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Association for Professionals in
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BETWEEN A ROCK AND A HARD PLACE:

**Recommendations for Balancing
Patient Safety and Pandemic Response**

A CALL TO ACTION

**on Improving our National Strategy for Pandemic
Preparedness and Patient Safety**

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Preface

This manuscript is a project of the Association for Professionals in Infection Control and Epidemiology (APIC) and its COVID-19 Task Force, a group of subject matter experts appointed by the APIC Board of Directors to help recommend programming and approaches to supporting infection preventionists during the COVID-19 pandemic. The Task Force held regular meetings to review changing guidance, appoint or serve as faculty on COVID-19-related educational offerings, and develop resources for APIC members, including peer-reviewed articles and fact sheets for healthcare personnel and the public.

About APIC

APIC is the leading professional association for infection preventionists, with more than 15,000 members. Our mission is to advance the science and practice of infection prevention and control.

Most APIC members are nurses, physicians, public health professionals, epidemiologists, microbiologists, or medical technologists who:

- Collect, analyze, and interpret health data to track infection trends, plan appropriate interventions, measure success, and report relevant data to public health agencies.
- Establish scientifically based infection prevention practices and collaborate with the healthcare team to ensure implementation.
- Work to prevent healthcare-associated infections (HAIs) in healthcare facilities by isolating sources of infections and limiting their transmission.
- Educate healthcare personnel and the public about infectious diseases and how to limit their spread.

Many infection preventionists are employed within healthcare institutions. They may also serve as educators, researchers, consultants, and clinical scientists. Although, the majority of APIC members are affiliated with acute care settings, an increasing number practice in ambulatory and outpatient services, where they direct programs that protect patients and personnel from HAIs. APIC members are also involved in long-term care, home health, and other practice settings where infection prevention and control is an increasing area of responsibility for nurses and other healthcare personnel. Visit us at apic.org.

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Executive Summary

BETWEEN A ROCK AND A HARD PLACE:

Recommendations for Balancing Patient Safety and Pandemic Response

A Call to Action on Improving our National Strategy for Pandemic Preparedness and Patient Safety

A PIC's infection preventionist members have always played a pivotal role in maintaining the health of patients, employees, and visitors to healthcare facilities, and communities at large. But when the coronavirus pandemic hit, their prominence and importance within healthcare organizations grew.

The 15,000 members of this multidisciplinary specialty, who are experts in infectious disease prevention, found themselves in the spotlight more than they ever had been before. They were essential to emergency preparedness and incident command teams as healthcare facilities across the United States became engulfed in the COVID-19 crisis.

Because infection preventionists are the only specialists in healthcare dedicated solely to infection prevention and control (IPC), facilities ranging from acute care hospitals, nursing homes, home health, and ambulatory surgery centers rely

on their expertise on all protocols and policies that relate to preventing the spread of COVID-19, as well as health-care-associated infections such as Methicillin-resistant *Staphylococcus aureus* and *Clostridioides difficile*.

Infection preventionists have had a distinct vantage point from which to consider lessons learned during the COVID-19 pandemic and formulate recommendations for the future. They are the hands-on experts on implementation of IPC policies and are in the best position to offer perspective on improving the nation's strategy for pandemic preparedness and response.

The following recommendations for policymakers, informed by the experiences of the COVID-19 pandemic, are to ensure the U.S. is better prepared to mitigate the worst effects of future infectious disease emergencies.



Develop Next-Generation Universal Personal Protective Equipment (PPE)

- Congress should fund the National Institute for Occupational Safety & Health (NIOSH) to develop an off-the-shelf, one-size-fits-all respiratory device that can be used in healthcare facilities for infectious disease emergencies without the need for fit-testing. NIOSH should work with other federal agencies and form public-private partnerships with industry and universities on this research.
 - Fit testing of N95 respirators for healthcare employees requires significant IPC and employee occupational health (EOH) staff time and detracts from time spent on other essential safety tasks. A universally fitting respirator would save time and simplify pandemic preparedness planning.
- Congress should fund federal agencies to investigate the feasibility of transitioning away from some types of disposable or single-use PPE and implementing more options for cleanable and reusable PPE.

Normalize the Use of Masks by the General Public During Times of Increased Infectious Disease Threats

- Federal, state, and local governments should recommend the use of masks for the public to prevent the spread of respiratory viruses.
- Congress should direct federal agencies to develop standards for masks for the public and conduct research to determine the types of masks and filtration levels that are effective for different types of infectious diseases.
- The federal government should share this research with the public to build trust in the use of masks for respiratory protection during infectious disease outbreaks. This information will also inform protocols in high-risk community settings like schools and assisted living.

Address Supply Chain Failures

- Federal agencies must develop better systems to manage, track, and rapidly supply all types of PPE during times of increased need. These systems must provide greater diversity in production locations, improved state and local distribution methods, and expanded ease of access.
- For adequate pandemic preparedness, federal and state officials must anticipate high demand for essential supplies, while also continuing to meet ongoing healthcare needs.
- Federal agencies should anticipate and plan for the general public's need for supplies of face coverings, surface disinfection and cleaning materials, and hand hygiene products to avoid competition for essential supplies needed by healthcare personnel and facilities during a pandemic.
- Government recommendations should document in what situations reuse, extended use, and decontamination of PPE are safe options for healthcare personnel.

Include Personnel with IPC Expertise on Healthcare System Incident Command and Emergency Response Teams

- The Centers for Medicare & Medicaid Services (CMS) should require that infection preventionists serve on healthcare facility incident command and emergency preparedness teams.
- CMS should require that infection preventionists be consulted on all policies or protocols that affect disease transmission within the healthcare facility or agency, such as patient placement, patient and/or employee cohorting, PPE use and selection, workflow reviews, airflow or ventilation issues, patient isolation, and direct patient care practices in healthcare facilities.
- CMS should require that an infection preventionist lead, or be a member of, every team that develops the crisis standards of care protocols related to PPE, anti-infective therapy, and vaccinations for the healthcare facility or agency.
- CMS should require that an infection preventionist be involved in developing the infectious disease surveillance program for the healthcare facility or agency, including decisions about surveillance testing plans for patients, employees, and visitors.
- CMS should require that an infection preventionist, likely in collaboration with the healthcare facility's statistical/analytical teams, be responsible for analyzing and reporting pandemic surveillance program data for the healthcare facility.

Put Properly Trained Personnel in Long-Term Care, Nursing Homes, and Other High-Risk Settings

- CMS should require that each nursing home have at least one full-time dedicated infection preventionist located on-site. Individuals serving in the position of infection preventionist in nursing homes should be certified in IPC whenever possible and should have ongoing continuing education requirements.
- CMS should require that additional nursing home staff be trained in the foundations of IPC to reinforce the facility's plan for surge capacity in the event of an infectious disease outbreak.
- CMS should require that routine mandatory surveillance for healthcare-associated infections be expanded in nursing homes to promote improvement in IPC.
 - Since the beginning of the pandemic, more than 200,000 long-term care residents and staff members died from COVID-19.
 - Even before the high incidence of COVID-19 cases, there was widespread concern about the adequacy of IPC programs in long-term care settings, with the Centers for Disease Control and Prevention noting that 1 to 3 million serious infections occur every year in these facilities.

Build and Implement Infection Prevention and Control Surge Capacity

- Congress should allocate funds for healthcare facilities to build IPC capacity to ensure the continuity of safe patient care during a pandemic and to have enough frontline infection preventionists during an infectious disease emergency, such as a pandemic.
- Congress should provide resources for healthcare facility IPC and EOH teams to conduct contact tracing and employee exposure testing and implement employee vaccination programs when needed.
- Congress should provide funding to healthcare facility IPC and EOH teams to better prepare for future events through the following strategies:
 - Implement "train the trainer" programs to rapidly expand the number of staff who can be tapped during a pandemic for IPC duties such as training staff for more-intensive PPE use and contact tracing.
 - Structure staffing plans to prepare for entry screenings, increased absentee rates, and potential work restrictions.
 - Design vaccination sites to prioritize protection of vaccine recipients and speed of vaccination.
- Congress should provide adequate funding to accommodate healthcare surges during a pandemic and avoid temporary eliminations of nonurgent medical procedures. Temporary elimination of nonurgent medical procedures to prevent a healthcare surge during a pandemic may lead to worse outcomes for individual patients and longer-term public health issues.

Increase Capacity for Testing and Contact Tracing

- Congress should ensure that health-care facilities, public health agencies, primary care providers, and the public have adequate access to appropriate testing to avoid transmission from people with unidentified infections.
- Congress should fund rapid and accurate contact tracing conducted by public health agencies and healthcare facilities to control disease spread during a pandemic.

Ensure Rapid Data Sharing and Interoperability around Infection Surveillance Data

- Congress should invest in solutions to ensure rapid healthcare data collection and facilitate sharing of data between healthcare provider electronic health records (EHRs), public health agencies, federal agencies, and the public to optimize testing, contact tracing and other public health strategies to prevent disease transmission.
 - Public health agencies are hindered in their ability to collect and analyze public health information by a lack of information technology infrastructure and the lack of universal or compatible data formatting, information systems, and even standards in healthcare data.
 - In the absence of a universal or compatible EHR system to connect public health agencies to health-care organizations and testing facilities, public health reporting can overwhelm the current capacity and hamper efforts to prevent disease transmission.
 - During a pandemic, there needs to be access to a national vaccine registry with clear privacy protections that allows the appropriate tracking and sharing of data between providers and public health agencies.

Establish Strategies and Actions to Build Vaccine Confidence

- Congress should direct the federal government to devote resources for ongoing public health education about the benefits and effectiveness of vaccines in preventing infectious diseases.
 - Specifically, Congress should fund research on infodemiology and share multi-level strategies that can be implemented to combat misinformation campaigns.
- During a pandemic, policymakers should fund healthcare facility IPC and EOH departments to address vaccine hesitancy among healthcare workers.

Fund Pandemic Preparedness Workforce Capacity and Training

- Congress should allocate funds for healthcare facilities to build IPC capacity to ensure the continuity of safe patient care during a pandemic and to have enough frontline infection preventionists during an infectious disease emergency, such as a pandemic.
- Congress should fund “just-in-time” infection prevention and control education and training for widespread dissemination to healthcare personnel and the broader workforce during a pandemic.
- Congress should fund incentives for universities to create an academic pathway for infection preventionists, who are the backbone of the infection prevention and control infrastructure in a wide range of healthcare settings. Further, these individuals were often called up by non-healthcare employers to assist in getting a wide range of work settings from education to sports and entertainment back to work safely.
- Congress must invest now in incentivizing the next generation of healthcare professionals to join the infection prevention and control pipeline. Legislation has been introduced to create a loan repayment program for infectious disease personnel, which can be crucial to attracting and retaining talent.
- The Department of Labor should recognize infection preventionists as a separate and distinct employment category. These highly skilled professionals have been employed in their distinctive area of practice for 50 years.

Introduction

AUTHORS: Heather Saunders, MPH, RN, CIC, Kathleen McMullen, MPH, CIC, FAPIC, Terri Rebmann, PhD, RN, CIC, FAPIC, Barbara A. Smith, BSN, MPA, CIC, FAPIC, and Elizabeth Garman, CAE

In times of great crisis, we learn. For many people working in the fields of healthcare and public health, the COVID-19 pandemic has been the greatest professional crisis ever confronted. Infection preventionists—specialists in the field of infection prevention and control (IPC)—have had a unique vantage point throughout the COVID-19 crisis. As the only specialists in healthcare dedicated solely to IPC, members of this multidisciplinary specialty played pivotal roles on emergency preparedness and incident command teams in healthcare facilities across the United States. Infection preventionists protected the frontline healthcare workforce by adapting evidence-based strategies for personal protective equipment, reconfiguring spaces for the influx of COVID-19 patients, assessing ventilation systems to ensure adequate airflow, creating temporary negative-pressure spaces to reduce the chance of airborne spread of SARS-CoV-2 (the virus that causes COVID-19), and evaluating therapeutic devices to minimize the aerosolization of infectious particles. While continuing to conduct surveillance and manage other healthcare-associated infections, they also developed safer workflows and monitored compliance with facility protocols to reduce the likelihood of healthcare-associated transmission of SARS-CoV-2. The role of the infection preventionist, ordinarily hidden from public view, has emerged as a linchpin that connects the emerging science about the coronavirus to the safety of healthcare personnel and patients in our nation’s hospitals, clinics, and outpatient facilities.

Infection preventionists have been called upon to guide the development and implementation of safe protocols outside of healthcare as well. Schools, film studios, hotels, airlines, cruise ships, and corporate America have relied on infection preventionists to help them restart or continue operations.

This paper explores the lessons infection preventionists have learned during their fight against COVID-19 and their recommendations for healthcare facilities and policymakers to make sure our nation is better prepared to handle future pandemics. This paper highlights actions that must be taken at the healthcare facility level to strengthen IPC programs nationwide, and at the healthcare policy level to enable the United States to be more prepared for future infectious disease threats. For the United States to move forward and grow from this crisis, we must act upon the lessons learned during the COVID-19 pandemic. Ultimately, we must allow the lessons learned from this pandemic to revolutionize the way that we prevent and control infectious diseases.

Challenges and Lessons Learned

Although the challenges experienced and lessons learned are too innumerable to outline here, this paper seeks to highlight those challenges and lessons that were universally true for infection preventionists practicing during the COVID-19 pandemic. They are presented under the umbrella of 11 main sections that summa-

rize the major challenges experienced. Those sections are:

- Inclusion of Infection Preventionists as Essential Stakeholders in Pandemic Response
- Using the Hierarchy of Controls to Prevent SARS-CoV-2 Transmission
- Surveillance and Epidemiological Investigations During a Pandemic
- Cleaning, Disinfection, and Sterilization During the COVID-19 Pandemic
- Situational Awareness During a Pandemic
- Employee and Occupational Health for Healthcare Personnel During a Pandemic
- Vaccination Policy as an Essential Path to Minimizing Disease Transmission and Protecting Vulnerable Populations During a Pandemic
- Intersections Between Healthcare Facility Infection Preventionists and Public Health
- Ensuring Pandemic Preparedness in Long-Term Care
- Managing Communications During a Pandemic
- Mitigating Pandemic and Post-Pandemic Workforce Shortages

Recommendations for Healthcare Providers and Policymakers

In this paper, the contributing infection preventionist authors point out recommendations to ensure adequate prepara-

tion for future infectious disease threats. Evidence-based IPC protocols and policies must be nimble to reflect the changing science inherent in pandemic response. The challenge of creating capacity during times of increased burden must be addressed in an innovative manner. Healthcare systems must be prepared to respond to shortages, supply chain disruptions, and IPC staffing shortages exacerbated by a pandemic. The ongoing issue of misinformation and disinformation, which has so damaged the COVID-19 pandemic response, must be confronted head-on at every level of society. Communications systems must be strengthened to allow for seamless transfer of data and information. And importantly, there must be a plan to have infection preventionists at the stakeholders' table, playing a lead role in efforts to prepare for and respond to emerging infectious disease outbreaks and pandemics.

Conclusion

The COVID-19 pandemic is not the first pandemic in the history of humanity, nor will it be the last. Infection preventionists have played a lead role in the response to the COVID-19 pandemic and have taken note of the significant experiences and associated lessons present during their response. Policy, healthcare, and community stakeholders throughout the United States and the world should reflect upon these lessons and recommendations as they provide a road map toward improved pandemic preparedness. The recommendations shared in this paper provide expert insight, and they offer an opportunity to use these experiences and lessons to strengthen our collective response to this and future pandemics.

1 CHAPTER

Inclusion of Infection Preventionists as Essential Stakeholders in Pandemic Response

Infection preventionists are infectious disease experts who play a pivotal role in maintaining the health of patients, employees, and visitors in healthcare facilities as well as the community.

AUTHOR: Terri Rebmann, PhD, RN, CIC, FAPIC

Any pandemic poses a large risk of morbidity and mortality and requires a multidisciplinary team to coordinate response.¹ Of the multiple pandemics that have occurred in the last two centuries, the COVID-19 pandemic has had a significantly larger impact than any other pandemic since the 1918 influenza pandemic. It has taxed healthcare and public health systems, businesses, educational institutions, and citizens, and has required response by all parts of society.

Emergency management is a framework used to prepare for and respond to disasters, including pandemics.² Emergency management is inherently multidisciplinary, and different disciplines may be needed for any specific disaster, depending on the nature of the event. Infection preventionists play a critical role in emergency management for all types of disasters, but their role is especially critical during a pandemic.^{1,3} Infection preventionists are infectious disease experts who play a pivotal role in maintaining the health of patients, employees, and visitors in healthcare facilities as well as the community. The infection preventionist's role during a pandemic involves providing expertise on all protocols and policies that relate to preventing the spread of infections that occur in healthcare settings across the continuum of care; in this role, infection preventionists are concerned with healthcare-associated infections, employee health issues/concerns, and even the prevention of community transmission.

In the first few months of the pandemic, many U.S. healthcare facilities had scarce supply of personal protective equipment (PPE) and other infection prevention supplies, such as hand hygiene products and disinfectants.^{4,5} These scarcities were due to healthcare surges and global supply chain disruptions.

PPE shortages eased as the pandemic progressed, but many hospitals and healthcare systems have also implemented crisis standards of care with PPE, such as extended use, reuse, or decontamination between uses of PPE.⁵ A lack of PPE, using crisis standards of care with PPE, and/or improper use of PPE can lead to occupational exposures and healthcare-associated COVID-19 transmission.



In the beginning of the pandemic, our staff wanted to wear everything... max PPE, but by the time we were actually treating cases and dealing with significant community spread, many of the staff were no longer interested in wearing appropriate PPE...They are just over it...We were heroes at first, bringing in the PPE that everyone wanted, but then we were the much-hated enforcers making people wear PPE, especially the face shields and goggles.”

**— APIC COVID-19 TASK FORCE
FOCUS GROUP PARTICIPANT**

LESSONS LEARNED

Recommendations for Healthcare Providers

- Healthcare facilities and agencies should adequately support infection preventionists to review and vet PPE purchases when normal supply chains have been disrupted during a pandemic (see Chapter 2: Using the Hierarchy of Controls to Prevent SARS-CoV-2 Transmission). During COVID-19 when some facilities and agencies did not involve an infection preventionist in the development of PPE crisis standards of care protocols, non-evidence-based decisions were made in some cases that left infection preventionists feeling unsure of the safety of these protocols.^{4,5}
- Healthcare facilities should ensure that the infection preventionist’s role in pandemic response is visible and that infection preventionists receive recognition for their contributions to healthcare and public health.⁶

- Healthcare facilities should reinforce the evidence-based recommendations of infection preventionists, especially in rural areas and other locations where misinformation about public health safeguards and reluctance to follow COVID-19 protocols are widespread among community members and employees.⁷
- Healthcare facilities should include at least one infection preventionist from each facility/agency in the emergency management team and/or the incident command system.
- To minimize healthcare-associated infection transmission and occupational health exposures, healthcare facility administrators should include an infection preventionist or other individual with infection prevention expertise in the development and review of pandemic protocols (see Chapter 5: Situational Awareness During a Pandemic).
- Healthcare administrators should require that an infection preventionist be consulted on all policies or protocols that affect disease transmission within the facility or agency, such as patient placement, patient and/or employee cohorting, PPE use and selection, and isolation.
- Healthcare administrators should require that an infection preventionist lead, or be a member of, every team that develops the crisis standards of care protocols related to PPE, anti-infective therapy, and vaccinations for the facility or agency.
- During a pandemic, healthcare administrators should require that an infection preventionist be involved in developing the infectious disease surveillance program for the facility or agency. For example, an infection preventionist should be involved in decisions regarding the facility/agency testing plans for patients, employees, and visitors, including the extent to which surveillance testing will play a role (see Chapter 3: Surveillance and Epidemiological Investigation During a Pandemic).
- Healthcare facilities may recommend that infection preventionists partner with public health officials regarding community COVID-19 surveillance programs (see Chapter 8: Intersections Between Healthcare Facility Infection Preventionists and Public Health).
- Healthcare facilities should require that an infection preventionist be responsible for analyzing and reporting the COVID-19 surveillance program data.
- Healthcare facilities should require that infection preventionists be:
 - Leaders or members of the outbreak investigation team for the facility or agency
 - Consulted on all purchase decisions regarding PPE, hand hygiene products, and other infection prevention supplies, such as disinfection products (see Chapter 4: Cleaning, Disinfection, and Sterilization During the COVID-19 Pandemic)
 - Consulted on plans for alternate care sites that will be used to manage healthcare surges
 - Consulted on how to prioritize the infection prevention and control duties that will be performed during the pandemic, and which will be put on hold until the pandemic ends
 - Involved in determining internal and external communications and reporting related to COVID-19 patient and employee infection data (see Chapter 10: Managing Communications During a Pandemic)
 - Involved in developing and/or reviewing employee health protocols, including health screening before a shift, monitoring and following up on staff work exposures, testing, furloughing, and return-to-work decisions (see Chapter 6: Employee and Occupational Health for Healthcare Personnel During a Pandemic)

- Involved in reviewing all local, regional, state, and federal COVID-19 recommendations and regulations to ensure facility/agency policies are compliant
- Involved in decisions related to employee COVID-19 vaccination (see Chapter 7: Vaccination Policy as an Essential Path to Minimizing Disease Transmission and Protecting Vulnerable Populations)
- Healthcare administrators should plan backup coverage for infection preventionists, especially if the facility or agency has only one infection preventionist on staff. The backup coverage may consist of an infection prevention designee. If an infection prevention designee is to be used, this individual or group of workers should receive training in infection prevention and control principles and practices before being assigned duties.

Recommendations for Policymakers

- Policymakers must ensure that accrediting bodies have high IPC standards for all health-care settings, including long-term care, as well as the to ensure safety of vulnerable populations such as older adults (see Chapter 9: Ensuring Pandemic Preparedness in Long-Term Care).
- Policymakers should require that at least one infection preventionist from each facility/agency be involved in the emergency management team and/or the incident command system.
- To minimize healthcare-associated infection transmission and occupational health exposures, policymakers should require that an infection preventionist or other individual with infection prevention expertise be involved in development and review of emergency management and pandemic protocols.
- Policymakers should require that an infection preventionist be consulted on all policies or protocols that affect disease transmission within the facility or agency, such as patient placement, patient and/or employee cohorting, PPE use and selection, and isolation.
- Policymakers should require that an infection preventionist lead, or be a member of, every team that develops the crisis standards of care protocols related to PPE, anti-infective therapy, and vaccinations for the facility or agency.
- During a pandemic, policymakers should require that an infection preventionist be involved in developing the infectious disease surveillance program for the facility or agency. For example, an infection preventionist should be involved in decisions regarding the facility/agency testing plans for patients, employees, and visitors, including the extent to which surveillance testing will play a role (see Chapter 3: Surveillance and Epidemiological Investigation During a Pandemic).
- Policymakers should require that an infection preventionist be responsible for analyzing and reporting the COVID-19 surveillance program data for a health facility.

2 CHAPTER

Using the Hierarchy of Controls to Prevent SARS-CoV-2 Transmission

AUTHORS: Barbara A. Smith, BSN, MPA, CIC, FAPIC, and Kathleen McMullen, MPH, CIC, FAPIC



Disinfectant product and hand sanitizer challenges were common. Some IPs reported not being able to access sufficient supplies, while others described obstacles to using available products. As one IP explained, ‘At one point we had to use pool shock, which our pharmacists diluted into bleach to make a bleach spray when we didn’t have wipes.’ ...We had to rely on alcohol from our local distilleries to use as hand sanitizer.”

— APIC COVID-19 TASK FORCE FOCUS GROUP PARTICIPANT

The National Institute for Occupational Safety & Health’s hierarchy of controls¹ is a series of tiered control measures designed to protect employees from occupational hazards. In healthcare, the hierarchy of controls can protect workers, patients, and visitors from contagions, such as SARS-CoV-2, and healthcare-associated infections, conditions, or events. The five control measures, from most effective to least effective, are as follows:

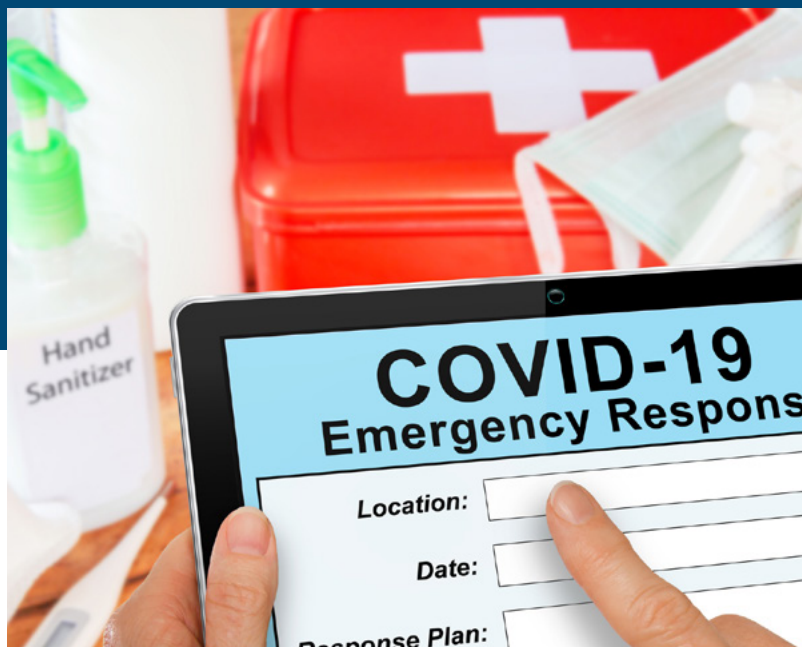
- Eliminating the hazard
- Replacing the hazard
- Isolating people from the hazard
- Changing the workflow
- Using personal protective equipment (PPE)

During the COVID-19 pandemic, all of these control measures were implemented in healthcare settings to help prevent the transmission of SARS-CoV-2 among patients, staff, and visitors.

Healthcare facilities have faced tremendous challenges in the implementation of these control measures during the pandemic, partly due to the novelty of the SARS-CoV-2 virus, the shortage of essential supplies, and the overwhelming volume of individuals who sought healthcare. To further complicate matters, patients with SARS-CoV-2 infections often undergo aerosol-generating procedures that require a higher level of protection for healthcare staff. As the Centers for Disease Control and Prevention (CDC), World Health Organization, and local health authorities issued new recommendations, organizations have had to be agile in adapting their existing strategies for preventing and controlling COVID-19 while also implementing new strategies.

Fear was a powerful motivator early in the pandemic, and it drove demand for PPE in both healthcare facilities and among the general public.

In addition to those challenges specific to the SARS-CoV-2 virus, the risk of other healthcare-associated infections persisted. During the initial phase of the pandemic, some of the routine and most basic of infection prevention practices were difficult to implement or sustain due to staffing constraints, limited supplies, and staff anxiety. Additionally, several patient care practices were implemented that may have increased the risk of device-associated infections for patients. These included placing patients in the prone position, placing intravenous pumps outside of patients' rooms, and sharing ventilators. Antibiotic stewardship may have also taken a back seat during the desperate attempts to treat patients with empiric antibiotics



before validated, evidence-based protocols could be established.

The following control measures have been implemented to help eliminate or reduce the hazard and isolate staff and patients from exposure to SARS-CoV-2:

- Facilities conduct symptom screening and testing for the virus to quickly identify new cases.
- Locations are designated for the care of patients with known or suspected COVID-19, such as a particular unit, wing, or building.
- Zones are also designated to guide practice and workflow. These zones are:²
 - The “hot” or “red” zone—the immediate space surrounding the patient where contamination is expected.
 - The “warm” or “yellow” zone—an area where contamination is not expected that provides a buffer

between the “hot” and “cold” zones. This area may be used for donning and doffing PPE.

- The “cold” or “green” zone—a space that should remain free of contamination.
- Airborne infection isolation rooms and temporary negative-pressure spaces are used to reduce the potential airborne transmission of SARS-CoV-2.
- Traffic flows into, out of, and within units are designated to reduce contact between staff.
- Physical spaces have been reconfigured to encourage social distancing throughout the facility.
- Alternative therapeutic devices are used to minimize the potential for aerosolization of respiratory particles. For example, inhalers may be used instead of certain nebulizers.

Infection preventionists have served a vital role in the implementation of these administrative and engineering controls. Their responsibilities have included creating and evaluating the designated zones, ensuring that negative-pressure rooms are functioning and well maintained, developing safer workflows, and monitoring compliance with facility protocols.

Although engineering and administrative controls can effectively remove or isolate individuals from a hazard, PPE is often needed when an individual must come into contact with a suspected or confirmed hazard. In the case of SARS-CoV-2, PPE has been used to further protect healthcare workers, patients, and visitors from contracting the virus when knowingly, or unknowingly exposed. Because SARS-CoV-2 was a novel virus, the recommendations for which PPE to use and how to use it have been constantly in flux. Initial recommendations were based on limited data and experiences with other strains of coronavirus such as SARS-Covid, the virus

known to cause severe acute respiratory syndrome. Early studies indicated that SARS-CoV-2 was likely transmitted by contact and droplets, making it necessary for healthcare workers to use isolation gowns, masks, and eye protection when providing care for individuals with suspected or confirmed COVID-19. Additionally, because little was known about the potential for aerosolization of the virus, a dispute ensued regarding whether healthcare personnel should use respirators in a variety of settings. Currently the CDC lists an N95 or higher respirator as the preferred respiratory protection while caring for any patient with known or suspect COVID-19 and certainly for patients undergoing aerosolized generating procedures.³ This discussion is still evolving.

Fear was a powerful motivator early in the pandemic, and it drove demand for PPE in both healthcare facilities and among the general public.⁴ Faced with PPE shortages in healthcare settings, the infection prevention and control community developed difficult and controversial recommendations for how and when PPE should be used, based on the latest CDC recommendations. In the most unfortunate of situations, infection preventionists were required to develop and trial creative alternatives for PPE use, including reuse, extended use, reprocessing, and the use of nontraditional equipment as PPE.

The extent to which infection preventionists were involved in the implementation of the hierarchy of controls demonstrates the value of the profession. It also highlights the importance of multidisciplinary collaboration to prevent and control infections. Key partners include, but are not limited to, palliative care, respiratory therapy, emergency medicine, environmental services, material management, and nursing.

LESSONS LEARNED

Recommendations for Healthcare Facilities

- When responding to a new contagion, patient placement decisions must often be made based on limited information and changing recommendations. Infection preventionists must be involved in the decisions regarding patient placement, air-handling systems, and direct patient care practices.
- Healthcare facilities must plan for large-scale space and negative-pressure needs in the event of an airborne contagion.
- When supplies are not available, infection preventionists must follow guidance based on the best available evidence and innovate to keep patients and staff safe.
- To ensure safety and prevention of virus transmission, the infection prevention and control department should always be part of workflow reviews for donning and doffing, especially when reuse of any type of PPE is involved.

Recommendations for Policymakers

- Federal agencies should develop better systems to rapidly supply all types of PPE during times of increased need. These systems must provide greater diversity in production locations, improved state and local distribution methods, and expanded ease of access.
- For adequate pandemic preparedness, federal and state officials must anticipate high demand for essential supplies, while also continuing to meet ongoing healthcare needs.
- Government recommendations should consider that the use of masks by members of the general public is highly effective at controlling the spread of respiratory diseases.⁵
- Government officials should recommend use of face coverings for the public to prevent the spread of respiratory viruses. Additionally, the government should fund research into the differences in filtration effectiveness of various fabrics to build consumer confidence in mask wearing.
- To avoid competition for needed healthcare personnel and facility resources during a pandemic, government officials should anticipate and plan for the general public's need for supplies of respiratory protection, surface disinfection and cleaning materials, and hand hygiene products.
- Government recommendations should document in what situations reuse, extended use, and decontamination of PPE are safe options for healthcare worker protection.
- Federal agencies should fund research to investigate the feasibility of transitioning away from some types of disposable or single-use PPE and implementing more options for cleanable and reusable PPE.⁶
- Federal agencies should incentivize development of a respirator for healthcare personnel that fits most facial sizes and shapes without the need for fit testing.

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- Federal agencies should require that infection preventionists be involved in decisions regarding patient placement, air-handling systems, and direct patient care practices in healthcare facilities during a pandemic.
- At the state and federal level, planning and coordination should be enhanced to identify spaces for patients requiring isolation with or without negative pressure.
- Congress and federal agencies should invest in research to understand the delineation of “droplet” versus “airborne” spread of viruses, and the impact of face masks versus respirators on preventing the spread of disease.



3 CHAPTER

Surveillance and Epidemiological Investigation During a Pandemic

AUTHOR: Barbara A. Smith, BSN, MPA, CIC, FAPIC

Infection prevention and control (IPC) departments within acute care and long-term care facilities have traditionally been responsible for the surveillance of healthcare-associated infections (HAIs). The sustainability of existing surveillance programs has been greatly affected by the COVID-19 pandemic.

Among the many sustainability challenges, three major foci have been identified:

- How to maintain current HAI surveillance efforts, several of which are mandated by state or federal regulations.¹
- The additional reporting requirements related to COVID-19² in terms of diagnosed patients, bed and equipment capacity, personal protective equipment (PPE) supplies, therapeutics, vaccinations, and staffing.
- The need for surveillance capabilities in alternative care settings (eg. daycare, home health care, schools, universities, ambulatory care centers, prisons, communal living facilities).

During the pandemic, infection preventionists used their skills to implement processes for the safe care of persons with COVID-19. These valuable interventions have included staff training, development of new workflows, and advising on the physical capacity of healthcare settings. However, this expanded scope reduced the time infection preventionists could devote to HAI surveillance. Given these time constraints, as well as changes in medical record documentation, the validity of HAI data collected during this period may be questioned. Process audits designed to measure compliance with prevention bundles were also likely to have been adversely affected during this time.

Strategies to maintain surveillance programs during times of strained capacity include prioritizing the use of computerized HAI detection methods over manual detection methods, and cross-training of other staff for some or all aspects of HAI surveillance.



The stressors on patient care and staff have highlighted the need for well-established IPC protocols to ensure the continuity of safe patient care. Strategies to maintain surveillance programs during times of strained capacity include prioritizing the use of computerized HAI detection methods over manual detection methods, and cross-training of other staff for some or all aspects of HAI surveillance.

In some facilities (especially smaller hospitals and long-term care facilities), the COVID-19 reporting requirement was assumed by the IPC department. Although the National Healthcare Safety Network (NHSN) HAI definitions have remained consistent, the elements required for COVID-19 reporting evolved during the pandemic, making application difficult. Resources may be allocated based on the volume of COVID-19 cases in a facility, highlighting the need for clear, measurable definitions. To reduce the burden on infection preventionists, administrative personnel may be able to fulfill the role of additional reporting

relevant to the pandemic. Automated data collection may also significantly simplify this task.

In March 2020, the Centers for Medicare & Medicaid Services (CMS) granted a waiver to relieve facilities of mandatory reporting of HAIs.³ Per the waiver, CMS did not count data from January 1, 2020, through June 30, 2020, for performance or payment programs. This waiver was certainly appreciated by those facilities that chose not to submit data. It is important to understand the impact of COVID-19 and the associated innovative patient care practices on the development of HAIs. However, because NHSN is the most widely used source of national HAI data, the waiver may mean that the true impact of COVID-19 on HAI development during the first pandemic period will never be elucidated. Additionally, healthcare facilities in areas of the country that were more heavily affected by COVID 19 in the latter half of 2020 were not afforded this waiver.

The final issue noted relates to surveillance conducted in alternative settings such as daycare settings, schools and universities, ambulatory centers, prisons, and other communal living facilities. Collection of surveillance data pertaining to infectious diseases is not a usual activity in these settings and requires additional education and resources. In alternative settings, it has been a struggle to implement the surveillance systems necessary for the identification and isolation of infected persons and the quarantine of exposed persons, and the lack of surveillance experience has occasionally contributed to errors in data collection, reporting, and response to exposures. Additionally, staff in these settings have had to quickly implement systems to track test results, screen for symptoms, and conduct contact tracing.

LESSONS LEARNED

Recommendations for Healthcare Facilities

- Infection preventionists have a broad range of skills that contribute to the safety of patients, residents, and staff. Given the high demand for these skills during the pandemic, additional support and resources should be allocated to traditional surveillance activities to ensure that these efforts are not minimized, putting patients at risk for HAIs.
- Healthcare facilities should ensure that evidence-based protocols and bundles for the prevention of HAIs are engrained, and that plans are made for emergency situations, such as a pandemic.
- Facility leadership should allocate resources for automated or data-mining programs to enhance the surveillance program.
- Facilities should identify personnel outside of the IPC department who can assist with data collection and surveillance.
- Facilities should anticipate the need for additional infection preventionists and other healthcare staff or resources to ensure compliance with regulatory mandates.
- Alternative healthcare settings should develop basic surveillance programs that can be applied during changing circumstances, such as a pandemic.

Recommendations for Policymakers

- The Centers for Disease Control and Prevention, CMS, and other government agencies should work together to ensure that consistent HAI definitions, which are vital for quality data, will be used to allocate pandemic resources.
- Regulators should identify effective means to report HAI data without penalizing facilities.
- The federal government should fund research to evaluate the impact of innovative patient care practices that prevent HAI rates from increasing during a pandemic.

4 CHAPTER

Cleaning, Disinfection, and Sterilization During the COVID-19 Pandemic

AUTHORS: Jill Holdsworth, MS, CIC, FAPIC, NREMT, CRCST, and Rebecca Alvino, RN, MS, CNS, CIC, CNOR, FAPIC

Supply shortages, which have continued to some extent throughout the pandemic, have put a strain on infection preventionists and frontline staff, who have been required to quickly learn and operationalize the use of new disinfectants and other products based on their availability.

The COVID-19 pandemic created unique challenges related to cleaning, disinfection, and sterilization. Increased use of disinfectants for high-touch surfaces and routine cleaning and disinfection in both healthcare and nonhealthcare settings contributed to supply chain challenges. Supply shortages, which have continued to some extent throughout the pandemic, put a strain on infection preventionists and frontline staff, who have been required to quickly learn and operationalize the use of new disinfectants and other products, based on their availability. Supply shortages have also forced many facilities to require the reuse of disposable or single-use items, a practice previously disallowed. When supplies dwindled, healthcare facilities sought alternative products for cleaning and disinfection.

Early in the pandemic, the Centers for Disease Control and Prevention (CDC) published instructions for facilities to safely prepare bleach solutions when faced with resource constraints.¹ Personnel who prepare or use 0.5% bleach solution must don personal protective equipment (PPE) to ensure their safety. Contact times for these solutions must be clearly defined and followed. Infection preventionists were tasked with continually updating education, workflows, and performing “just-in-time” training on cleaning, disinfection, and sterilization as recommendations continually evolved.

In the beginning of the pandemic, questions arose regarding the efficacy of low- to intermediate-level disinfection methods against the SARS-CoV-2 virus. At that time, several chemical disinfectants already included label claims of efficacy against enveloped viruses, and some chemical disinfectants carried an Environmental Protection Agency (EPA) label claim of efficacy against coronaviruses. However, the efficacy of these products against this novel coronavirus was uncertain. Manufacturers

soon began testing disinfectants against SARS-CoV-2 and submitting test results to the EPA, which used the testing data to create the List N Tool: COVID-19 Disinfectants.³ List N identifies disinfectants that have demonstrated efficacy against SARS-CoV-2 and includes contact times required for specific disinfectants to achieve kill or inactivation of the virus. List N and label claims specific to SARS-CoV-2 are useful when selecting disinfectants; however, infection preventionists have still been faced with questions regarding whether institutions need to use products on the list for all cleaning and disinfection at their facilities.



LESSONS LEARNED

Recommendations for Healthcare Facilities

- Healthcare facilities should consult with infection preventionists on all policies and procedures that affect disinfection or sterilization protocols in the facility, including product selection.
- When there is an outbreak of a novel organism, healthcare facilities should look to infection preventionists who are closely following the emerging science to understand which cleaning, disinfection, and sterilization products and processes will be effective against the novel organism.
- The facility should promote adoption of evidence-based recommendations, while acknowledging that new recommendations may emerge as the science evolves.
 - During an outbreak, caused by a novel pathogen, some enhanced cleaning and disinfection processes that are initially implemented may later prove to be unnecessary. For example, in the case of SARS-CoV-2, consumers wiped down groceries due to their concerns about surface transmission.⁴

- Healthcare facilities should consider the importance of interdepartmental collaboration and innovation in roles related to cleaning, disinfection, and sterilization during a pandemic.
- If the U.S. Food and Drug Administration issues Emergency Use Authorizations for the reuse of items, healthcare facilities should include the infection prevention and control team in discussions about associated facility policies, which contribute to the development of protocols and considerations for use.
- To minimize risks for transmission of health-care-associated infection and occupational health exposure during epidemiologically significant disease outbreaks, facilities must involve infection preventionists in decisions about cleaning, disinfection, and sterilization related to workflow, purchasing, and distribution.

Recommendations for Policymakers

- Policymakers should ensure that the survey and accreditation process reinforces the essential role of the infection preventionist in determining the organization's emergency management plan and accompanying processes, including such processes as patient room turnover and reviewing disinfection and PPE protocols.
- Federal agencies should prepare for disruptions to local and global supply chains that will affect stocks of cleaning, disinfection, and sterilization supplies.⁵
- During times of product shortages and inventory challenges, federal agencies should provide healthcare facilities with dedicated resources to assist infection preventionists with providing continual education to health-care workers so they will be confident in the use of new and unfamiliar products.

5 CHAPTER

Situational Awareness During a Pandemic

AUTHORS: Jill Holdsworth, MS, CIC, FAPIC, NREMT, CRCST, and Alexander Isakov, MD, MPH, FACEP, FAEMS

Situational awareness during the COVID-19 pandemic was critical in allowing continuity of operations, while protecting workers and the public. Standard and transmission-based precautions applied by healthcare personnel aim to prevent healthcare-associated transmission to patients and serve to keep the workforce safe. Staff need situational awareness strategies to help them know when it is appropriate to implement transmission-based precautions, such as when to wear personal protective equipment (PPE), and what types of PPE and other precautions are appropriate for specific situations.

Prior to the COVID-19 pandemic, and as a consequence of the West African Ebola virus disease outbreak of 2014-2016, the Centers for Disease Control and Prevention and others developed the “identify, isolate, and inform” strategy to increase situational awareness of communicable disease hazards in the workplace.¹⁻⁵ The strategy teaches the importance of quick identification of communicable disease threats, prompt isolation of infectious individuals, and clear communication to appropriate personnel for further action. It was initially implemented in the United States to facilitate the identification of persons who might be presenting with Ebola virus disease^{1,2} and was then applied to other infectious threats such as Middle Eastern respiratory syndrome⁶ and Zika virus.⁷

During the initial stage of the COVID-19 pandemic, the “identify, isolate, and inform” strategy was used in the United States to identify individuals with a higher likelihood of exposure to COVID-19 after travel to certain geographic locations.⁸ Since community transmission of COVID-19 became evident, the strategy has been used to increase situational awareness through the quick identification of individuals who have signs or

Effective situational awareness for an emerging threat can serve as a trigger for several actions, including ‘just-in-time’ training for frontline staff, development of internal and external communications, review of contingency plans for isolation and management of affected individuals, assessment of the integrity of the supply chain, and efforts to ensure the availability of critical supplies.



symptoms consistent with COVID-19 and/or have been in close contact with someone suspected or confirmed to have COVID-19.

Increasing situational awareness for high-consequence communicable diseases through such strategies serves to improve workplace safety and helps determine appropriate follow-up actions (e.g., isolation, testing, modified clinical guidelines, enhanced safety measures, or specific cleaning and disinfection protocols). Systems-level situational awareness for emerging high-consequence communicable diseases is also important to trigger specific actions necessary for workplace safety and continuity of operations. Effective situational awareness for an emerging threat can serve as a trigger for several actions, including “just-in-time” training for frontline staff, development of internal and external communications, review of contingency plans for isolation and management of affected individuals, assessment of the integrity of the supply chain, and efforts to ensure the availability of critical supplies.

LESSONS LEARNED

Recommendations for Healthcare Facilities

- Healthcare leaders should improve situational awareness about evolving global and regional communicable disease threats so that they can be best informed about the need to implement “just-in-time” training for staff, review internal and external communications templates, ensure the integrity of the supply chain, stockpile materials as indicated, and review contingency plans for the continuity of operations.
- Healthcare facilities should provide situational awareness training and education for healthcare personnel, both clinical and nonclinical, who have the potential for high-consequence communicable disease exposure.
- Healthcare facilities should provide education and training on what next steps should be taken to facilitate patient and staff safety (e.g., mask the patient, isolate them from others, ensure that personnel making contact use appropriate PPE).
- Healthcare facilities should use the “identify, isolate, and inform” strategy to help quickly contain high-consequence communicable diseases. Healthcare facilities should also incorporate training in this strategy into required workforce continuing education.
- To ensure readiness, leaders in infection prevention and control and emergency medical services should collaborate often, make plans, and run drills and scenarios for various types of communicable disease situations, including a surge of patients caused by an infectious disease outbreak.

Recommendations for Policymakers

- Policymakers should provide funding to healthcare facilities for infection prevention and control surge capacity during a pandemic to enable education and training of healthcare personnel and to streamline communication with partners in public health and emergency medical services.
- Policymakers should fund “just-in-time” infection prevention and control education and training for widespread dissemination to healthcare personnel and the workforce during a pandemic.

CHAPTER 6

Employee and Occupational Health for Healthcare Personnel During a Pandemic

The lost productivity and infection transmission risk associated with employees working ill, has been a longstanding problem for the healthcare industry.

AUTHORS: Jill Holdsworth, MS, CIC, FAPIC, NREMT, CRCST, and Kathleen McMullen, MPH, CIC, FAPIC

Healthcare personnel have been a vital part of the response to the COVID-19 pandemic. Not surprisingly, keeping those frontline workers safe and healthy has been a big challenge for healthcare facilities. Personal protective equipment (PPE) of all types—including N95 respirators and powered air-purifying respirators (PAPRs)—have been in high demand. Traditionally, healthcare workers have not favored N95 respirators and PAPRs because this equipment is uncomfortable for the user. However, staff anxiety about occupational exposure and illness, as well as a lack of consistent evidence about the transmission of SARS-CoV-2, led many healthcare workers to seek access to and to wear high-level respiratory protection. Demand for this equipment was especially great in the early months of the pandemic, and infection preventionists struggled to provide N95 respirators and PAPRs due to the training and fit testing required as well as widespread supply shortages.

Of note, as recommendations and demand for specific types of PPE have evolved, healthcare workers have clearly perceived a need to remain protected from one source of risk—their patients. However, healthcare organizations have struggled to help workers understand that the risk of exposure to SARS-CoV-2 from other people, including coworkers, is just as real as the risk of exposure from patients. For example, to ensure safety is maintained, personnel have required consistent feedback about the risks of removing essential pieces of PPE while taking a break.

Presenteeism, the lost productivity and infection transmission risk associated with employees working ill, has been a longstanding problem for the healthcare industry. The COVID-19 pandemic, along with entry screening processes, has brought this issue to light. While facilities already had policies in place about illness-related work restrictions, awareness of and adherence to those policies

have increased during the pandemic. Because infection prevention and control (IPC) and employee occupational health (EOH) team members conduct contact tracings, potentially exposed employees—including some who are asymptomatic—have been tested and required to remain out of the workplace until cleared for return. Adherence to entry screening and work restrictions have further increased the number of employees unavailable to work and brought up issues regarding how to officially clear employees to return to work.

The development of COVID-19 vaccine has had a major impact on EOH. These programs were logically selected to facilitate initial vaccinations of healthcare personnel. However, in the haste to vaccinate as many workers as possible, there were likely situations where at-risk behaviors surfaced, such as lack of physical distancing or cutting short the postvaccination waiting period. Although those initial concerns have been addressed, a surprising new problem has surfaced: vaccine hesitancy. Here again, EOH programs have played an important role in overcoming this barrier. These programs are, and should continue to be, trusted resources for employees.



LESSONS LEARNED

Recommendations for Healthcare Facilities

- IPC and EOH training in healthcare facilities should emphasize underappreciated areas of risk for employee exposure, such as cafeterias and breakrooms.
- Contact tracing responsibilities may be shared between IPC and EOH teams. Healthcare facility administrations should recognize and adequately resource these tasks, which can consume a large amount of time for both teams. Teams need to establish clear lines of authority and responsibility to optimize efficiencies of both teams.
- Healthcare facility administrations should require a clear line of authority and messaging and reinforce that exposure testing for employees needs strict parameters and project management to ensure timely and appropriate follow-through and work clearance.
- Healthcare facility administrations should reinforce the need for clear and consistent messaging coming from IPC and EOH departments to ensure employee trust and safety.
- Healthcare facilities should support adherence to work restriction policies for ill personnel to reduce the risk for healthcare-associated transmission of infectious diseases.
- Healthcare administrators should acknowledge that even healthcare workers may have vaccine hesitancy, and EOH will need to be resourced as an important partner in addressing that hesitancy, particularly during a pandemic.

Recommendations for Policymakers

- Policymakers should plan for high demand for maximal respiratory protection, in the form of N95 respirators and PAPRs, during situations such as a pandemic when the evidence about transmission may be unclear and evolving.
- Policymakers should provide adequate resources to allow IPC and EOH teams to conduct contact tracing and employee exposure testing within healthcare facilities, areas that can consume a large amount of time for both teams.
- To ensure quick and efficient vaccine delivery to healthcare workers during a pandemic, policymakers should provide funding to EOH-run employee vaccination programs in healthcare facilities.
- Policymakers should be aware that even healthcare workers may have vaccine hesitancy, especially during pandemics, and EOH programs will need funding and resources to help address that hesitancy.
- Policymakers should leverage the lessons learned from the COVID-19 pandemic by providing funding and resources to help IPC and EOH departments better prepare for future events through the following strategies:
 - Anticipate the staffing needed to prepare and train personnel for more-intensive PPE (such as N95s or PAPRs). For example, design “train-the-trainer” programs and establish plans to continually monitor personnel for ongoing compliance.

- When entry screening or other monitoring of work restriction policies are enacted, structure staffing plans to prepare for increased absentee rates.
 - Design vaccination sites to prioritize protection to vaccine recipients above all other considerations, including speed of vaccination.
 - Consider the time commitment that will be necessary for IPC and EOH departments to carry out the contact tracing process in future situations. Develop standard workflows, interview templates for team member interviews, and other ways to streamline the exposure testing process in advance.
 - Develop training modules that can be used to rapidly educate students, interns, and other trainee-level team members to assist with future contact tracings.¹
- Policymakers should fund the development of an off-the-shelf, one-size-fits-all respiratory device that can be used in healthcare facilities for infectious disease emergencies without the need for fit-testing. NIOSH should work with other federal agencies and form public-private partnerships with industry and universities on this research
 - Policymakers should fund federal agencies to investigate the feasibility of transitioning away from some types of disposable or single-use PPE and implementing more options for cleanable and reusable PPE.



7 CHAPTER

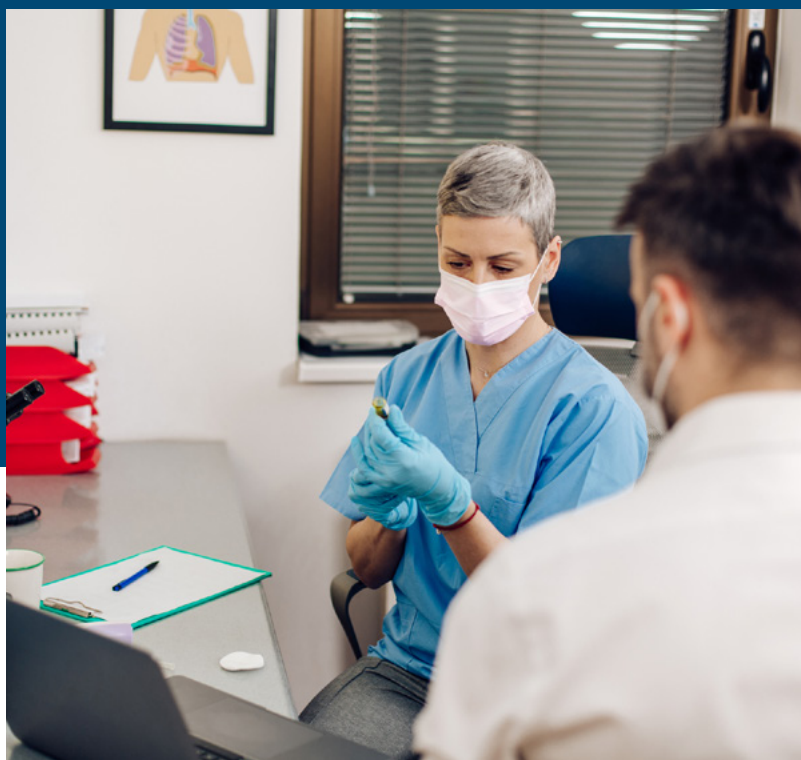
Vaccination Policy as an Essential Path to Minimizing Disease Transmission and Protecting Vulnerable Populations During a Pandemic

A study examining vaccine effectiveness among healthcare and first-responder personnel found that both Pfizer and Moderna vaccines were 80% effective after a single dose and more than 90% effective two weeks after the second dose when given outside of clinical trials and in a population at high risk of exposure.

AUTHOR: Terri Rebmann, PhD, RN, CIC, FAPIC

Development of vaccine technologies that would work against SARS-CoV-2, the virus that causes the disease COVID-19, began years before COVID-19 was identified. Soon after Chinese researchers published the DNA sequence for SARS-CoV-2 on December 31, 2019, researchers worldwide began developing vaccines specifically for COVID-19.¹ By early May 2020, clinical trials for the first COVID-19 vaccine began.² On December 11, 2020, the U.S. Food and Drug Administration (FDA) issued an Emergency Use Authorization (EUA) for the first COVID-19 vaccine, Pfizer, for use in individuals aged 16 years or older.³ Just one week later, on December 18, 2020, the FDA issued an EUA for the use of a second COVID-19 vaccine, Moderna, for those aged 18 years or older.⁴ Both of these COVID-19 vaccines are messenger RNA (mRNA) vaccines, which work by telling cells to produce the spike protein; this triggers the immune system to produce antibodies against the SARS-CoV-2 virus. On February 27, 2021, the FDA issued an EUA for a third COVID-19 vaccine, Janssen, produced by Johnson & Johnson.⁵ Unlike Moderna and Pfizer, Janssen is not an mRNA vaccine. Instead, it is a viral vector vaccine that uses an adenovirus to produce the spike protein. Janssen is also different in that it is a single-dose vaccine, whereas Pfizer and Moderna require two doses.

COVID-19 vaccines have proven to be both safe and effective. In clinical trials, Moderna and Pfizer were found to be 94% and 95% efficacious, respectively, two weeks after the second dose was given.^{6,7} The Janssen vaccine was approximately 66% efficacious two weeks after the vaccine was given in its trials.⁸ A study examining vaccine effectiveness among healthcare and first-responder personnel found that both Pfizer and Moderna vaccines were 80% effective after a single dose and more than 90% effective two weeks after the second dose when given outside of clinical trials and in a population at high risk of



exposure.⁹ In addition, the Pfizer vaccine was found to be approximately 63% effective among residents in a skilled nursing facility, a population in which vaccines are often less effective than in other populations.¹⁰

On April 13, 2021, the FDA and the Centers for Disease Control and Prevention (CDC) released a joint statement indicating that the use of the Janssen vaccine would be paused as they investigated a possible association between the vaccine and a rare clotting disorder.¹¹ Ten days later, on April 23, 2021, the FDA and CDC lifted the pause on Janssen and recommended its use.¹²

On Monday, August 23, 2021, Pfizer was the first of the three vaccines to be fully approved by the FDA.¹³ On January 31, 2022 the FDA granted full approval to the Moderna vaccine.¹⁴ Full FDA approval for the J & J vaccine is likely to follow soon, though the CDC has stated that the mRNA vaccines are preferred over J & J due to safety concerns.¹⁵

Those who are immunocompromised require a third dose of mRNA vaccine to develop as robust an immune response compared to nonimmunocompromised individuals.¹⁶ Based on those findings, the FDA approved offering an additional dose of mRNA vaccine to individuals who are immunocompromised through their EUA for the Pfizer and Moderna COVID-19 vaccines.¹⁷ As of February 6, 2022, the CDC is also recommending that everyone should stay up-to-date on COVID-19 vaccination.¹⁸ At this time, that means that those who are eligible should receive a booster dose. Individuals are eligible for a booster dose two months after they receive a dose of J & J vaccine, or 5 months after receiving a second dose of Moderna or Pfizer vaccine. Vaccine recommendations are expected to evolve as more is learned about short- and long-term immunity against SARS-CoV-2.

Facts that Inform Policy

- High vaccine uptake is the fastest and most likely route to get society back to normalcy. A community or population is the most protected when a high percentage of individuals are immune from a disease either through vaccination or prior infection. When a large percentage of a community has immunity, disease spread is less likely to occur.
- Increasing seasonal and H1N1 influenza vaccine uptake among healthcare personnel and school-age children decreases illness, absenteeism related to respiratory illness, and costs related to lost work time.¹⁹⁻²¹
- Mandatory vaccination policies are legal, subject to certain limits detailed in the 1964 Civil Rights Act and the Americans with Disabilities Act (ADA) of 1990. Any mandatory COVID-19 vaccination policy must allow for exemptions as determined by state and federal laws.
- Mandatory seasonal influenza vaccination policies for healthcare personnel were associated with decreased mortality rates among nursing home residents.²⁰
- Mandatory vaccination policies are very effective at increasing vaccine uptake among K-12 school-age children²² and healthcare personnel,²³ even as vaccine hesitancy has increased across the United States.
- Mandatory vaccination policies are more likely to be accepted when vaccine uptake rates are low.²⁴
- Mandatory vaccination policies are increasing globally as the rates of vaccine-preventable diseases and vaccine hesitancy increase.²⁵
- Mandatory vaccination policies were the strongest predictor of pandemic vaccine uptake among healthcare personnel and emergency medical services personnel during the 2009 H1N1 influenza pandemic.^{26, 27}
- Existence of a mandatory H1N1 influenza pandemic vaccination policy for healthcare personnel was associated with significantly higher vaccine uptake rates, regardless of whether the policy was actually enforced.²⁶
- Pre-COVID-19 vaccine studies indicate that the number of people willing to receive a vaccine was less than what would be needed to protect a community or population;^{28,29} in one study, nearly one in four (23%) medical students self-reported that they would be hesitant to get a vaccine immediately after FDA approval.³⁰
- There is more vaccine hesitancy found when a vaccine is released under an EUA compared to vaccines already fully approved by the FDA.^{31,32}
- Systemic racism may cause some individuals to distrust COVID-19 vaccines.³³
- When COVID-19 vaccines first became available, vaccine accessibility was not universal.
- There is currently no standardized approach to verifying vaccination status; COVID-19 vaccination cards were intended to serve as a second-dose reminder, not as proof of vaccination.
- Not all states have an immunization registry, and some state registries are not comprehensive/accurate.
- Demanding proof of vaccination status may raise privacy concerns.
- Boosters are likely to be required as part of a mandatory COVID-19 vaccination policy, at least for some high-risk populations, such as in congregate living settings,³⁴ or for travel.³⁵

- Interventions other than a mandatory vaccination policy may be used alone or in conjunction with the following strategies:
 - Declination or opt-out policies
 - Encouraging healthcare personnel to get vaccinated
 - Offering vaccinations on-site at the workplace
 - Partnering with primary healthcare providers to have them encourage their patients to get vaccinated
 - Allowing employees to get vaccinated during their shifts and/or paying for their time while they get vaccinated
 - Providing paid sick leave for side effects related to COVID-19 vaccination

LESSONS LEARNED

Recommendations for Healthcare Facilities

- Healthcare facilities must recognize that personnel working at multiple long-term care facilities and patients transferred between these facilities or from a hospital to a long-term care facility can carry infectious diseases from one facility to another.
- Healthcare facilities should mandate vaccination as a condition of employment during a pandemic for those vaccines recommended by the CDC's Advisory Committee on Immunization Practices (ACIP) and put policies into place that all healthcare personnel should be vaccinated as a condition of employment, except for those with medical exemptions or another exemption covered by law.

Recommendation for Policymakers

- Healthcare facilities should mandate vaccination as a condition of employment during a pandemic for those vaccines recommended by the CDC's Advisory Committee on Immunization Practices (ACIP).

8 CHAPTER

Intersections Between Healthcare Facility Infection Preventionists and Public Health

...[W]hile public health entities are exempt from protected health information (PHI) authorization for the purposes of ensuring public health and safety, their ability to collect and analyze relevant PHI is hindered by the lack of universal or compatible data formatting, information systems, and even standards in healthcare data.

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During its rapid global evolution, the COVID-19 pandemic has upended the U.S. public health and healthcare system. The speed at which COVID-19 spread among the U.S. population has required public health agencies and the healthcare organizations to quickly adapt during a period of significant ambiguity about the virus, its transmission, and even its clinical manifestations. Early in the pandemic, healthcare facilities had to implement public health recommendations around physical distancing and universal masking, while also contending with rapidly dwindling supplies of personal protective equipment (PPE), scant testing resources, and pressure to preserve the healthcare workforce. In many healthcare facilities, it has been necessary to pause in-person routine care and procedures during COVID-19 surges to meet physical distancing recommendations, preserve resources, and redeploy supplies and personnel as needed. Whenever possible, based on patient and healthcare facility resources, telehealth was rapidly scaled-up to connect patients with healthcare. As time passes, members of the U.S. public health and healthcare system are learning the consequences of deferring routine in-person patient care and screenings.

To protect the health and safety of the public during a public health emergency, identification of disease cases through surveillance, swift case reporting to facilitate contact tracing, and implementation of quarantine or isolation protocols are vital to slow disease transmission. In January 2019, the Association of State and Territorial Health Officials noted that while public health agencies are exempt from protected health information (PHI) authorization for the purposes of ensuring public health and safety, their ability to collect and analyze relevant PHI is hindered by the lack of universal or compatible data formatting, information systems, and even standards in healthcare data.¹ In

the absence of a national health system and a universal or compatible electronic health record (EHR) system to connect public health agencies to healthcare organizations and testing facilities, public health reporting can overwhelm antiquated technologies, such as facsimile and telephone communication.² However, all EHR systems and healthcare organizations are required to share PHI with entities with the right to those data. Specifically, the 21st Century Cures Act of 2016 prohibits “information blocking” (failure to share patient information with entities with a legitimate need to access it).³

Ironically, while struggling to address the COVID-19 pandemic, public health agencies have also been challenged with overcoming an “infodemic”⁴—a flood of information, of varied reliability and accuracy—that can confuse or overwhelm the public. Especially given the prominence of social media, the speed at which information and misinformation travel gives rise to a new front for public health professionals to address during times of crisis. Combatting misinformation and rumors diverts valuable resources away from emergency management. Misinformation shared within healthcare facilities and systems is a challenge that continues to require substantial resources to overcome. For example, one qualitative study seeking to understand COVID-19 vaccine hesitancy among skilled nursing facility healthcare personnel reported that most participants acknowl-





I feel like I'm kind of making it up as I go. You're really coming up with answers right there on the spot because nobody else has the answers.... I think the scariest thing is just people trusting what I say when I'm not 100% sure that what I'm saying is correct... The frontline staff, they just did not trust what we were telling them, nor what CDC was telling them about how to reuse and decontaminate respirators safely."

**— APIC COVID-19 TASK FORCE
FOCUS GROUP PARTICIPANT**

edged getting vaccine information from friends or social media; however, most were also interested in learning from experts.⁵ Infection preventionists have also struggled with overcoming misinformation within their own healthcare facilities and systems⁶ (see also Chapter 10: Managing Communications During a Pandemic).

Infection preventionists have also, at times, struggled with conflicting guidance from various public health organizations at the local, state, and federal levels.⁶ For example, infection preventionists and infection preventionist leaders in multiregion or multistate health systems have reported challenges with determining which guidelines applied to which facilities, and how to manage inconsistent guidance as recommendations evolve. In turn, local infection preventionists have found themselves challenged to monitor whether behaviors of healthcare personnel align with frequently changing or conflicting public health guidance around universal masking, physical distancing, and other measures crucial to the safe care of patients with suspected or confirmed cases of COVID-19.

LESSONS LEARNED

Recommendations for Healthcare Facilities

- Healthcare facilities should consider integrated use of hospital informatics systems when conducting contact tracing.⁷
- Healthcare providers in primary care settings play an important role in educating patients and should carefully reinforce public health messages to help prevent the spread of infections, especially during a pandemic.^{8,21}

Recommendations for Policymakers

- The federal government should provide resources to help healthcare providers, public health organizations, and social services adapt to social distancing requirements and work together in new ways.⁹
- The federal government should fund development of a program to cross-train the public health infection prevention and control workforce for other care settings to provide additional infection prevention and control staff at the provider level during surges like a pandemic.

- Policymakers at all levels should consider public health recommendations from the Centers for Disease Control and Prevention before modifying community safeguards during a pandemic that may contribute to healthcare surges.¹⁰
- Healthcare personnel can be exposed to and infected with COVID-19 by both coworkers and patients¹¹; contact tracing is essential to control further spread.¹² When funding contact tracing involving healthcare employees, policymakers should consider community transmission rates, staffing levels, risk assessment, and the feasibility of implementing work restrictions.¹⁹
- Policymakers should provide adequate funding for public health infrastructure and partnerships between healthcare facilities and public health to avoid unnecessary healthcare surges during a pandemic.
- Policymakers should ensure adequate access to testing to avoid transmission from people with unidentified infections.
- Policymakers can improve conditions during a pandemic by funding improvement of cross-sector alignment across healthcare, public health, and social services.^{14,9}
- Policymakers should fund rapid and accurate contact tracing conducted by public health agencies and healthcare facilities to control outbreaks during a pandemic.¹⁵
- Policymakers should provide funding to primary healthcare providers to reinforce messages about the pandemic in recognition of these providers' important role in preventing the spread of infectious disease.⁸
- Policymakers should consider the following issues when providing funding during a pandemic:
 - Disruptions in U.S. healthcare during the pandemic due to shelter-in-place and similar public health orders led to decreased compliance with routine childhood vaccinations.¹⁶
 - Emergency department visits dropped 42% at the start of the pandemic, with emergent pediatric visits dropping by 72%.¹⁷
 - Home eviction leads to healthcare surges in communities.¹⁸
 - Public health and healthcare systems have been overwhelmed by the need for contact tracing during the pandemic.
 - Healthcare facilities' temporary elimination of nonurgent medical procedures to prevent a healthcare surge during a pandemic may lead to longer-term public health issues, such as more negative health outcomes for chronic conditions,⁸ cancer,¹⁹ and eye conditions.²⁰

9 CHAPTER

Ensuring Pandemic Preparedness in Long-Term Care

[B]etween January and September 2020, facilities with more than 40% minority residents reported COVID-19 case and death counts that were 3.3 times higher than facilities with more than 97% white residents.

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The COVID-19 pandemic has revealed major gaps in long-term care infection prevention and control (IPC). Without intact and functioning IPC programs led by knowledgeable and empowered infection preventionists, facilities have struggled with the core infection prevention principles. This struggle has had grave consequences: Since the beginning of the pandemic, more than 200,000 long-term care residents and staff members died from COVID-19.¹ Outbreaks in nursing homes have also created a total upheaval of person-centered care, resulting in isolation, depression, and despair among residents. Meanwhile, frontline staff have put themselves in harm's way as they have struggled to care for their residents in crisis situations. Notably, working in a nursing home was listed as one of the deadliest occupations of 2020.²

Approximately 1.3 million U.S. residents live in nursing homes, which³ are defined by the Centers for Disease Control and Prevention (CDC) as care settings that provide “a variety of services, both medical and personal care, to people who are unable to live independently.”⁴ Challenges of long-term care will likely multiply in coming years for several reasons. First, the population in these care settings is expected to increase to 5.3 million by 2030.⁵ Further, nearly 85% of all nursing home residents are over 75 years of age.⁶ Also, the level of care in such settings has grown increasingly complex; for example, many types of invasive devices used by long-term care residents, although necessary for their care, put residents at higher risk for infection. Additionally, attention to the kinds of details necessary to prevent the spread of infectious diseases can be difficult when approximately 70% of residents are living with some form of cognitive deficit, and nearly half of residents have been diagnosed with dementia.⁷

Even before the high incidence of COVID-19 cases put long-term care facilities on the nightly news, there was widespread concern about the adequacy of IPC programs in long-term care settings. CDC has noted “that 1 to 3 million serious infections occur every year in nursing homes, skilled nursing facilities, and assisted living facilities.”⁴ There is a significant gap in IPC in long-term care. CDC recommends that facilities “assign one or more individuals with training in infection control to provide on-site management of the infection prevention and control program. This should be a full-time role for at least one person in facilities that have more than 100 residents or that provide on-site ventilator or hemodialysis services. Smaller facilities should consider staffing the IPC program based on the resident population and facility service needs identified in the infection prevention and control risk assessment.”⁸ However, maintaining the recommended number of infection preventionist positions has been a long-term challenge. From 2014 to 2018, infection preventionist staffing in for-profit nursing homes decreased.⁹ This reduction in staff had a direct impact on many long-term care facilities, especially in places that support minority populations. Research has shown that nursing homes with higher minority resident populations are likely to be larger for-profit facilities.¹⁰ Given that such facilities had reduced staff and more residents who needed care, it is not surprising that 38% more IPC deficiencies were recorded in nursing homes with high minority concentrations than in facilities with primarily white residents.¹¹ Further, between January and September 2020, facilities with more than 40% minority residents reported COVID-19 case and death



counts that were 3.3 times higher than facilities with more than 97% white residents.¹⁰

Prior to the pandemic, the infection preventionist's role in long-term care lacked standardization and regulation. Facilities were given a lot of latitude regarding what the role included, what training was expected, and how much time the person in the role would dedicate to IPC. As a result, the role varied from facility to facility, and many individuals designated as infection preventionists had significant job responsibilities beyond IPC. An APIC survey showed that, on average, infection preventionists typically dedicated less than one-third of their time to IPC processes.⁹

During the pandemic, infection preventionists working in nursing homes have faced a myriad of hurdles, including increased risk of harm to patients and staff, greater scrutiny from stakeholders (media, families, etc.), rapidly changing evidence-based practices, staffing shortages, and a lack of personal protective equipment. The challenges of COVID-19 have made the infection preventionist's job difficult even for those who are highly trained in the field and passionate about their work. However, evidence shows that infection preventionists working in these facilities are generally not as well equipped as their acute care counterparts. According to a survey of infection preventionists published in the *American Journal of Infection Control*, 61% of infection preventionists in nursing homes do not have specialized training, and less than 10% are certified in the field.¹²

Evidence from the field suggests that individuals are often assigned the infection preventionist role regardless of their background or interest in the position. This seems to be a recipe for poor outcomes and high employee stress, especially during a pandemic, because many individuals assigned to these positions in long-term care do not have the specialized IPC training they need to succeed. In hospitals, there is widespread recognition of the importance of certification and evidence of improved outcomes. There is a need for greater focus on certification and training in long-term care. In a 2003-2008 study of long-term care in Maryland, trained infection preventionists reported an outbreak to their public health department two days earlier than their peers without training.¹³ Results of a national survey conducted in 2018 showed that nursing homes with a certified infection preventionist were 5 times more likely to have a comprehensive antibiotic stewardship program¹⁴ an important indicator that the facility is focused on addressing the risk of infections from multi-drug-resistant organisms.



I was emotionally devastated by the phone calls that I had with long term care facilities... I just listened to them crying because they did not have the PPE, yet they wouldn't leave their residents. And their health care workers were getting infected... Keeping up staff morale right now is one of the biggest challenges and keeping people on track with what we need to do to stay safe... Everybody's burned out."

**— APIC COVID-19 TASK FORCE
FOCUS GROUP PARTICIPANT**

LESSONS LEARNED

Recommendations for Long-Term Care Facilities

- Long-term care facility administrators should require at least one full-time, trained infection preventionist who is fully dedicated to IPC.
- To prepare for the next pandemic, while limiting the spread of healthcare-associated infections, long-term care facilities should dedicate more staff time and appropriate resources to supporting IPC to maintain safety for patients and employees.
- Facilities should hire certified infection preventionists whenever possible because there is clear evidence that certification promotes improved IPC practices.^{13, 14}

Recommendations for Policymakers

- The morbidity and mortality related to the COVID-19 pandemic in long-term care has demonstrated that limited regulatory intervention related to IPC resources in nursing homes is inadequate and risky for patients and staff. Therefore, federal agencies and accrediting bodies should require that:
 - Each nursing home have at least one full-time infection preventionist on staff.
 - Additional nursing home staff be trained in the foundations of IPC to reinforce the facility's plan and for surge capacity in the event of an infectious disease outbreak.
 - Individuals serving in the position of infection preventionist in nursing homes be certified in infection prevention and control whenever possible and have ongoing continuing education requirements.
 - Routine mandatory surveillance be expanded in nursing homes and home health to improve patient outcomes. The National Healthcare Safety Network COVID-19 module¹⁵ should be used as a model.
 - Surveillance should collect data stratified by race and ethnicity to identify inequities among populations.
- Policymakers should use surveillance data collected from long-term care facilities to determine how different racial groups are affected by the allocation of IPC resources in long-term care so that disparity issues can be fairly addressed.

10 CHAPTER

Managing Communications During a Pandemic

It is important to instill transparency through early communication from trusted sources about the changing nature of pandemics and to continually emphasize that IPC decisions are made by prioritizing staff and patient safety.

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One of the most important lessons learned from managing the Ebola response during the 2014-2016 outbreak was the importance of situational awareness and transparent communication (see Chapter 5: Situational Awareness During a Pandemic.). For example, early during the Ebola outbreak, Emory University Hospital in Atlanta¹ shared the importance of getting ahead of misinformation and ensuring continued transparency. Such experiences influenced the way infection preventionists responded to COVID-19, as they recognized the need for often daily communication about guidance updates and the situation within the healthcare facility, as well as updates about COVID-19 in the community. Being transparent with healthcare staff about COVID-19-positive patients, local case counts, and personal protective equipment supplies helps to ensure that staff can maintain situational awareness.

The goal of science communication (often called “SciComm”) during a pandemic is to communicate nuanced information about the disease, the infection risks and evidence-based interventions so that people can make informed decisions and employ critical thinking in complex situations.

There is an inherent challenge in communicating scientific information about a novel pathogen and associated infection prevention and control (IPC) guidance—especially in a pandemic that will likely last for a long period of time—because the guidance will evolve with the science and data. An important aspect of communication during these unique events is to openly acknowledge that IPC guidance will likely change as more information becomes known. When IPC recommendations change, it can be a helpful strategy to encourage staff to lean into, and even embrace, these changes as improvements—rather than debating whether initial recommendations were adequate.

It is important to instill transparency through early communication from trusted sources about the changing nature of pandemics and to continually emphasize that IPC decisions are made by prioritizing staff and patient safety.

Two particular challenges have made effective communication especially difficult during the COVID-19 pandemic:

- Negative bias in the news media. News media can often focus on the worst outcomes of studies or findings, and in so doing, bias perception of current events. For example, reporting about individuals who only received one dose of a two-dose COVID-19 vaccine focused on the 8% who opted not to get their second dose, rather than the 92% who did get both shots.²
- Politicization of the virus, the pandemic response, and interventions. Polarization in COVID-19 news and media coverage—in addition to polarization in the perspectives of government officials—has complicated IPC efforts. For example, the politicization of masks and face coverings has created substantial challenges for communication and education efforts to encourage their use.



Another impediment to effective IPC communications is the phenomenon of the “infodemic,” which has escalated throughout the COVID-19 pandemic. The World Health Organization³ defines an infodemic as “an overabundance of information—some accurate and some not—occurring during an epidemic.” Such an abundance of information cannot be eliminated; therefore, the goal is to guide and educate people on finding trustworthy and reliable sources for information. Ultimately, the speed at which misinformation can spread is often faster than the pace of disease transmission, further emphasizing the need to proactively identify and respond to misinformation and disinformation as a measure of outbreak mitigation.

LESSONS LEARNED

Recommendations for Healthcare Facilities

- During a pandemic, healthcare facilities should communicate daily with healthcare personnel about IPC guideline and policy updates.
- Healthcare facilities should use a variety of formats to communicate vital IPC information to suit different learning styles, and repeat key points during rounds, huddles, and other means of communication.
- When healthcare personnel experience “communication fatigue,” they are less inclined to thoroughly review every update. Therefore, healthcare facilities should make sure urgent updates stand out as high priority. Updates that are less urgent are best combined and published together to indicate their importance level and improve audience receptivity and uptake.
- Healthcare facilities should share updates at the time of day when the individuals most likely to implement the changes will still be on-site.
- Healthcare facilities should emphasize the importance of healthcare personnel safety in all IPC communications. Communicating that every decision made is with the staff’s safety and best interests at heart reassures personnel that they matter and are constantly factored into considerations.
- Healthcare facilities should acknowledge fears and the desire to protect oneself when informing frontline healthcare personnel about new IPC procedures. Leaders should allow staff to verbalize their concerns, fears, and issues. This can be done through leadership rounding to see and hear in real time what the staff are facing; other options include online forums and existing compliance applications and phone lines that allow for anonymous reporting.
- To increase the receptivity of healthcare personnel to new procedures and protocols, healthcare facilities should present information so personnel can easily see what is in it for them.
- Healthcare facilities should use visual communication tools such as infographics and language that is not overly technical to help increase understanding. Visual references can also help audiences comply with IPC recommendations such as social distancing. For example, healthcare systems have presented the number of kayaks or rattlesnakes that would fit within 6 feet to help people picture this distance.

Internal Communication

- Myths, common misunderstandings, disinformation, and misinformation among healthcare personnel should be addressed with commonsense, easy-to-understand terminology and explanations. For example, some healthcare personnel misinterpreted statements from the Centers for Disease Control and Prevention about the low risk of fomite transmission of COVID-19 to mean that cleaning and disinfection are unnecessary. To counter this incorrect conclusion, infection preventionists needed to explain the data to personnel and emphasize the importance of daily cleaning and disinfection in addition to source control strategies such as masking and hand hygiene. These conversations are opportunities to reiterate the additive nature of risk reduction.
- Science communications curricula in healthcare undergraduate and graduate degree programs must include the topic of infodemiology and strategies to combat misinformation.
- Infection preventionists and others involved in internal communications should get ahead of science reports and community-level guidance, such as double-masking, that will likely gain media attention and can be misinterpreted as being applicable in healthcare settings.
- Information should be disseminated in many ways. For example, huddles and rounding are personal approaches that emphasize unity and empathy; intranet pages serve as an accessible home for relevant documents, training materials, and resources.

External Communication

- Public health and healthcare system communications teams should play an integral role in communicating factually accurate IPC information to the public, particularly in the era of social media. Patients and families often refer to hospital websites and hospital-based social media accounts for information. Factual updates should be reiterated at frequent intervals to combat the proliferation of disinformation. According to a study by researchers at the Massachusetts Institute of Technology Media Lab,⁴ false news reports are 70% more likely to be retweeted than true ones, meaning it takes true news six times longer than false news to reach people.
- Public health and healthcare system communications teams should have infection preventionists review talking points and coach those who will be presenting information to ensure communications are consistent and factually accurate.
- If public health professionals and infection preventionists are contacted by media outlets directly, they should work with their organization's communications and risk management teams to be clear about what they can say.



11

CHAPTER

Mitigating Pandemic and Post-Pandemic Workforce Shortages

As the country struggles to move to the next stage of COVID-19, it now faces another challenge, “The Great Resignation” of healthcare workers.

AUTHORS: Richard Capparell, and Lisa Tomlinson, MA, CAE

An essential workforce in holding the line on infectious disease transmission in healthcare, infection preventionists come from a wide variety of backgrounds, such as nursing, public health, epidemiology, microbiology, or medical technology. Infection preventionists:

- Collect, analyze, and interpret health data to track infection trends, plan appropriate interventions, measure success, and report relevant data to public health agencies.
- Establish scientifically based infection prevention practices and collaborate with the healthcare team to ensure implementation.
- Work to prevent healthcare-associated infections (HAIs) in healthcare facilities by isolating sources of infections and limiting their transmission.
- Educate healthcare personnel and the public about infectious diseases and how to limit their spread.

Many infection preventionists are employed within healthcare institutions and serve as educators, researchers, consultants, and clinical scientists. The majority of APIC members are affiliated with acute care settings. However, an increasing number practice in ambulatory and outpatient services, where they direct programs that protect patients and personnel from HAIs. Infection preventionists are also involved in long-term care, home health, and other practice settings where infection prevention and control has increased in importance as the pandemic has driven home the need for adequate IPC resources in these settings (see Chapter 9).

During the COVID-19 pandemic, the role of infection preventionists has become even more essential due to issues identified elsewhere in this paper, such as vaccine hesitancy, rapidly changing infection prevention and control guidance, and lack of adequate personal protective equipment. For example, one mid-western hospital documented a 500% increase in consultation requests during the first six months of the pandemic. Planning for future pandemics should include creative strategies to increase response capacity within infection prevention and control programs such as cross-training other healthcare personnel to contribute during an infectious disease surge.¹

As the country struggles to move to the next stage of COVID-19, it now faces another challenge, “The Great Resignation” of healthcare workers. With many people leaving the healthcare workforce or shifting jobs, some industries are struggling to fill existing positions. Unfortunately, healthcare professionals have been struggling with these challenges for years. A recent survey in the *American Journal of Infection Control (AJIC)* looked at the challenges of recruitment and hiring for infection preventionists (IPs) prior to the pandemic. At the time of the survey, a vacant IP position was reported by 25% of responding organizations.² This issue was further magnified in long-term care settings, where more than half of facilities have seen an IP leave within 24 months.³ With the added stress of the pandemic, there are further concerns of people leaving the profession early or for other positions. Another survey in *AJIC* found that 65% of IPs were reporting symptoms of burnout and 83% reporting a low professional quality of life.⁴





**There is no Monday through Friday.
It is literally 24 hours a day,
seven days a week.”**

**— APIC COVID-19 TASK FORCE
FOCUS GROUP PARTICIPANT**

However, these workforce issues are further compounded by another challenge: retirements. A recent study showed, 40% of the IP workforce will enter retirement age within the next ten years.⁵ IPs are still a relatively new role to healthcare. This role started taking shape in acute care facilities in the 1970's and 1980's, with it becoming a Condition of Participation in Medicare in 1986. With this impending wave of retirements, the field stands to lose some of its pioneers and decades of on-the-ground experience. The knowledge of those leaving the field will be crucial as we not only prepare for the next pandemic, but also continue efforts to lower healthcare-associated infection rates and continue to combat antibiotic resistance. Recruiting individuals to train under these seasoned veterans of the profession will be an important step to capturing their knowledge. Actions must be taken now to encourage new individuals to join the profession and to retain the current workforce.

When infection preventionists were asked what could improve retention, continuing education support and tuition reimbursement were two of the highest rated incentives.⁶ Educational opportunities not only can help retain the current workforce, but they could also lower barriers to enter the field which could help diversify a largely homogenous workforce. As other employment opportunities arise, it will be crucial to incentivize and retain the current infection prevention workforce.

With these staffing challenges ahead, questions about how to replace this valuable workforce come into focus. Currently, few universities offer a minor in infection prevention and control and no facilities offer a bachelors or associates degree. This lack of educational pathways combined with growing demand for IPs leads many facilities to hire individuals “with minimal infection prevention experience.”² Further requiring action, now so the veterans and pioneers of the field can transfer their experience and knowledge.

Historically, this field has been a hands-on training position with little preparation before hire. As many of the leading pioneers of this field enter retirement, it will be important to have a workforce ready on day one.

LESSONS LEARNED

Recommendations for Healthcare Facilities

- Certification is an important way to demonstrate competency in this field and has been tied to better patient outcomes in hospitals.⁸ While facilities and universities, establish an academic pathway to the profession, certification needs to be required for those entering the field.
- Given the high demand for infection preventionists' skills during a pandemic, policymakers should require that healthcare facilities allocate additional support and resources to traditional surveillance activities. This ensures that tracking for healthcare-associated infections and monitoring for adherence to best practices continue during future public health emergencies. healthcare surges, such as a pandemic.

Recommendations for Policymakers

- Congress should allocate funds for healthcare facilities to build IPC capacity to ensure the continuity of safe patient care during a pandemic and to have enough frontline infection preventionists during an infectious disease emergency, such as a pandemic.
- Policymakers should fund “just-in-time” infection prevention and control education and training for widespread dissemination to healthcare personnel and the broader workforce during a pandemic.
- Congress should fund incentives for universities to create an academic pathway for infection preventionists, who are the backbone of the infection prevention and control infrastructure in a wide range of healthcare settings. Further, these individuals were often called up by non-healthcare employers to assist in getting a wide range of work settings from education to sports and entertainment back to work safely.
- Congress must invest now in incentivizing the next generation of healthcare professionals to join the infection prevention and control pipeline. Legislation has been introduced to create a loan repayment program for infectious disease personnel, which can be crucial to attracting and retaining talent.
- The Department of Labor should recognize infection preventionists as separate and distinct employment category. These highly skilled professionals have been employed in their distinctive area of practice for 50 years.

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