION AND CONCLUSION

## Implications for Practice, Policy and Research

These findings suggest several avenues for best practice, policy and research in five thematic areas. Best practices should include adequate staffing, fair compensation and a sufficient reserve of PPE. Flexible scheduling and the inclusion of nurse voices in decision-making may reduce burnout. Identifying and supporting champions within organizations as standard-bearers of IPC and reinforcers of appropriate training promotes adherence to standard precautions. Continuous and interactive training informs new hires and reinforces skills for tenured staff. Organizations may consider implementing more frequent and interactive training opportunities for all staff members, especially those providing direct care. Soliciting information and input from nursing staff encourages more collaborative and successful solutions.

Policy implications are related to the advancement of just culture. This includes the elimination of punitive structures in order to improve communication and promote accurate HAI surveillance, as well as the creation of an organization that shares accountability for care decisions and outcomes across the system as a whole. A pivot away from self-reported data for mandatory care quality reporting will provide a more accurate understanding of the state of NH IPC while uniform implementation of national guidelines may improve performance. Further research is needed to better understand staff retention and management of staff shortages. Additionally, the application of behavioral sciences to enhance practice improvement, especially the maintenance of proper hand hygiene, is a major priority. See Table 1 for a visual summary of these implications.

## Limitations

There are two major limitations in this survey of IPC in NHs. First, the data on staffing focused primarily on nursing rather than other types of staff members and visitors. This is problematic because of the contribution of other team and family members to successful IPC.

For example, in an observational study of the frequency of resident contacts with staff, other residents, and the environment while outside of resident rooms, Pineles et al. found resident-to-staff contacts to be highest among physical and occupational therapists.<sup>85</sup> Additionally, they found high levels of resident-to-environment and staff-to-environment contacts, which gesture toward the importance of plant operations/housekeeping efforts in disinfecting congregate spaces such as hallways, dining rooms and bathrooms as well as high-touch surfaces such as handrails, elevator buttons and tabletops. Additionally, a

study of Japanese nursing home residents found that residents who were more physically active in the community had a higher risk of contracting respiratory tract infections.<sup>86</sup>

Secondly, while this report sourced scientific literature from many countries, the majority of included studies focused on U.S. NHs despite HALs in this setting being a global concern. As a result, the deficiencies in knowledge and training, for example, were primarily reflective of American NH culture and do not necessarily reflect the state of IPC knowledge and adherence in other nations.

## Conclusion

The impact of the COVID-19 pandemic has highlighted the long-standing systemic deficiencies in and need for effective IPC practices in NHs. New, and sometimes confusing and contradictory, information has been forthcoming at an unprecedented pace, challenging administrators and frontline staff in NHs to keep apace. The overarching goals of this project were to examine current processes and programmatic elements of IPC efforts and to identify best practices and promising approaches to IPC from recent peer-reviewed literature and guidance from national and international agencies and experts that could be immediately applied in NH settings. The inclusion of findings from the Forgotten Frontline study and the Virtual Summit provided valuable first-person perspectives and expert commentary on the five themes and enriched the understanding of the many levels and dimensions of effective IPC. If improved IPC practices and reduced cross-transmission of infections in NHs are to be sustained, immediate and long-term changes in these areas are essential.

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# GLOSSARY OF TERMS

TERM	ABBREVIATION	DEFINITION
Antimicrobial Stewardship		Antimicrobial stewardship is a coordinated program that promotes the appropriate use of antimicrobials (including antibiotics), improves patient outcomes, reduces microbial resistance, and decreases the spread of infections caused by multidrug-resistant organisms.
Activities of Daily Living	ADL	A term used in healthcare to refer to people's daily self-care activities including feeding, bathing, grooming, dressing, etc.
Bacterial Colonization		The presence of bacteria on a body surface (like on the skin, mouth, intestines, or airway) without causing disease in the person.
Burnout		A state of emotional, physical, and mental exhaustion caused by excessive and prolonged stress. It occurs when an individual feels overwhelmed, emotionally drained, and unable to meet constant demands.
Catheter Associated Urinary Tract Infection	CAUTI	A UTI that occurs as a result of prolonged use of a urinary catheter. CAUTIs are the most common form of infection reported to the NHSN.
Centers for Medicare and Medicaid Services	CMS	The agency within the U.S. Department of Health and Human Services (HHS) that administers the nation's major healthcare programs. The CMS oversees programs including Medicare, Medicaid, the Children's Health Insurance Program (CHIP), and the state and federal health insurance marketplaces.
Centers for Disease Control and Prevention	CDC	A federal agency that conducts and supports health promotion, prevention and preparedness activities in the United States, with the goal of improving overall public health.
Certified Nursing Assistant	C.N.A	A healthcare worker that can provide personal care to patients in a variety of settings. CNAs help patients with a variety of tasks, including personal care, feeding, bathing, and other ADLs.
Direct Care Workers	DCW	Frontline workers who provide hands-on long-term care and personal assistance received by Americans who are elderly or living with disabilities or other chronic conditions. They include CNAs, home health aides, and personal care aides.
Director of Nursing	DON	A nurse that is responsible for leading and supervising a nursing unit. This position is ultimately responsible and accountable for the nursing care received by residents.
Environmental Scan		An environmental scan examines published academic articles, media articles, federal guidelines, publically available program information, and other resources.
Final Rule		A federal administrative regulation that advanced through the proposed rule and public comment stages of the rulemaking process and is published in the Federal Register with a scheduled effective date.
Licensed Practical Nurse	LPN	Under the supervision of RNS, LPNs manage basic patient care such as checking blood pressure and vitals, changing wound dressings, and following the care plans developed by RNs and/or doctors.
Hand Hygiene		A general term that applies to either handwashing, antiseptic hand-wash, antiseptic hand rub, or surgical hand antisepsis.
Healthcare Associated Infection	HAI	Infections that patients develop in a healthcare facility while receiving medical care



TERM	ABBREVIATION	DEFINITION
Healthcare Worker	HCW	Healthcare workers include physicians, nurses, emergency medical personnel, dental professionals and students, medical and nursing students, laboratory technicians, pharmacists, hospital volunteers, and administrative staff.
Infection Prevention and Control	IPC	A practical, evidence-based approach that prevents patients and health workers from being harmed by avoidable infection and as a result of antimicrobial resistance.
Infection Preventionist	IP	A professional tasked with developing and implementing IPC protocols within a healthcare organization/facility. They are responsible for the education and training of staff in IPC best practices.
Minimum Data Set 3.0	MDS 3.0	A federally mandated tool used for clinical assessment of all residents in Medicare and Medicaid certified nursing homes. The tool provides a comprehensive assessment of each resident's functional capabilities and helps nursing home staff identify health problems.
National Healthcare Safety Network	NHSN	The nation's most widely used healthcare-associated infection tracking system. NHSN provides facilities, states, regions, and the nation with data needed to identify problem areas, measure the progress of prevention efforts, and ultimately eliminate healthcare-associated infections.
Nursing Home	NH	Nursing homes, also called skilled nursing facilities, provide a wide range of health and personal care services which typically include nursing care, 24-hour supervision, three meals a day, and assistance with ADLs. Rehabilitation services, such as physical, occupational, and speech therapy, are also available.
Nosocomial Infection		See HAI
Pathogen		A bacterium, virus, or other microorganism that can cause disease
Per Resident Day	PRD	The total number of nursing staff providing care compared to the number of residents.
Registered Nurse	RN	A nurse who holds a nursing diploma or Associate Degree in Nursing (ADN), has passed the NCLEX-RN exam administered by the National Council of State Boards of Nursing (NCSBN) and has met all the other licensing requirements mandated by their state's board of nursing.
Quality of Life	QOL	A broad, multidimensional, and subjective concept that evaluates the degree to which an individual is healthy, comfortable, and able to participate in or enjoy life events.
Urinary Tract Infection	UTI	A common infection occurs when bacteria enter the urethra and infects the urinary tract.
World Health Organization	WHO	A specialized agency of the United Nations responsible for international public health.

# APPENDIX

**Table: Implications for practice, policy, research, and a summary of key findings from environmental scan**

THEME	PRACTICE	POLICY
<b>STAFFING &amp; RESOURCE AVAILABILITY</b>	<ul style="list-style-type: none"> <li>• Ensure adequate staffing, especially total RN hours</li> <li>• Provide fair compensation to direct care staff</li> <li>• Build reserve of PPE and related materials</li> <li>• Explore options for making hand hygiene materials readily available in resident rooms during direct care provision</li> </ul>	<ul style="list-style-type: none"> <li>• Provide flexible scheduling to accommodate staff preferences and prevent staff burnout</li> <li>• Involve staff in decision-making on staffing and PPE and related materials to promote engagement</li> </ul>
<b>TRAINING &amp; KNOWLEDGE</b>	<ul style="list-style-type: none"> <li>• Identify champions within organization to promote &amp; role model proper IPC</li> <li>• Ensure training for direct care workers incorporates both technical and soft skills</li> <li>• Maintain continuous and interactive training initiatives to inform new hires and reinforce skills for tenured staff</li> <li>• Partner with schools of nursing for observational learning opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporate staff successes/challenges into educational plans that are personalized to the unique needs of the facility</li> <li>• Enhance initiatives that support continuing education for staff</li> </ul>
<b>QUALITY OF LIFE</b>	<ul style="list-style-type: none"> <li>• Expand staff understanding of NH settings to include awareness of high burden of HAIs</li> <li>• Educate staff on natural course of HAIs to minimize excessive isolation and stigmatization</li> </ul>	<ul style="list-style-type: none"> <li>• Implement visitation policies that do not entirely restrict interaction with family/friends</li> </ul>
<b>ORGANIZATIONAL CULTURE</b>	<ul style="list-style-type: none"> <li>• Implement interdisciplinary meetings for IPC &amp; antibiotic stewardship to encourage teamwork &amp; info exchange</li> <li>• Eliminate punitive structures for medical error to promote accurate surveillance and teamwork</li> <li>• Solicit feedback &amp; input from nursing staff to generate collaborative solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Implement and enhance formal mentorship structures between experienced and newly hired staff</li> <li>• Implement and regulate mandatory surveillance and reporting of HAI rates by staff with appropriate expertise</li> </ul>
<b>EXTERNAL INFLUENCES</b>	<ul style="list-style-type: none"> <li>• Build relationships with regional healthcare facilities</li> <li>• Utilize CDC &amp; CMS publications for up-to-date, easily accessible technical assistance</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain active participation in NHSN LTC Facility Component</li> </ul>

RESEARCH	SUMMARY OF FINDINGS
<ul style="list-style-type: none"> <li>Examine impact of various nursing home staffing models on HAIs and burnout/staff turnover</li> </ul>	<ul style="list-style-type: none"> <li>Adequate nurse staffing associated with fewer HAIs</li> <li>Nurse tenure in facility linked to improved surveillance</li> <li>Most NHs experienced significant staff shortages during COVID-19</li> <li>Increased RN staffing linked to decreases in COVID-19 cases</li> <li>Poor IPC practice during “active care” linked to absence of hand hygiene materials in residents’ rooms</li> <li>High proportion of NHs reported significant PPE &amp; supply shortages during COVID-19</li> </ul>
<ul style="list-style-type: none"> <li>Assess role of resident hand hygiene as well as staff hand hygiene on HAI transmission in NHs</li> <li>Assess the impact of the role of the champions and leadership (DON, staff, RN, Medical Director, etc.) on standard precaution adherence</li> </ul>	<ul style="list-style-type: none"> <li>Gaps in staff knowledge of appropriate hand hygiene remains a pervasive problem across disciplines</li> <li>Education initiatives that bundle technical &amp; socio-adaptive skills have proven effective</li> <li>Early student–nurse exposure to clinical scenarios may foster improved mindfulness of proper hand hygiene</li> <li>Tailored &amp; continuous training models are most effective</li> </ul>
<ul style="list-style-type: none"> <li>Examine methods of minimizing infection during NH-to-hospital transfers (and vice versa)</li> <li>Explore safe socialization practices between residents in congregate settings</li> </ul>	<ul style="list-style-type: none"> <li>HAIs are among the most common reasons for hospital transfers, which have detrimental effects on QOL</li> <li>Lack of understanding of infectious disease natural history leads to over-isolation of residents due to fear of transmission</li> <li>Staff desire to maintain QOL goals &amp; home-like atmosphere may lead to lax hand hygiene adherence</li> </ul>
<ul style="list-style-type: none"> <li>Evaluate the impact of a “just culture” on staff adherence and commitment to infection prevention and control policies and practices, staff turnover and burnout, and resident outcomes related to HAI rates</li> <li>Test strategies for improving effectiveness of interdisciplinary teamwork and collaboration regarding HAI prevention</li> <li>Examine the correlation between HAI reporting and providing feedback to staff on HAI rates</li> </ul>	<ul style="list-style-type: none"> <li>Teamwork and shared responsibility, as opposed to a punitive approach to IPC, allows for more accurate data collection</li> <li>Interdisciplinary collaboration is key—engage all staff in shared IP values</li> <li>Improved work environments help reduce infection-related medical errors</li> <li>Nursing leadership/role modeling during direct care linked to improved care</li> </ul>
<ul style="list-style-type: none"> <li>Continued examination of the effects of NHSN on HAIs in NHs and barriers to engagement</li> <li>Identify effective and easy-to-implement methods of enforcement for IPC deficiencies</li> </ul>	<ul style="list-style-type: none"> <li>CMS’s 2016 final rule</li> <li>Wide variation in NH IPC policies across the globe</li> <li>80% of NHs have IPC deficiencies, yet only 1% receive enforcement actions</li> <li>NHSN provides regional surveillance on MDROs in NHs, yet increased membership is needed</li> </ul>

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### SPEAKER BIOS

#### **Evelyn Cook, RN, CIC**

Evelyn Cook is the Associate Director for the North Carolina Statewide Program for Infection Control and Epidemiology (SPICE). She is a principal lecturer at all SPICE infection control courses and leads applied research projects in infection prevention and epidemiology of infectious diseases. Evelyn provides training, education, and consultation to hospitals, long-term care facilities, and other healthcare organizations to prevent and control healthcare-associated infections. Evelyn is named as Primary Investigator (PI) on several CDC funded grants, geared to address COVID-19 related issues in nursing homes and other healthcare settings.

Evelyn is a registered nurse and is certified in Infection Prevention and Control (CIC). She is active in the North Carolina Association for Professionals in Infection Control and Epidemiology serving as President and currently board member. Evelyn has presented extensively to multiple state and national associations and is currently serving as a member of the APIC Long-Term Care Task Force.

#### **Karen K. Hoffmann, RN, BSN, MS, CIC, FSHEA, FAPIC**

Karen Hoffman is currently the Infection Preventionist Consultant for the Quality, Safety and Oversight Group at the Centers for Medicare and Medicaid. From 1988 to 2014, she was a Clinical Instructor in the Division of Infectious Diseases at the University of North Carolina's School of Medicine in Chapel Hill and continues as an adjunct faculty member. She has specialized in infection control and prevention for over 30 years, beginning at the Detroit Medical Center, then at the University of Virginia Hospitals, and prior to joining CMS, for 23 years as the Associate Director and consultant for the North Carolina Statewide Program for Infection Control and Epidemiology (SPICE). Karen is a Fellow in both the Society of Healthcare Epidemiology of America (SHEA) and Association for Professionals in Infection Control and Epidemiology (APIC). She currently serves as the Immediate Past President of APIC. Karen has been the recipient of several awards, including, the 2010 SHEA "Advance Practice Infection Preventionist Award". Karen earned her Bachelor of Science in Nursing from Indiana University and her Master's in Healthcare Epidemiology from the University of Virginia.



### **Donald Macaskill, PhD**

Dr. Donald Macaskill has worked for many years in the health and social care sectors across the United Kingdom. A particular professional focus has been issues related to bereavement, palliative care and individual human rights. He is the CEO of Scottish Care, the representative body for care providers in the independent sector in Scotland. He sits on a number of Governmental committees and working groups and is a trustee of a number of charities.

### **Judith A. Salerno, MD, MS**

Dr. Judith Salerno is President of The New York Academy of Medicine and is leading its strategic vision to advance health equity. A physician executive and one of the nation's pre-eminent leaders in health and healthcare, Dr. Salerno most recently served as President and CEO of Susan G. Komen™, the world's largest breast cancer organization. She also served as the Leonard D. Schaeffer Executive Officer of the Institute of Medicine of the National Academies, Deputy Director of the National Institute on Aging at the National Institutes of Health, and Chief Consultant for Geriatrics and Extended Care for the U.S. Veterans Health Administration. Dr. Salerno is board-certified in internal medicine and holds an MD degree from Harvard Medical School and a Master of Science in Health Policy from the Harvard School of Public Health. She was elected a member of the National Academy of Medicine in 2018.

### **Ann Spenard, DNP, RN-BC**

Dr. Ann Spenard is the Chief Clinical Officer for National Healthcare Associates a privately owned company with a post-acute network of 38 skilled nursing centers and two assisted living centers. The centers are located in seven states Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York and Vermont. Dr. Spenard has spent the majority of her career in long-term care with a focus on Quality and Patient Safety.

### **Nimalie D. Stone, MD, MS**

Dr. Nimalie Stone is the Team Lead for Long-term Care for the Prevention and Response Branch within CDC's Division of Healthcare Quality Promotion. She is a Board-certified infectious disease physician with over 10 years of experience developing surveillance and quality improvement projects to track and prevent infections and antibiotic resistant pathogens in post-acute and long-term care settings. She trained in internal medicine at Johns Hopkins University and in infectious diseases at Emory University. During the COVID-19 pandemic, Dr. Stone and her colleagues have been leading the development of guidance, education and implementation resources for COVID prevention and response activities in nursing homes and other long-term care facilities.

### **Patricia W. Stone, PhD, RN, FAAN**

Dr. Patricia Stone is a senior faculty member, nurse scientist and adult nurse practitioner who has practiced in the nursing home setting. For the past two decades, the majority of her research has focused on the prevention of infections in vulnerable adults across healthcare settings. Since 2010, she has led an interdisciplinary team that has conducted multiple NIH- and Centers for Disease Control and Prevention (CDC)-funded studies examining nursing homes (NHs) capacity for infection prevention. These mixed methods studies have used multiple data sources including national surveys, which were linked to Centers

for Medicare and Medicaid Services data (i.e., Minimum Data Set and Medicare Claims) as well as the CDC's National Healthcare Safety Network data. Her team has also engaged NH stakeholders and conducted qualitative interviews. With many NH residents having serious illness, Dr. Stone is also interested in the integration of infection management and palliative care at the end-of-life. She also is the current Editor-in-Chief of the *American Journal of Infection Control*.

### **Michael Wasserman, MD**

Dr. Michael Wasserman is a geriatrician who has devoted his career to serving the needs of older adults. He has been a tireless advocate for vulnerable older adults during the COVID-19 pandemic, serving as a member of the National Academy of Science's "A Framework for Equitable Allocation of Vaccine for the Novel Coronavirus" Committee. He is Editor-in-Chief of Springer's upcoming textbook, *Geriatric Medicine: A Person Centered Evidence Based Approach*. He previously served as Chief Executive Officer for Rockport Healthcare Services, overseeing the largest nursing home chain in California. In 1989, in the *Journal of the American Geriatrics Society*, Doctor Wasserman published "Fever, White Blood Cells and Differential Count in Diagnosing Bacterial Infection in the Elderly," the findings of which are now part of the McGeer Criteria, used widely in nursing homes to evaluate residents for infections.





## VIRTUAL SUMMIT

# Infection Prevention in Nursing Homes

December 8, 2020

### SPEAKER BIOS

#### **Anucha Apisarnthanarak, MD**

Dr. Anucha Apisarnthanarak is current the Professor and Chief of Infectious Diseases Division at Thammasat University Hospital. He also serves as an Adjunct Visiting Professor at Division of Infectious Diseases, Washington University School of Medicine, USA. Dr. Apisarnthanarak's research focus included infection prevention in resource-limited setting, infection control to prevent multi-drug resistant microorganisms as well as outbreak investigations. He published more than 250 peer-review articles and more than 20 peer-review book chapters. He has been a key committee member of many national and international societies including Thai National Nosocomial Infection Group, Society of Healthcare Epidemiology of America, and Asia Pacific Society of Infection Control. Dr. Apisarnthanarak also serves as editorial board for key infectious diseases and infection control journals including Clinical Infectious Diseases, Infection Control and Hospital Epidemiology and American Journal of Infection Control.

#### **Lisa Hall, PhD, SFHEA**

Dr. Lisa Hall is Associate Professor in Epidemiology at the University of Queensland, in Australia. Dr. Hall is a health services researcher with expertise in epidemiology, implementation science and evaluation. She is internationally recognized for her research which focuses on the interface between evidence, policy and implementation to improve the surveillance and prevention of infections.

#### **Steven J. Schweon RN, MPH, MSN, CIC, FSHEA, FAPIC**

Steven Schweon is a seasoned, board certified infection preventionist. His experiences include acute care (neonate, pediatric, adult), long-term care, behavioral health, rehabilitation, and ambulatory care. Steve has served on the "American Journal of Infection Control and Epidemiology" and "RN" editorial boards. He has authored / co-authored articles in peer reviewed publications, lectured / presented posters at national conferences, and presented national webinars. He is also currently serving on APIC, SHEA and AMDA national committees. He has authored chapters in APIC's "Infection Preventionist Guide to Long-Term Care," both editions. Additionally, Steve has served as a faculty member for the AHRQ Safety Program for Long-Term Care: HAI/CAUTI. He is also an APIC EPI acute care/LTC faculty member.

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Dr. Stone is the Team Lead for Long-term Care for the Prevention and Response Branch within CDC's Division of Healthcare Quality Promotion. She is a Board-certified infectious disease physician with over 10 years of experience developing surveillance and quality improvement projects to track and prevent infections and antibiotic resistant pathogens in post-acute and long-term care settings. She trained in internal medicine at Johns Hopkins University and in infectious diseases at Emory University. During the COVID-19 pandemic, Dr. Stone and her colleagues have been leading the development of guidance, education and implementation resources for COVID prevention and response activities in nursing homes and other long-term care facilities.

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# STATEMENT OF RESPONSIBILITY

The views presented in this publication are those of the authors and not necessarily those of The New York Academy of Medicine, or its Trustees, Officers or Staff.

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### **About the Center for Healthy Aging**

The Center for Healthy Aging works to improve the health and well-being of aging populations. With equal concern for both today's older adults as well as tomorrow's, the Center works to make both immediate and long-term systemic changes to ensure equity and a healthy life for generations to come. For more information, visit [NYAM.org/center-healthy-aging](https://nyam.org/center-healthy-aging).

### **About NYAM**

The New York Academy of Medicine (NYAM) tackles the barriers that prevent every individual from living a healthy life. NYAM generates the knowledge needed to change the systems that prevent people from accessing what they need to be healthy such as safe and affordable housing, healthy food, healthcare and more. Through its high-profile programming for the general public, focused symposia for health professionals, and its base of dedicated Fellows and Members, NYAM engages the minds and hearts of those who also value advancing health equity to maximize health for all. For more information, visit [NYAM.org](https://nyam.org).

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