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United front: Emergency management managers, public health, and infection prevention

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ABSTRACT

Introduction: *Response to infectious diseases-related events may present a challenge to cooperative disaster management and emergency preparedness strategies. The primary objective of this investigation was to identify areas of strength and areas needing improvement in emergency management (EM) coordination between public health (PH) and infection prevention (IP) officials during disasters. A secondary objective was to evaluate education and training among EM, PH, and IP as they relate to increasing the number of mutually supportive relationships.*

Methods: *An eight-question survey was conducted among individuals working in New Jersey with responsibilities in PH, EM, and IP to identify themes and the current state of collaboration.*

Results: *The results of this survey suggested that more dedicated personnel in EM are needed for effective health system disaster planning.*

Conclusion: *Stronger disaster response action plans can only be achieved through improvements in collaboration among stakeholders in EM, PH, and IP. These partnerships are essential to control disease transmission and protect the public from preventable harm.*

Key words: emergency management, infection prevention, public health

INTRODUCTION

Over the last 10 years, public health emergencies have included but not been limited to the coronavirus disease 2019 (COVID-19) pandemic, the 2009 swine flu pandemic, the 2013 Ebola virus epidemic, and the 2015 Zika virus epidemic.[1,2] With the significant impact of these pathogens contributing to morbidity and mortality, there needs to be a stronger united front, better collaboration, and more cohesive partnerships among emergency management personnel, public health workers, and infection prevention stakeholders.[1] The public health emergency and the subsequent devastation from the COVID-19 pandemic have highlighted the need to incorporate lessons learned to improve emergency management programs in healthcare.[3] The goal of this study is to understand the characteristics of partnerships or divisions among emergency management, public health, and infection prevention professionals and whether existing partnerships among emergency management, public health, and infection prevention professionals can be improved with training programs.

Infection prevention professionals seldom take the lead in emergency preparedness-related operations, trainings, or after-action reports. Nevertheless, infection prevention professionals increasingly find themselves taking leadership roles in emergency planning endeavors. Although infection prevention professionals have specific roles and knowledge to individually lead during these emergencies, a team approach is preferred to tighten the gaps.[4] Infection prevention professionals help develop facility and community emergency management plans.[4] Training programs in public health emergency management (PHEM), however, need to be strengthened to ensure that practical applications in the field continue to evolve at a pace to keep up with infection prevention needs.[4] One of the critical needs in this regard is assigning roles and tasks for improved communication and integration related to public health, emergency management, and infection prevention.[5]

The importance of assigning emergency preparedness tasks in healthcare programs has correspondingly

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increased with the increasing frequency of emerging and reemerging infectious diseases over the last decade.[6] Despite existing frameworks and plans, the COVID-19 pandemic tested healthcare facilities' emergency plans and exposed significant vulnerabilities in healthcare.[6] Actionable steps should be formed using lessons learned from COVID-19, and those exposed vulnerabilities should be addressed as part of emergency preparedness programs. Past disasters have shown that proactive use of lessons learned improves future abilities to respond effectively to future incidents. Examples of disasters that brought improvements to emergency management partnerships across different responding professionals include, but are not limited to, the events of 9/11, Hurricane Katrina in New Orleans in 2005, Hurricane Sandy in New Jersey in 2012, the pandemic influenza flu outbreak in 2009, and the Ebola concerns in 2014.[7] The relationships among various stakeholders involved in infection prevention are thus important to recognize if effective future planning is to be achieved.

One barrier/obstacle that creates challenges for strong partnerships to exist includes divisions of authority among various responding governmental and nongovernmental entities, as illustrated in Figure 1.[9] Such barriers were seen in attempts at collaboration during the COVID-19 pandemic.[9] The lessons learned from the COVID-19 pandemic can provide valuable insights and suggest collaborations to better manage future crises globally. A public health framework may be able to help strengthen the response and work to reduce the barriers by identifying roles and responsibilities early on.[10] Such a framework would potentially involve planning, training, exercising, and sharing real-world experiences to provide a more resilient and coordinated response, maintain relationships, and open communication channels.[10] An interdisciplinary team approach has demonstrated improved outcomes and efficiencies when focused solely on emergency management.[7] Public health professionals and emergency management have various skills and perspectives when managing public health emergencies, which, when combined, may improve infection prevention outcomes.[11] To further evaluate the impact of collaboration between emergency management, public health professionals, and infection prevention, a survey was conducted as a gap analysis to identify the current state of collaboration in the State of New Jersey. A gap analysis was chosen because there were a lot of unknown components and an interest in learning what other professionals were doing in their respective fields.

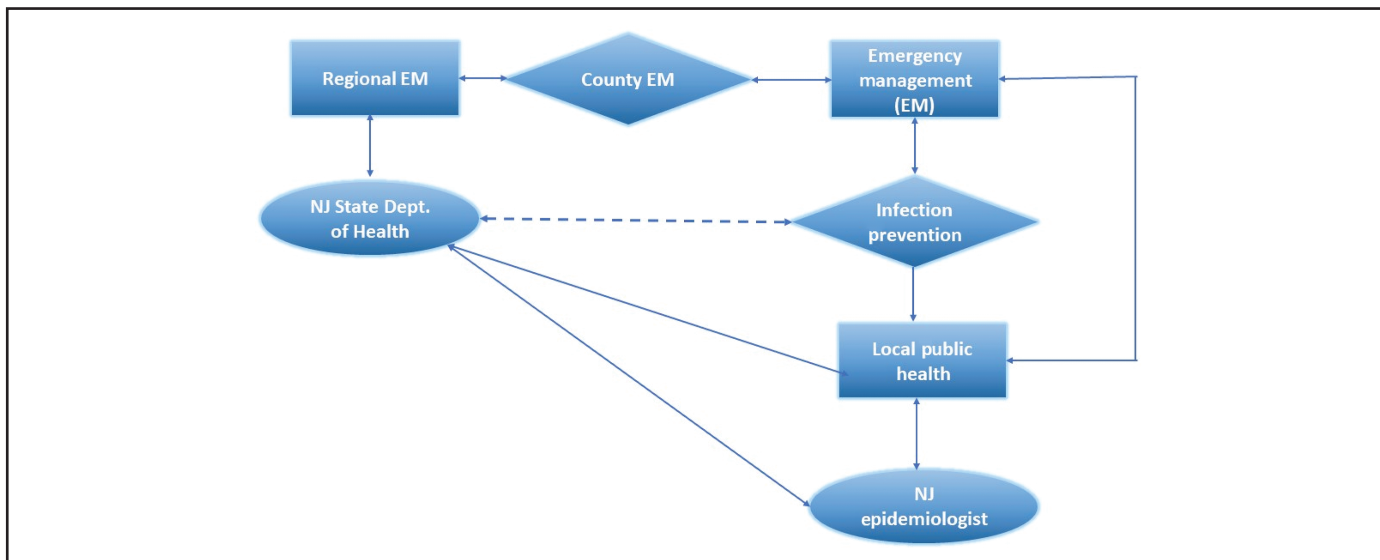

Figure 1. Current emergency management and infection prevention roles in the state of New Jersey.[8]

METHOD

The primary objective of this study was to evaluate the relationship between public health, emergency management, and infection prevention. Secondary objectives were to evaluate the benefit of public health training related to emergency management and infection prevention-leading emergency management activities. This was an Institutional Review Board-exempt, eight-question survey interview that was developed to understand the collaboration between emergency managers, public health specialists, and infection preventionists. A survey approach was taken to evaluate the responses and identify the role of infection prevention as the primary responsible party in communicable disease management planning. There were five groups of individuals, with five respondents in each group. Interviews were conducted throughout the state of New Jersey in July 2022. The participants were identified at all levels of government and nongovernmental organizations, including regional, county, and local public health officers, healthcare public emergency management professionals, and infection prevention professionals. Peer-reviewed articles were utilized for a foundational understanding of the survey questions and literature review. Surveys were coordinated and conducted by phone by a single interviewer, targeting 30 participants from various healthcare facilities, emergency management, and public health agencies, with an overall response rate of 25/30 (83 percent).

The survey included a series of questions with discrete answers of "yes" or "no." These questions were part of the gap analysis to identify the current state of the collaboration with infection prevention and compare it to our current institutional practice. The relationship between public health, emergency management, and infection prevention for the primary objective utilized survey questions 1-7, and the secondary objective being question 8 (Table 1).

Questions were developed by a single interviewer but reviewed with the infection prevention team at a single site. Survey data was collected, and descriptive statistics (proportions and percentages) were evaluated in Microsoft Excel® (Redmond, Virginia).

RESULTS

Those interviewed included emergency management professionals in healthcare, infection prevention managers in healthcare, public health epidemiologists, regional, state, and local public health departments, and regional and county emergency management offices in New Jersey (Table 1). The cumulative results from the survey are displayed in Figure 2. The results from the survey indicated 48 percent (12/25) of respondents felt there was a strong partnership between all the groups. This survey also identified that all respondents indicated there is a benefit to public health training related to emergency management.

Interviewees who worked at healthcare facilities without emergency management teams favored infection prevention professionals being responsible for public health emergency preparedness and response. Local and state agency respondents agreed that the assistance and resources provided by infection prevention professionals were instrumental in an effective response to public health emergencies.

DISCUSSION

The results of this study show that infection prevention professionals not only provide important services for the prevention of public health emergencies but are also key responders during public health emergencies. The respondents indicated that infection prevention experts and teams would be called for disaster response for pandemics, emerging diseases, and outbreaks (100 percent). Emergency management professionals are primarily responsible for developing disaster management plans, but when infectious-related emergencies arise, infection prevention teams generally develop these plans. However, these plans should not be developed in silos, but rather collaborative efforts should be taken with appropriate stakeholders (96 percent) (Table 1).

While best practices and literature emphasize the need for collaboration, this survey indicated a weak partnership between the groups (48 percent). This may be related to a lack of dedicated resources for healthcare hazards, specifically health systems without emergency management teams, which favor utilizing infection prevention as the lead responder

Table 1. Survey results and baseline characteristics					
Questions	Respondents (N = 25)				
	EM-healthcare, n = 5	IP managers healthcare, n = 5	NJ state public health epidemiologist, n = 5	Regional, state, and local public health departments, n = 5	Regional and county EM, n = 5
1. Do you respond to communicable disease as part of EM?	4 (80 percent)	5 (100 percent)	5 (100 percent)	5 (100 percent)	5 (100 percent)
2. Do you have a team of EM in healthcare and public health?	3 (60 percent)	3 (60 percent)	5 (100 percent)	3 (60 percent)	5 (100 percent)
3. Do you prepare plans for all EM incidents and plan drills and exercises?	4 (80 percent)	5 (100 percent)	4 (80 percent)	3 (60 percent)	5 (100 percent)
4. Do you call IP on all disaster incidents related to pandemics, emerging diseases, and outbreaks?	5 (100 percent)	N/A	5 (100 percent)	5 (100 percent)	5 (100 percent)
5. Do you respond to disasters related to pandemics, emerging diseases, and outbreaks?	3 (60 percent)	5 (100 percent)	5 (100 percent)	5 (100 percent)	5 (100 percent)
6. Do you feel that IP should be the only responsible party to prepare plans, exercises, and response for disaster incidents related to pandemics, emerging diseases, and outbreaks?	1 (20 percent)	0 (0 percent)	0 (0 percent)	0 (0 percent)	0 (0 percent)
7. Do you feel there is a strong partnership between EM, IP, and public health in healthcare?	3 (60 percent)	2 (40 percent)	2 (40 percent)	2 (40 percent)	3 (60 percent)
8. Would there be a benefit to public health training as it related to EM?	5 (100 percent)	5 (100 percent)	5 (100 percent)	5 (100 percent)	5 (100 percent)
All results displayed in responses of "yes." EM: emergency management; IP: infection prevention; NJ: New Jersey. All results displayed as n (percent).					

and developer of action plans. During infectious disease outbreaks and other disasters, partnerships with public health, emergency management, and infection prevention professionals should be strengthened.[12]

Education, training, drills, and exercises can also improve outcomes to strengthen preparedness capabilities and identify gaps in knowledge. While 84 percent of those surveyed participated in exercises and

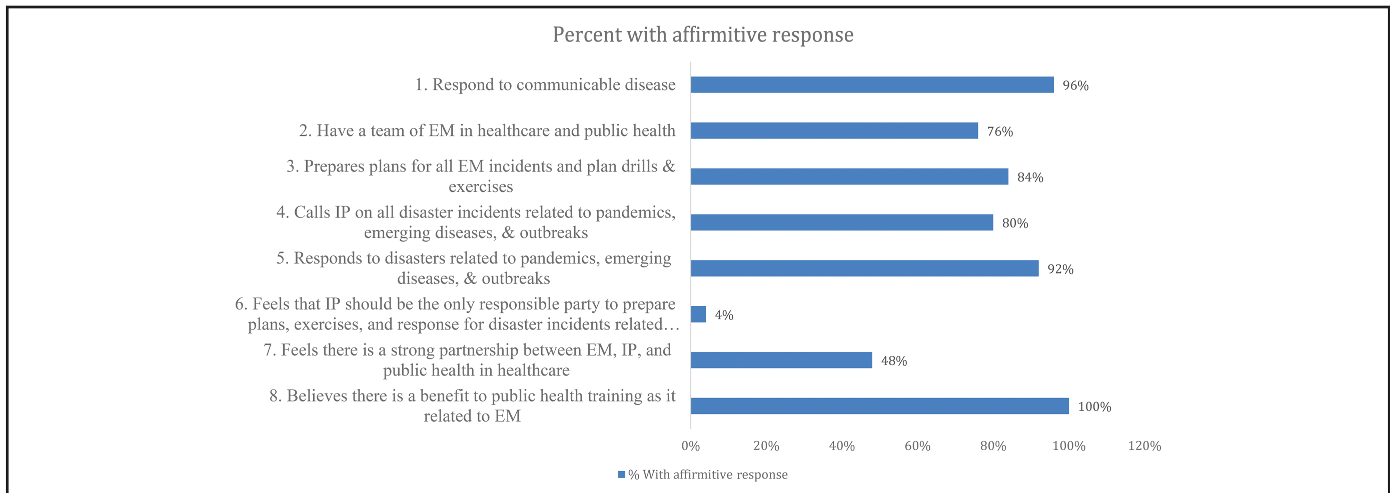

Figure 2. Summary of outcomes. EM: emergency management; IP: infection prevention.

drills, 16 percent did not, indicating there should be a stronger emphasis on the importance of preparedness in emergency management to evaluate, test, and re-evaluate plans.

PHEM is an emerging field of practice that draws on specific sets of knowledge, techniques, and organizing principles necessary for the effective management of complex health events.[13] Healthcare-specific PHEM programs should be developed to encourage improved facilitation between teams of professionals.[12,13]

LIMITATIONS

This evaluation has some limitations in the small sample size and generalizability based on geography as it was only conducted in New Jersey. Future studies could include widening the sample size, jurisdictions, and states, and elaborating on the survey questions. Survey question elaboration could include additional demographic information, more open-ended questions on response planning, reviewing plans, and focusing on methods of collaboration and coordination.

FUTURE PLANNING FOR COORDINATION PROBLEMS

Throughout the last several years in the response to the COVID-19 pandemic, barriers have been identified specifically related to coordination during response. There have been plans to mitigate communication barriers, improve networking, collaboration, and partnerships, and provide standardized education to all professionals in healthcare and emergency management. Ineffective information sharing and silos lead to poor communication in public health emergencies and negative outcomes. This has been identified during recent pandemic responses with emergency management, public health, and infection prevention professionals.[2] This resulted in a response that was chaotic, inefficient, confusing, and provided a significant level of uncertainty.[15] The use of data analytics and artificial intelligence has been able to assist with collecting, analyzing, and communicating data more effectively and efficiently for epidemiological modeling of various hazards.[13,15] This allows for improved forecasting for emergency management, public health, and infection prevention personnel when it comes to healthcare infrastructure needs, eg, supply chain management, medical supplies, human resources, testing centers, and vaccination resources.[13] Additional modeling and data analytics can be done to consider the impact on all potential stakeholders and for recovery planning.[13,14] Businesses suffered in the initial activation of emergency management responses, which was significantly highlighted during COVID-19.[14,15] With alternative perspectives, performing a business impact analysis with emergency management, infection prevention, and public health may help with early identification of gaps, threats, and risks to provide valuable recommendations for a more expedient recovery.[14]

Continuous planning and preparation via drills or exercises on a regional level can be a potential solution to mitigate ineffective responses. Bringing together professionals with interdisciplinary backgrounds is one method to integrate team members and provide a forum to build relationships, share experiences, and learn lessons. One such example is the International Preparedness and Response to Emergencies and Disasters Conference.[11] A more practical approach to healthcare systems may include a scaled down local or regional forum. This could provide similar opportunities and promote networking between healthcare professionals or conduct large-scale drills to display the capabilities of multidisciplinary agencies for prehospital and in-hospital team members.[16] The Centers for Disease Control and Prevention offers a PHEM Fellowship twice a year.[17] The fellowship program builds PHEM capacity among members of the international public health community through standardized training, mentorship, and technical assistance, which can be expanded to provide similar opportunities for all levels of emergency management managers, public health, and infection prevention.[17] Simulation in healthcare scenarios for disaster management and preparedness are also being incorporated into education for healthcare professionals. For example, a Swiss hospital pharmacy incorporated a mass casualty simulation to evaluate hospital response and conduct gap analysis to improve preparedness.[18] Education and training are some of the foundations for improved response processes and should be incorporated into emergency management practices with all stakeholders.

CONCLUSION

These unprecedented response efforts to the COVID-19 pandemic have illustrated that, more than ever, partnerships between emergency management, public health, and infection prevention are essential to control disease transmission and protect the public from preventable harm.

The health impacts of recent infectious disease outbreaks and other disasters have demonstrated the crucial need for collaboration and integration between emergency management, public health, and infection prevention professionals. The interconnectedness of these fields is evident in the response to infectious disease outbreaks and other disasters. Strengthening the capabilities of these professionals through additional support for training programs is vital to address the identified gaps and create a more unified and effective approach. There is a need to maintain a collaborative relationship and open communication among emergency management, public health, and infection prevention, which is key to sustaining effective programs. This collaboration not only enhances the response to specific hazards but also acknowledges the influence of environmental complexities, demographics, social constructs, and the challenges posed by both novel and re-emerging diseases.

There is a limited defined role for infection prevention and public health in emergency management. Removing silos and incorporating experts with a wide range of specialized knowledge can help guide decision-making processes that impact morbidity and mortality. The role of infection prevention and public health in emergency management is essential, regardless of the type of hazard or event. In addition, experts can be cross trained, serve as liaisons, or take on leadership roles to strengthen the emergency management response and serve as advocates during planning and response.

Future studies could include expanding the sample size to a regional or national survey to provide a broader perspective and potentially uncover trends or patterns that may not be apparent in smaller-scale studies, evaluating best practices from organizations and case reports, or evaluating collaborative interventions on response.

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