



NATIONAL ASSOCIATION OF STATE EMS OFFICIALS

February 2018

Capabilities Assessment for the Interfacility Transport of Patients with Special Pathogens – Final Report

This report summarizes the findings from a 2017 survey of state EMS offices to determine the national capabilities and capacity for the transport of patients with special pathogens from one facility to another. This report addresses both ground and air ambulance transport.

ACKNOWLEDGEMENTS

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INTRODUCTION

In March of 2014, the largest Ebola virus disease (EVD) outbreak on record began in West Africa. Unlike many smaller preceding outbreaks of EVD, this particular outbreak spread to multiple African countries. The United States Centers for Disease Control and Prevention (CDC) reported that between March 2014 and April 2016, there were a total of 28,652 suspected, probable, and confirmed EVD cases, with a total of 11,325 deaths among the cases. In August 2014, the first American EVD patient was evacuated from West Africa and flown to the United States (U.S.) for treatment. Subsequently, six (6) additional patients were also evacuated to the U.S. for treatment.

In the Fall of 2014, four (4) cases of EVD were diagnosed within the U.S. and received treatment at domestic healthcare facilities. Epidemiological investigation confirmed that two (2) of the four (4) cases were people infected while in West Africa. The remaining two (2) cases were healthcare workers who cared for one (1) of the domestic cases.

The patients evacuated from West Africa for treatment in the United States and the cases that presented at U.S. healthcare institutions highlighted the critical need to ensure that all components of the U.S. healthcare system are prepared to identify, isolate, transport, and treat patients with a suspected or confirmed infection with EVD or another special pathogen. To protect the individual health status of the personnel providing direct care to suspect/confirmed cases and the health of the general public, the U.S. healthcare system must be able to perform these critical activities in a manner that is both timely and minimizes the potential risks of exposure.

While significant resources have been invested in healthcare system preparedness, the majority of these resources have been focused on hospital and healthcare worker preparedness activities. Hospital-centric initiatives to ensure capabilities for treating EVD and/or special pathogen patients include the establishment of the National Ebola Education and Training Center, ten (10) Regional Ebola and Special Pathogen Treatment Centers, and a tiered system of frontline, assessment, and treatment hospitals within each U.S. state and territory. Although prehospital transport and patient care is also an important component of the healthcare system, less resources have been invested to ensure that emergency medical services (EMS) agencies and EMS providers are fully

prepared to execute their responsibilities during incidents that involve suspect or confirmed special pathogen patients.

To assess the current capabilities of the U.S. EMS system to transport special pathogen patients in a safe and timely manner, the U.S. Department of Health and Human Services' (HHS) Office of the Assistant Secretary for Preparedness and Response (ASPR) entered into a cooperative agreement with the National Association of State EMS Officials (NASEMSO): Enhancing the Ability of EMS to Transfer Patients with Confirmed or Suspected High Consequence Infectious Diseases (“Interfacility Special Pathogen Transport Project”). This report provides the findings from the national capabilities assessment that was conducted.

METHODOLOGY

For the execution of this project, NASEMSO worked with ASPR to establish a 12member Expert Panel and five (5) member Capabilities Assessment Work Group. The Expert Panel was comprised of representatives from national organizations that have a primary interest in EMS transport issues. See Appendix A for a list of organizations represented on the Expert Panel. The Work Group was comprised of representatives from state EMS offices and the EMS Biosafety Transport Consortium. NASEMSO assigned three (3) staff members to the Panel and Work Group to facilitate project work.

The Expert Panel was charged with providing direction and oversight for assessment development and approving the resultant report. The Work Group was responsible for conducting a review of prior national EMS transport assessments with relevancy to the project, developing the assessment tool, conducting an analysis of assessment findings, and developing this report. The Expert Panel and Work Group accomplished these tasks through one (1) in-person meeting each and a series of virtual meetings.

As part of the larger Interfacility Special Pathogen Transport Project, NASEMSO established a five (5) member Transport Plan Template Work Group. This Work Group was tasked with developing a planning template for use by state EMS offices to assist them with developing and/or updating their interfacility transport plans. The template identifies key components that should be included in a plan, considerations that planners should contemplate when developing plans, and best practices gleaned from the literature review and EVD patient transport experiences of EMS Biosafety Transport Consortium members.

To inform assessment question development, NASEMSO staff and Work Group members conducted a comprehensive review of existing state and local EMS transport plans and national EMS transport capabilities assessments to identify the key functions that a jurisdiction must be prepared to execute in order to transport a special pathogen patient from one facility to another while minimizing the potential risks of exposure to others. The Transport Plan Template Work Group was also consulted and the draft template was reviewed to ensure that the list of key functions being considered for inclusion in the assessment was comprehensive. The results of this review identified that both the Capabilities Assessment and Transport Plan Template Work Groups had

identified a very similar list of core functions critical to successful transport operations. The combined list was used as the basis for selection of the questions to include in the assessment.

After finalization by the Capabilities Assessment Work Group, the draft assessment tool was sent to the Expert Panel for review and comment. The updated assessment tool was then sent to the NASEMSO Executive Committee, who was asked to review the assessment tool and provide feedback both in terms of content and length of completion time.

NASEMSO membership includes all 50 states, the District of Columbia, and five (5) territories. Throughout this report, “state” is inclusive of DC, commonwealths, and territories. State government plays a crucial role in EMS performance and protection of the public through regulatory mechanisms to assure that ambulance services’ availability, staffing, equipment, education, and other clinical and operating conditions meet or exceed minimum standards. Through their ability to promote efficiency and effectiveness on a systems level, state governments promulgate procedures, communications, planning, and other interagency practices through direct regulatory means. The patient care and transportation setting comprise the out-of-hospital environment, which includes, the emergency prehospital setting; the equally important interfacility mode of transportation; and the point of interface between the transportation mode, the point of origin of the patient, points of transfer enroute, and the destination facility. For these reasons, the targeted respondent within each state to complete the assessment was the state EMS director.

As part of the HHS-funded Hospital Preparedness Program (HPP), three (3) cities receive funding directly from HHS for healthcare system preparedness. While these cities are encouraged to work in collaboration with their respective state governments to coordinate preparedness efforts, the availability of this targeted funding has often resulted in the development of capabilities that exceed the capabilities of the rest of the state. To ensure that the results of the assessment reflect the true status of national capabilities, NASEMSO opted to include these additional entities (New York City, the City of Chicago, and Los Angeles County) as direct recipients of the capability assessment. The assessment was sent to the Commissioners of the three directly funded cities.

Acknowledging that no two state EMS offices are structured exactly alike and that there is wide variability of responsibilities among the different EMS offices, NASEMSO sent a hard copy of the assessment questions to each EMS director in advance of the assessment release. The intent of employing this strategy was to provide EMS directors with adequate time to research the answers to the assessment questions for topic areas in which they may not have direct oversight; optimally increasing the accuracy of assessment findings and overall completion rate. The questions were sent to the EMS directors on July 24, 2017; they had one week for review and research until the official release of the assessment.

SurveyMonkey® was used for assessment deployment, a link to which was sent via e-mail to the state/city EMS director or equivalent position on July 31, 2017. Respondents were asked to complete the assessment no later than August 14th (allowing two weeks for responses). Targeted respondents who had not yet completed the survey were sent reminder e-mails on August 14th, and follow up phone calls were made during the week of August 21st. Those who did not complete the assessment by September 8th were excluded from the results compiled in this report. All respondents finished the survey except one. The respondent of the one partially completed survey stopped answering questions a quarter of the way through the survey. The answers from the partially completed assessment are included in the analysis. Some respondents skipped questions within the survey, which is why the total responses for each question differs.

Graphical analysis was conducted for each assessment question. As appropriate, the results were stratified by states and cities. For questions that allowed free text comment to explain why the "other" answer choice was selected, some answers were moved from the "other" categories into prescribed answer choices for the question. This was done for those narrative answers that clearly fit one of the answer choices provided.

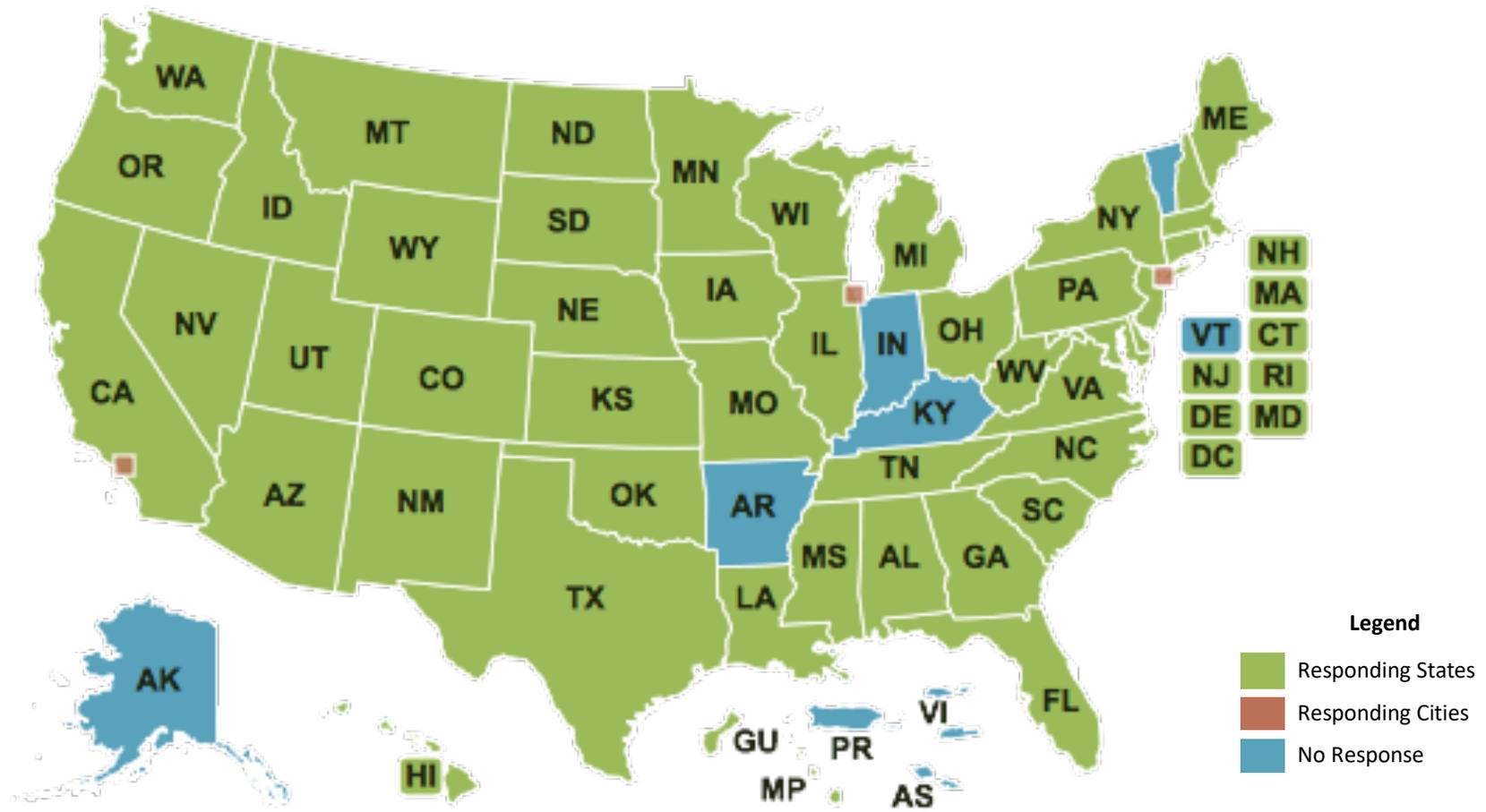
Narrative answers that did not match a prescribed answer choice were left in the "other" category and reported as such. A copy of the assessment instrument can be found at <http://www.nasemso.org/documents/NASEMSO-Capabilities-Assessment-Questions.pdf>

DEMOGRAPHICS

Represented States

The states and cities shown below responded to this survey (51 states & cites; 86% response rate):

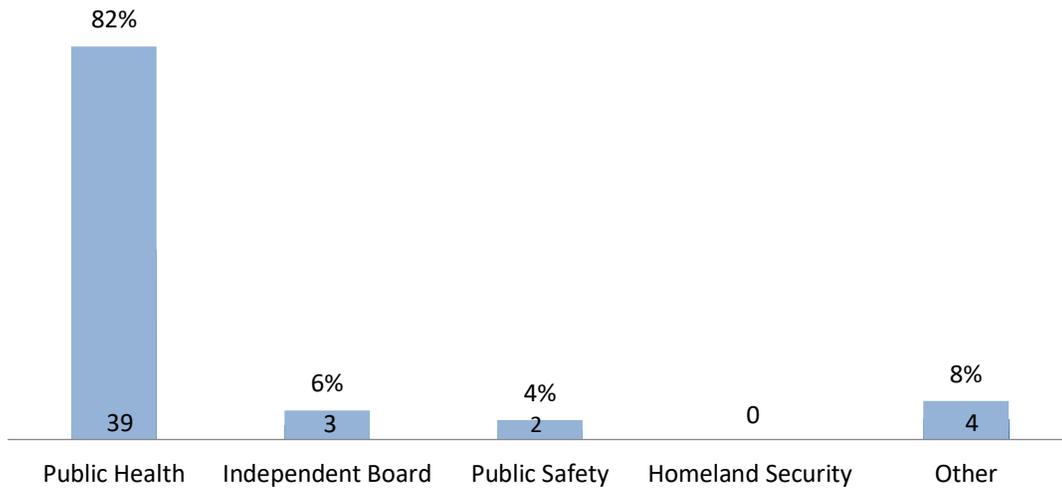
FIGURE 1



State EMS Office Location

Question:
Organizationally, where does your state EMS office reside within state government?
Total Responses: n=51

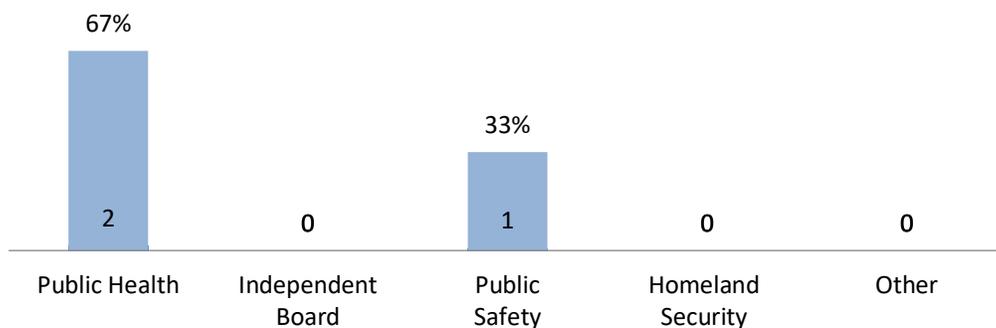
FIGURE 2 – EMS OFFICE LOCATION, STATES (n=48)



“Other” Responses, States (n=4)

- Department of Health Epidemiology and Response Division (Public Health is another sister division)
- Department of Safety
- Fire Department
- Independent department within Health and Human Services Agency

FIGURE 3 – OFFICE LOCATION, CITIES (n=3)



FINDINGS

Special Pathogen Interfacility Transport Plans – General

Question:
Does your state/city have a written Special Pathogen Interfacility Patient Transport Plan?
Total Responses: n=51

FIGURE 4 – WRITTEN TRANSPORT PLANS, STATES (n=48)

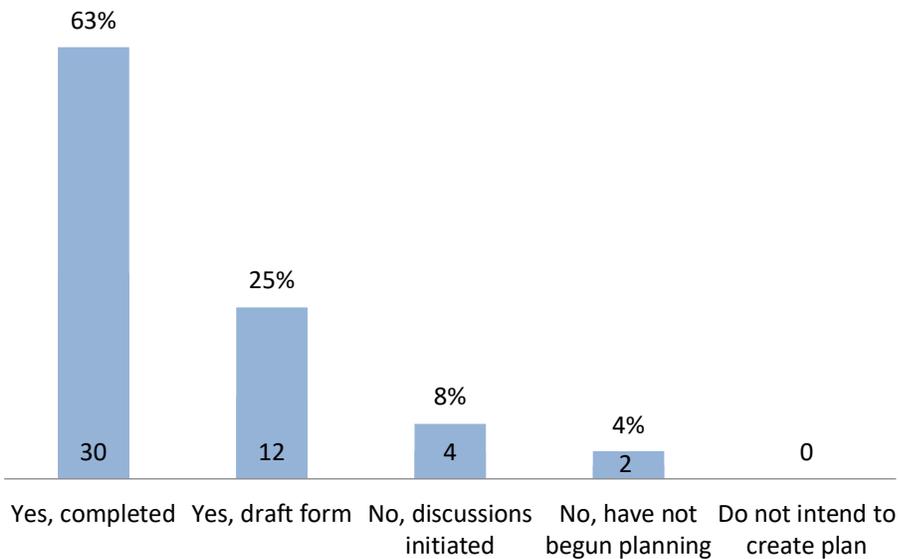
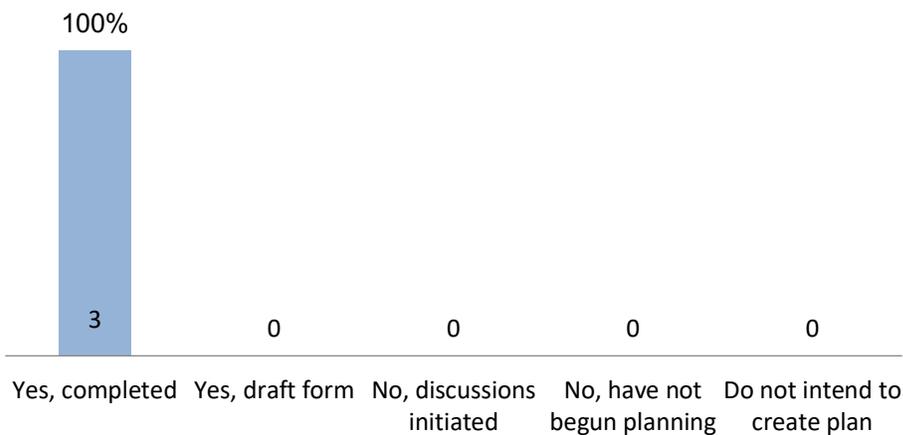
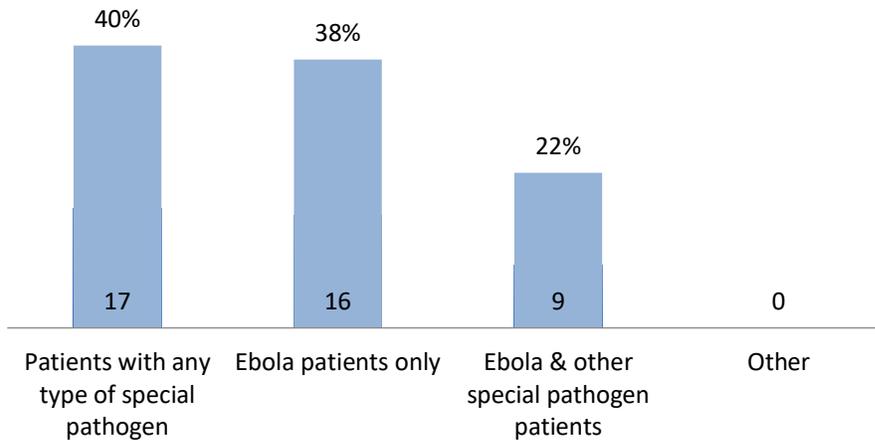


FIGURE 5 – WRITTEN TRANSPORT PLANS, CITIES (n=3)



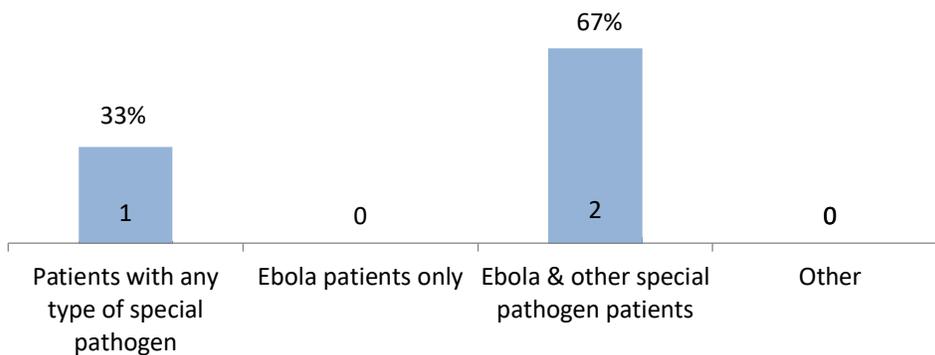
Question
*Is your Plan specific to transport of a suspected or confirmed Ebola patient
or does it also address the transport of patients with other special pathogens?*
Total Responses: n=45

FIGURE 6 – SCOPE OF PLAN, STATES (n=42)



Three of the "Ebola only" respondents are using the Ebola plan as the starting point to expand to a more comprehensive special pathogen plan.

FIGURE 7 – SCOPE OF PLAN, CITIES (n=3)



Summary & Discussion

Ninety-six percent of state respondents reported that they have already completed their plan, have a plan that is in draft form, or are currently in the discussion phase of the planning process. All city respondents reported that their plans are completed. The high percentages demonstrate the importance state and city officials have placed on developing capabilities for transporting patients with a suspect or confirmed special pathogen diagnosis from one facility to another.

As a requirement attached to targeted funding received from ASPR, states and the three directly funded cities were to develop plans for the safe transport of a patient with a suspect or confirmed diagnosis with EVD. Knowing that there are many similarities between requirements and logistical considerations for safely transporting a patient with EVD and a patient with another special pathogen, it is encouraging to see that many of the state and all of the city respondents have expanded upon their EVD interfacility patient transport plans to include other or all special pathogen interfacility patient transports or have indicated that they intend to expand upon the EVD plan to include other special pathogens. This demonstrates use of the all-hazards approach to emergency planning and foresight by government officials to leverage resources and begin preparing now for the next, but currently unknown, special pathogen that may impact the United States population.

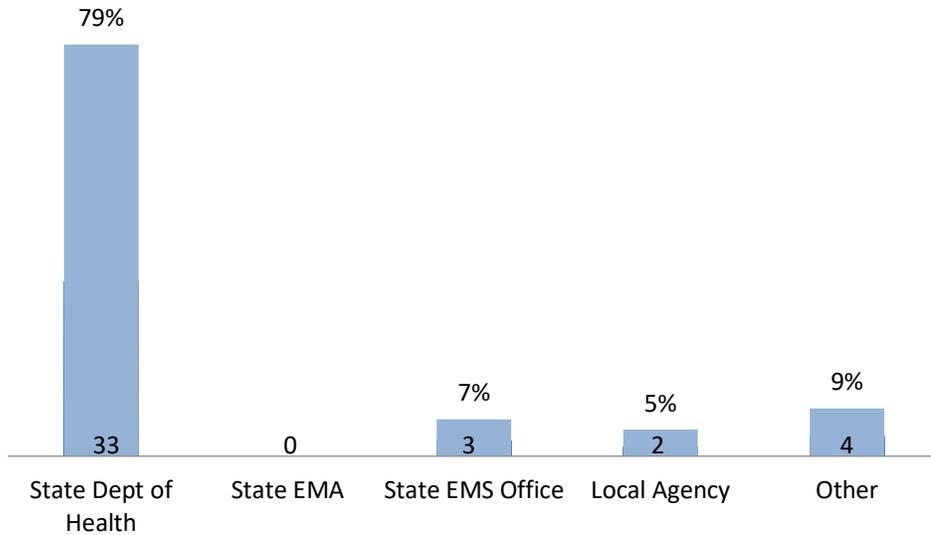
Recommendations

States and cities are encouraged to maintain, and ideally increase, the capabilities that have been developed for the interfacility transport of Ebola and special pathogen patients. Plans must be reviewed and updated on a schedule that is compliant with state policy regarding the frequency of review and update of emergency plans. Regular training and exercise opportunities must be provided for the personnel who will be charged with plan execution and response, as well as the ongoing procurement and maintenance of equipment and supplies necessary for plan execution. A long term funding commitment to sustaining capabilities by federal, state, city, and local stakeholders is required to facilitate the abilities of states/cities to educate, train, and equip EMS personnel to transport patients with a suspect or confirmed special pathogen diagnosis anytime, anywhere within our country.

Plan Development and Maintenance

Question:
Who has primary responsibility for Plan development and maintenance?
Total Responses: n=45

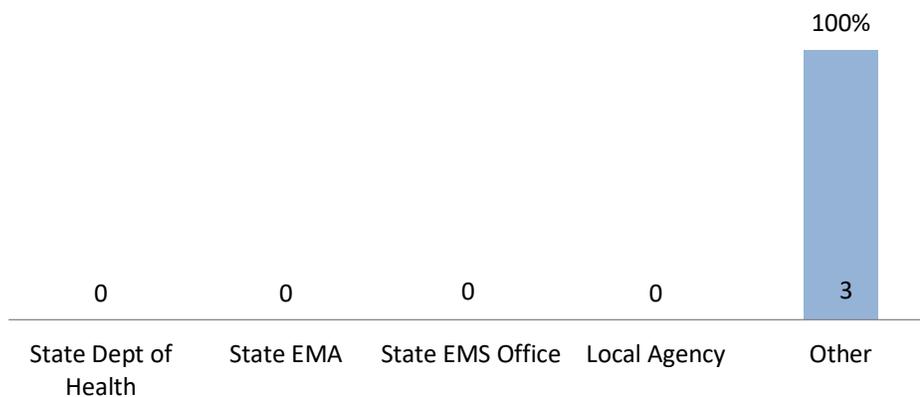
FIGURE 8 – RESPONSIBILITY FOR PLAN DEVELOPMENT AND MAINTENANCE, STATES (n=42)



“Other” Comments, States (n=4)

Two respondents reported that that public health and the office of EMS share the responsibility for plan development and maintenance. One entity stated that responsibility for this function depends on the plan. The final entity identified their Special Pathogens Response Network, comprised of the Bureau of EMS, Trauma, and Preparedness; Local/Regional Healthcare Preparedness; health departments, and local EMS agencies as being the responsible party.

FIGURE 9 – RESPONSIBILITY FOR PLAN DEVELOPMENT AND MAINTENANCE, CITIES (n=3)



“Other” Comments, Cities (n=3)

- City Department of Public Health
- Dept of Health in conjunction with {City} Fire Dept – the latter responsible for 911 EMS systems
- Local EMS Agency and Regional Disaster Medical and Health Coordinator

Question:
{asked only to respondents who responded that the state EMS office was not primarily responsible in Plan development and a Plan is completed or in draft form}

Was the EMS office involved in the [development] process?

Total Responses: n=41

FIGURE 10 – EMS OFFICE INVOLVED IN PLANNING PROCESS, STATES (n=38)

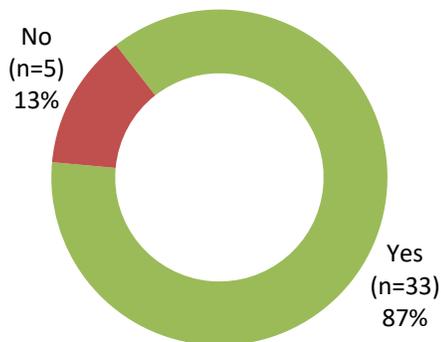
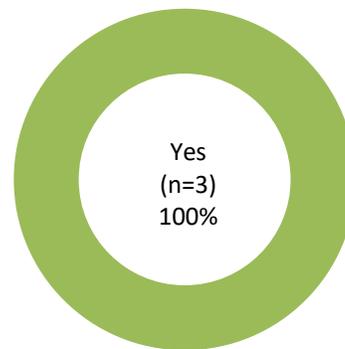


FIGURE 11 – EMS OFFICE INVOLVED IN PLANNING PROCESS, CITIES (n=3)



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Question:
Does the state EMS office participate in development or review of:
Total Respondents: n=51

FIGURE 12 – PARTICIPATES IN PLAN DEVELOPMENT OR REVIEW, STATES (n=48)

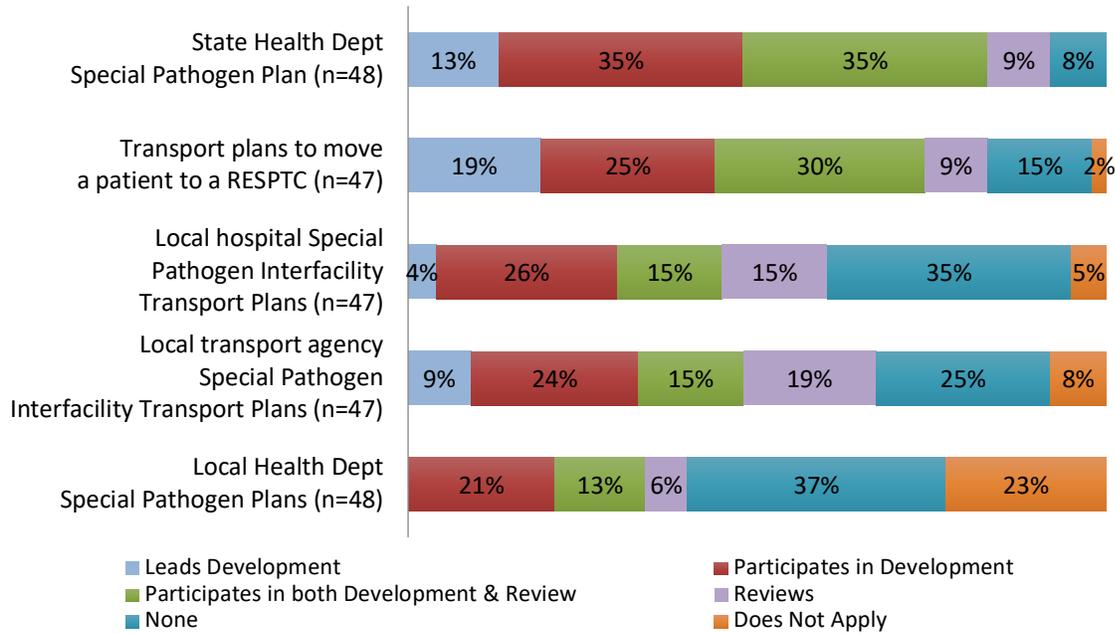
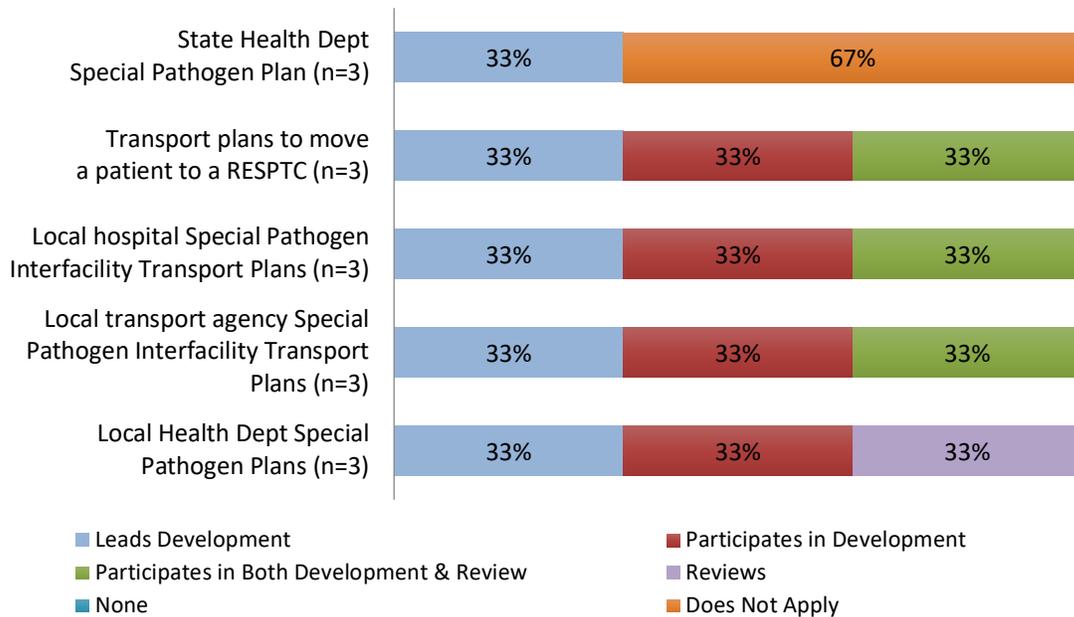


FIGURE 12 – PARTICIPATES IN PLAN DEVELOPMENT REVIEW, CITIES (n=3)



Summary & Discussion

Seventy-one percent of state respondents indicated that the state department of health has primary responsibility for the development and maintenance of the state's special pathogen patient interfacility transport plan and 7% of respondents indicated that the state EMS office has primary responsibility. An additional 75% of the respondents who chose "other" indicated that the office of EMS *and* health department share this responsibility, sometimes with additional entities too. For city respondents, the department of public health serves as the plan development and maintenance lead in 33% of the jurisdictions, the department of public health shares this responsibility with the local fire department in 33% of responding jurisdictions, and the local EMS and the Regional Medical Health Coordinator share this responsibility in the remaining jurisdiction. When EMS is not the primary entity responsible, 87% of state respondents and 100% of city respondents specified that EMS is involved in the planning process. In 83% of the state's survey and 67% of the cities, it was reported that the office of EMS resides within the department of public health. Therefore, it is possible that the office of EMS leads plan development and maintenance with greater frequency than was reported if respondents selected "department of health" as the responsible entity instead of "office of EMS" because the department of health is inclusive of the office of EMS.

Regardless of whether EMS serves as the planning lead or as a member of the planning team, government officials should be commended for ensuring that the state EMS office is involved in the process in 94% of states and the local EMS agency is involved in 100% of the cities. The state EMS office plays a critical role in the regulation and oversight of EMS systems and individual EMS practitioners. To ensure that special pathogen patient interfacility transport capabilities are maintained, it is vital that state EMS offices remain involved at this high level.

Special pathogen patient interfacility transport plans cannot exist in isolation if they are to be effective. These plans must be coordinated with the special pathogen patient transport plans of other stakeholder agencies in order to ensure timely and seamless execution. Therefore, it is important for stakeholders to be knowledgeable of one another's plans and ideally, involved in their planning process. Notably, assessment findings revealed that 92% of state EMS offices and 33% of city EMS offices are involved in the development and/or review of their state health department's special pathogen

plan and 83% of state EMS offices and 100% of city EMS offices are involved in planning for the transport of patients to their designated Regional Ebola and Special Pathogen Treatment Center. Furthermore, the state EMS office is involved in local transport agency planning in 67% of states that responded and all of the cities. Although states reported a lesser degree of involvement in local hospital and local health department planning, this does not lessen the importance of state involvement. Greater state EMS office involvement in these planning processes will promote better coordination among all stakeholders, which will translate into more timely execution of plans and safer working environments for the personnel involved in care of special pathogen patients requiring interfacility transport.

Recommendations

State and city EMS offices are encouraged to continue leading or being intimately involved in their state/city's special pathogen patient interfacility transport planning initiatives. Acknowledging the importance collaborative planning environments, EMS offices should consider inviting stakeholders to participate in the state's planning processes, as well as reaching out to stakeholders and offering to be involved in their planning efforts. At a minimum, EMS offices should pursue a crosswalk of stakeholders plans in accordance with state policy for routine review and update of emergency plans to identify any conflicting plan elements that may need resolution prior to the initiation of a transport.

Agencies Providing Transport

Question:

Does your state/territory/city have identified EMS agencies that are willing and capable to provide interfacility transport of special pathogen patients?

Total Responses: n=51

FIGURE 14 – TRANSPORTING EMS AGENCIES IDENTIFIED, STATES (n=48)

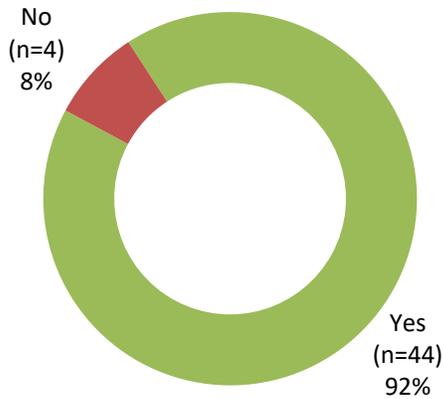
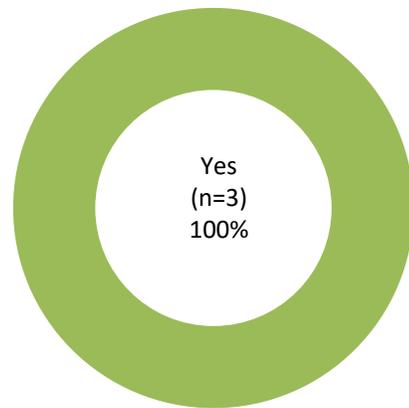


FIGURE 15 – TRANSPORTING EMS AGENCIES IDENTIFIED, CITIES (n=3)



Question:
*(asked only to respondents who responded “Yes”
to the question reflected in Figure 14 and 15)*
*What percentage of these EMS agencies have a written agency-specific Plan
and/or Standard Operating Procedures (SOPs) in support of the
state/territory/city Plan?*
Total Responses: n=47

FIGURE 16 - WRITTEN AGENCY-SPECIFIC PLAN/SOPs, STATES (n=44)

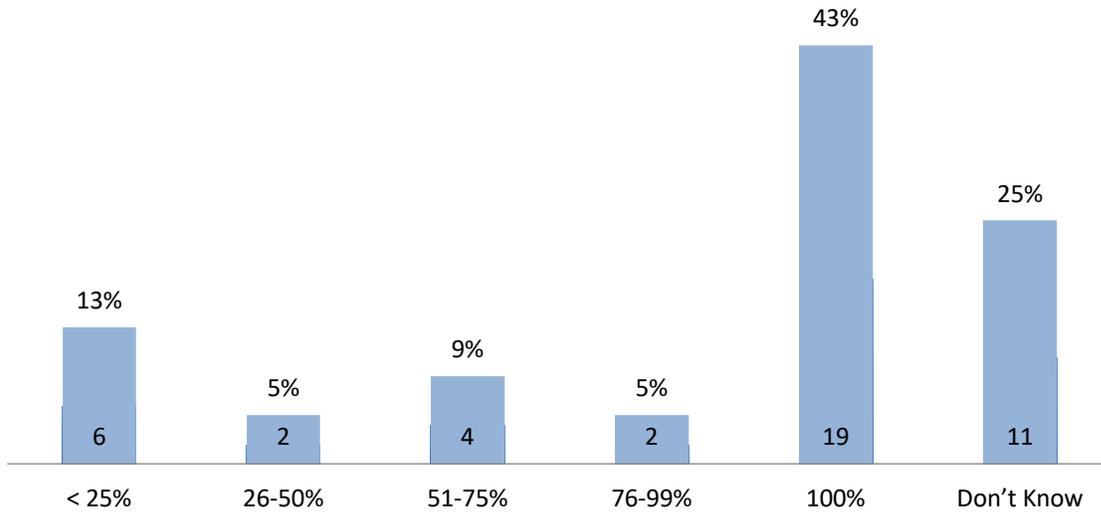
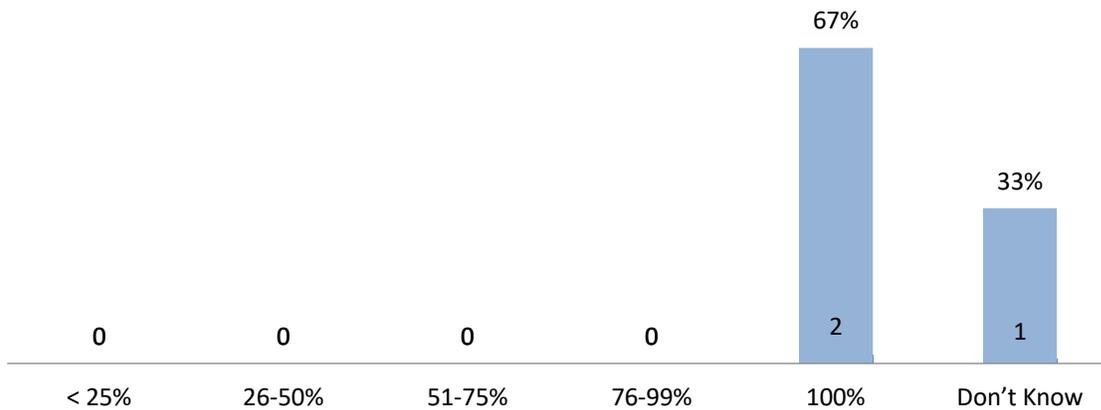


FIGURE 17 – WRITTEN AGENCY-SPECIFIC PLAN/SOPs, CITIES (n=3)



Question:
*{asked only to respondents who responded “Yes”
to the question reflected in Figure 14 and 15}*
*What percentage of these EMS agencies have had their plans and/or SOPs
reviewed by the state/territory/city EMS office*
Total Responses: n=47

FIGURE 18 – EMS AGENCIES THAT HAVE PLANS REVIEWED BY EMS OFFICE, STATES (n=44)

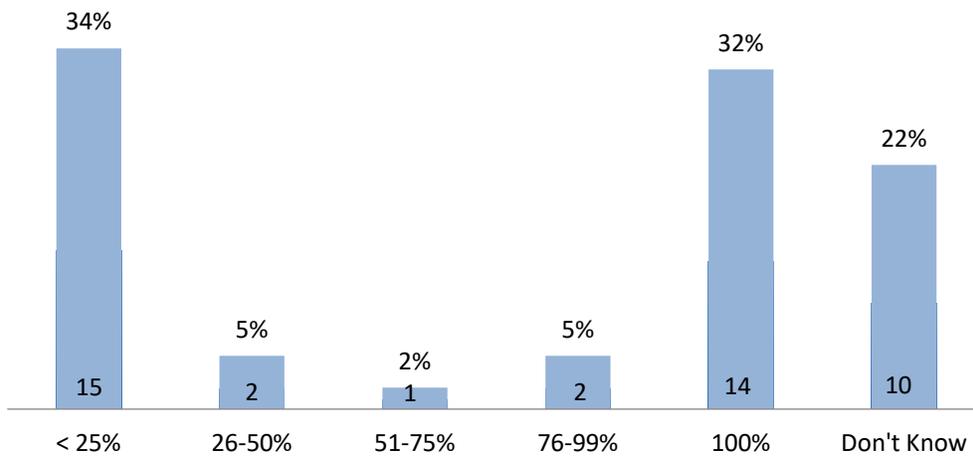
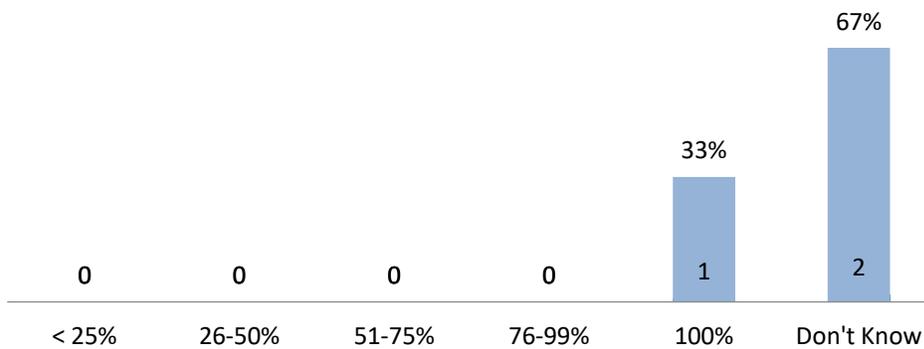


FIGURE 19 – EMS AGENCIES THAT HAVE PLANS REVIEWED BY EMS OFFICE, CITIES (n=3)



Summary & Discussion

EMS agencies that are willing and capable to provide interfacility transport of special pathogen patients have been identified by 92% of state and 100% of city respondents. These percentages demonstrate that the majority of states and cities have initiated collaborative planning with EMS agencies regarding mission requirements and EMS

capabilities to meet the requirements. Of the states and cities with identified agencies, 43% of states and 67% of cities reported that 100% of their identified agencies have written agency-specific plans and/or Standard Operating Procedures (SOPs) in support of the state/city plan. An additional 14% of state respondents reported that more than 50% of their identified EMS agencies have written plans and/or SOPs. This finding is noteworthy since it shows that more than half of the EMS agencies that have agreed to perform the interfacility transport of special pathogen patients have thought through what the mission requirements mean for their agency and EMS personnel and have developed written documents to detail how operations should be executed. However, 25% of states and 33% of cities reported that they "don't know" whether the identified EMS transport agencies have written plans/SOPs to support the state/city plan. This finding suggests that collaborative planning may have ended once the EMS agencies agreed to accept the transport mission. But, the assessment survey did not delve into the reasons that respondents "don't know" about the status of their identified agencies' plans/SOPs so specific information in this regard cannot be reported.

Thirty-two percent of states and 33% of cities reported that they have reviewed 100% of their identified EMS agencies' plans/SOPs; an additional 7% of states reported that they have reviewed more than 50% of their identified EMS agencies' plans/SOPs. This finding is encouraging since it shows states/cities are continuing to work with identified EMS agencies beyond the initial identification of providers willing to accept the mission. However, the lack of a follow-up question in the survey in regard to what type of information the reviewer is looking for during the document review (e.g. ensuring SOPs conform with state guidance documents) and/or follow-up actions taken based on the reviewers assessment (e.g. state/EMS agency collaboration on improvement plan actions) prevents us from knowing whether the document review is in-fact a step toward developing a greater level of preparedness or simply a perfunctory review to ensure that the EMS agency has something in writing.

Recommendations

States that have not yet identified EMS agencies that are willing and capable to transport special pathogen patients from one facility to another should prioritize completing this task. States and cities that have already identified a single EMS provider should consider identifying a secondary provider(s) to ensure that the

transport capability is always available. The sooner that EMS agencies are identified, the sooner collaborative planning can be initiated; resulting in a greater level of preparedness to execute transport operations in a manner that is as safe as possible for the patient, EMS providers, and the general public. If states have exhausted all possible resources within their state without being able to identify a willing and capable EMS agency, consideration should be given to evaluating the possibility of establishing agreements with resources from a nearby state or within their region.

States and cities whose identified EMS agencies are without written plans and SOPs in support of the larger state/city plan should prioritize working with their designated agencies to develop written documents that align with the strategies, procedures, and protocols outlined in state and city planning documents. Plans and SOPs must be carefully considered and identified challenges worked through in advance of an incident. States and cities that reported not knowing whether identified EMS agencies have plans must investigate this issue immediately and if discovery yields no plans/SOPs, must work to rectify this planning deficiency. Not knowing the status of planning for all stakeholder agencies is a vulnerability that can be mitigated.

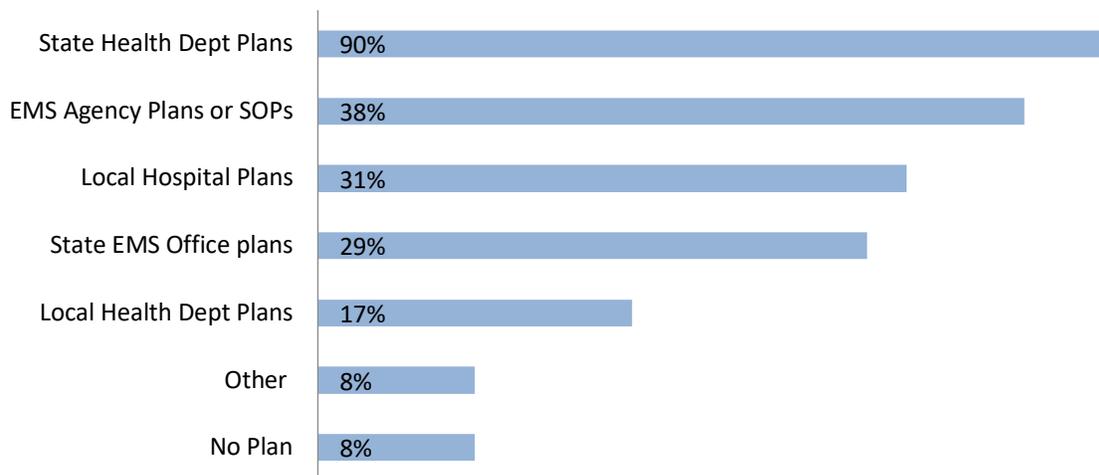
Without further information, the impact of a having a state/city level review of written EMS agency documents cannot be assessed. However, if states and cities are not already doing so, they are encouraged to develop a list of criteria that can be used to evaluate the status of EMS agency plans and work toward establishing improvement plans for those EMS agency documents that are deemed deficient. If not already done, the evaluation criteria can also be turned into planning guidance for EMS agencies that have agreed to transport special pathogen patients or may wish to accept this mission in the future. Development of national guidance that can be used to evaluate EMS agency plans would help to ensure that all EMS agencies selected for special pathogen patient interfacility transport missions meet minimal qualifications and have completed specific planning requirements.

Scope of Plans

Respondents were directed to answer the remaining questions to reflect their state/city Plan, if one was in place. If the state/city does not have a Special Pathogen Interfacility Patient Transport Plan but their approved transport agency(s) does and/or the state relies on plans from local jurisdictions, respondents were directed to answer the remaining questions to reflect this Plan/these Plans.

Question:
Please identify the types of Plan(s) that you are using to answer the remaining questions. Respondents could select “all that apply”
Total Responses: n=51

FIGURE 20 – TYPES OF PLANS, STATES (n=48)

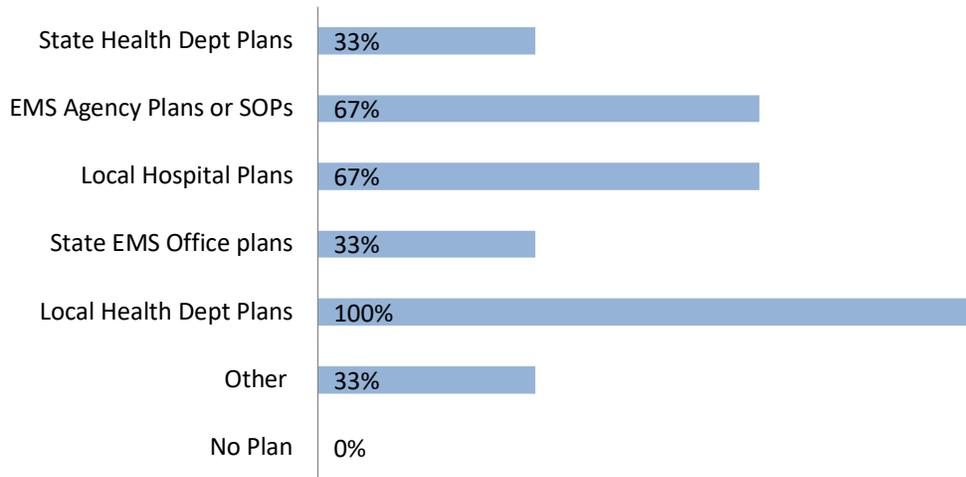


“Other” Comments, States (n=4)

Other plans identified by respondents as being used to answer the remaining assessment survey questions include state regional infectious disease transport plans (1); ASPR/HHS regional special pathogen coordination and transport plans (3); and healthcare emergency services coalition plans (1).

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FIGURE 21 – TYPES OF PLANS, CITIES (n=3)



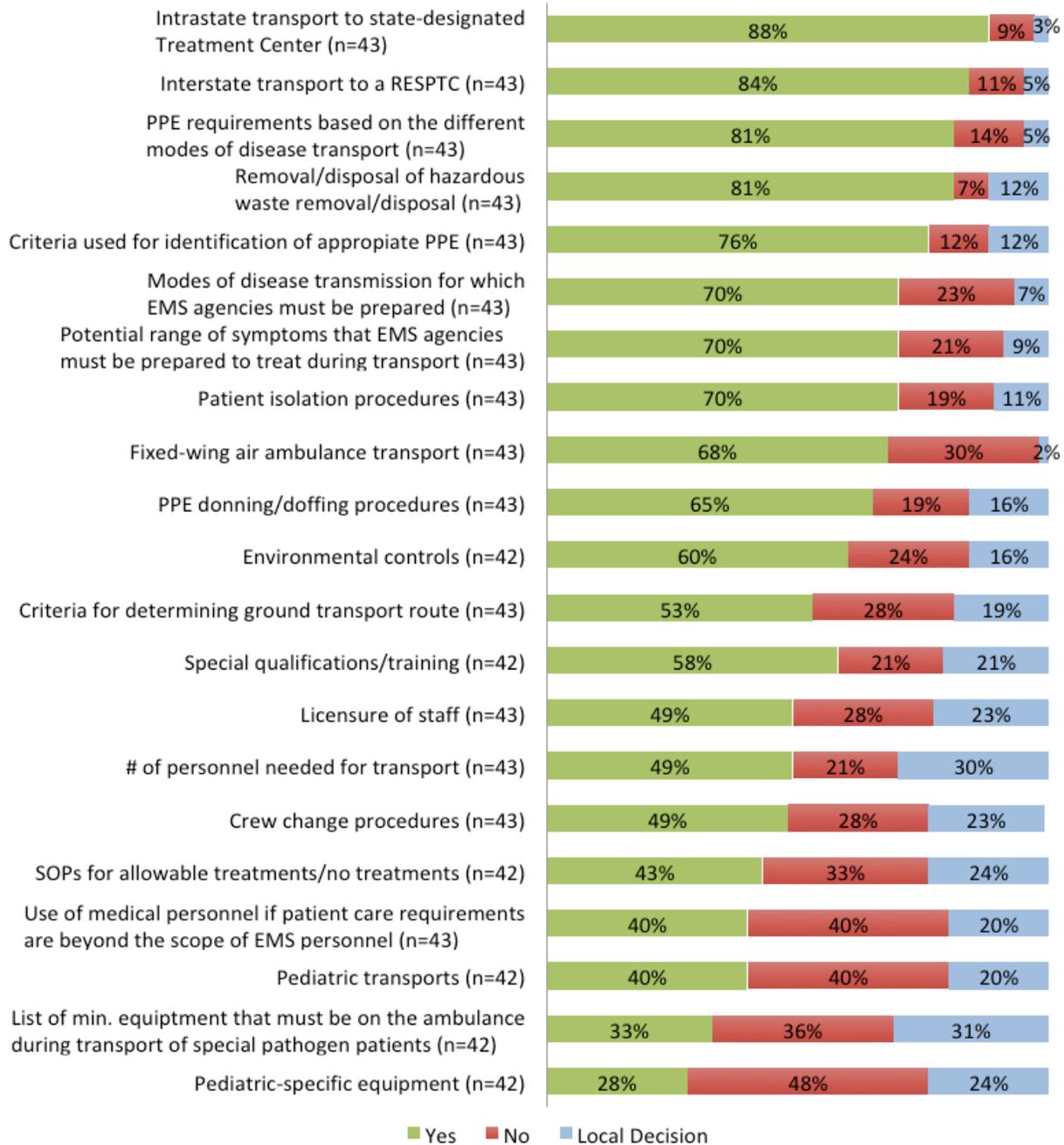
“Other” Comments, Cities (n=1)

Healthcare Coalition Emergency Operations Plan, High Consequence Infectious Disease Plan

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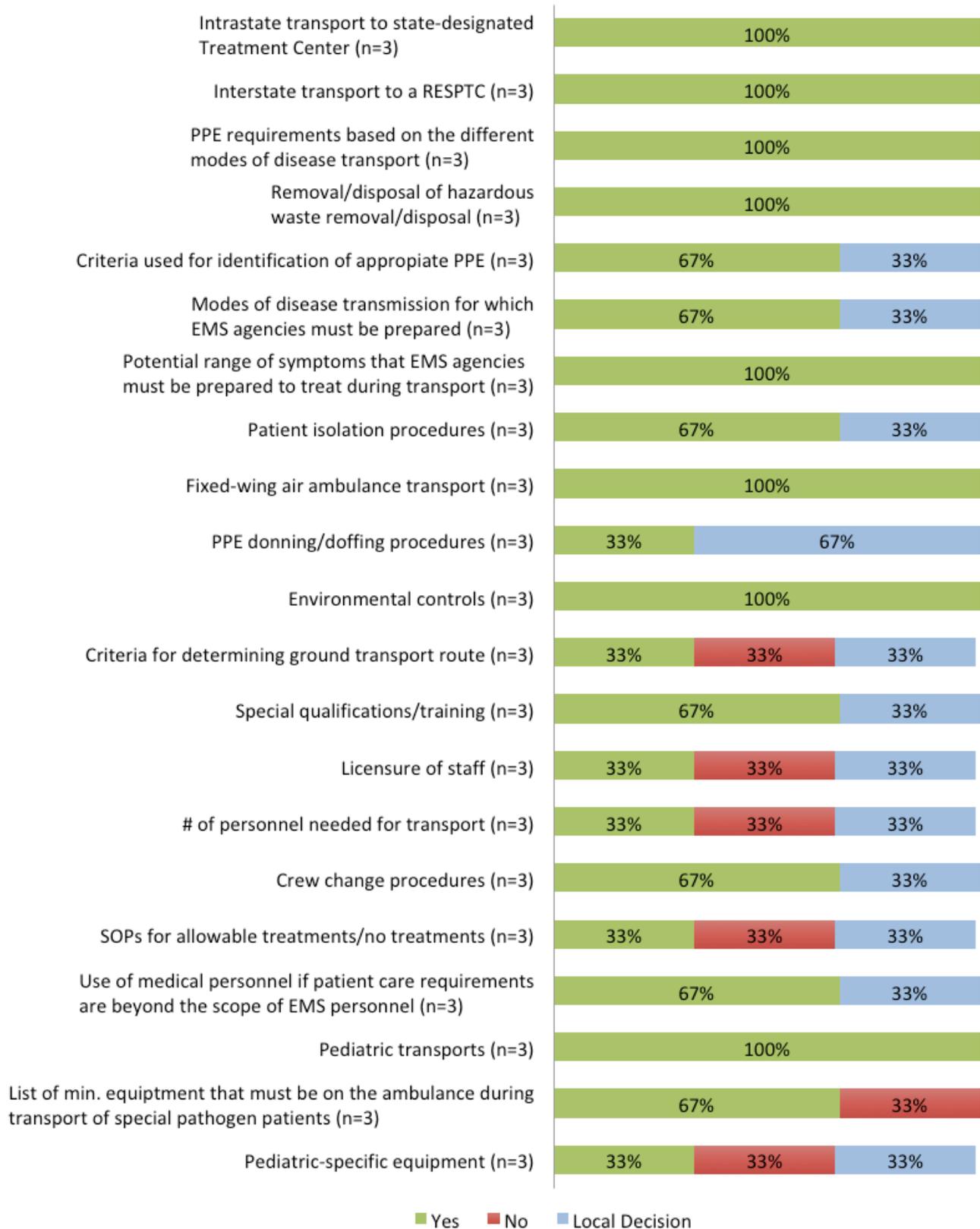
Question:
Does the Plan address the following:
Total Responses: n=46
(but some respondents did not provide an answer for each planning element listed)

FIGURE 22 – ELEMENTS INCLUDED IN THE PLAN, STATES (n=43)



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FIGURE 23 – ELEMENTS INCLUDED IN THE PLAN, CITIES (n=3)



Question:
*What does your Plan address as the longest ground transport distance
for an entire mission?
 Respondents were asked to enter their answer via free text. During analysis, the
answers provided were sorted into groups for reporting purposes.
 Total Responses: n=42*

TABLE 1 – LONGEST GROUND TRANSPORT DISTANCE, STATES (n=39)

Distance (length/time)	Count	Percent
~100 miles	2	5%
200-250 miles	7	18%
1-hour	1	3%
2-3 hours	7	18%
4-5 hours	4	10%
6-8 hours	2	5%
to RESPTC or receiving hospital	6	15%
Other	2	5%
Not addressed	7	18%
Unknown	1	3%

“Other” Comments, States (n=2)

- Incident command decision based on operational conditions
- Distance is based on time in PPE

Explanation, States (n=35)

The predominant reason provided to explain the longest distance a state is planning for an entire special pathogen patient interfacility ground transport mission was the maximum distance between a frontline or assessment hospital within the state to a state-designated Ebola Treatment Center or the Regional Ebola and Special Pathogen Treatment Center (RESPTC). Fifty-three percent of respondents provided distance as a justification.

The second most prevalent reason provided relates to safety of the ambulance crew. Twenty-five percent of respondents indicated that crew member fatigue from working in the required personal protective equipment (PPE) and/or concerns about decreasing the potential for crew member exposure to the special pathogen are the primary reasons for why a state selected the reported maximum ground transport distance. However, it is unknown if the distance/time reported by states for an entire ground transport mission is adequate for picking up a patient from one location within the state and transporting them to the designated receiving facility or if the distance/time reported is actually for one leg of the transport before a crew change is required. This lack of clarity may be due to different interpretations of the phrase "entire mission;" was this phrase interpreted to mean total patient transport distance from point A to point B or was it interpreted as total mission distance one ambulance crew may provide patient care? Or does the state's plan rely heavily on air ambulance transport and the ground transport being planned for is from the sending facility to the airport and the destination airport to the receiving facility? Follow-up with respondents is required if it is necessary to clarify this issue.

Additional reasons provided for why a ground transport distance was selected include: CDC recommendations for length of time providers can wear PPE; U.S. Department of Health and Human Services Regional Ebola Virus Disease Guidelines; experiences shared from the National Ebola Training and Education Network (NETEC); language in a statewide contract; and that counties have the authority to specify protocols and procedures (which is inclusive of transport distances).

TABLE 2 – LONGEST GROUND TRANSPORT DISTANCE, CITIES (n=3)

Distance (length/time)	Count	Percent
74-310 miles	1	33%
200 miles	1	33%
1-hour	1	33%

Explanation, Cities (n=3)

All three cities identified crew member safety issues as being predominant factors in selecting the distance for an entire ground transport mission. Specific concerns provided include staff fatigue and dehydration related to working in PPE for an extended period of time and limitations of the heating, ventilation, and air conditioning (HVAC) system of the high risk ambulance. One city also listed the distance from one Ebola Treatment Center to the next closest center (presumed to be a RESPTC) as a contributing factor.

Question:
*How many patients can be transported simultaneously using the resources and processes specified in your Special Pathogen Interfacility Transport Plan?
 Please account for transport by multiple EMS agencies and/or using multiple vehicles.*

Total Responses: n=46

FIGURE 24 – PATIENT TRANSPORT CAPACITY, STATES (n=43)

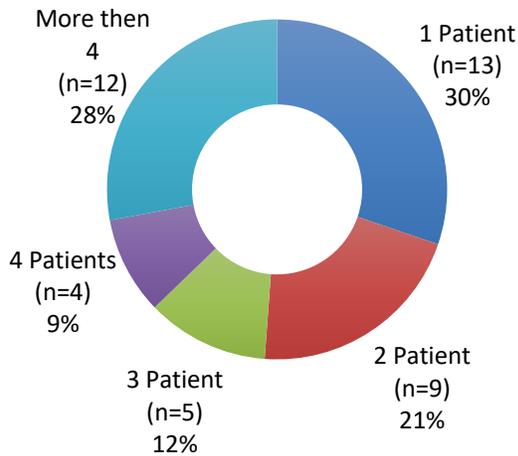
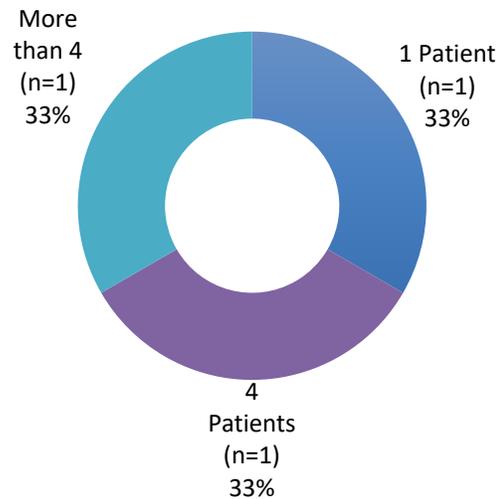


FIGURE 25 – PATIENT TRANSPORT CAPACITY, CITIES (n=3)



Summary & Discussion

Twenty-one planning elements that should be included in all state and city special pathogen patient interfacility transport plans, as judged by members of the Expert Panel for this project, were identified and respondents asked to identify whether each element is included in their plan or the planning element is instead deferred to local

jurisdictions. No one single planning element was reported as being included in all state plans nor was a single element identified as always being a local decision. State respondents reported a high percentage of inclusion for planning elements related to transport both within and out of the state, PPE, hazardous waste, patient isolation procedures, and the range of symptoms for which EMS personnel must be prepared to treat. Conversely, a much lower percentage of respondents (as low as 28%) indicated addressing pediatric issues, minimum equipment that must remain on the ambulance during transport, and allowable treatments/no treatments. City respondents reported seven (7) planning elements that were included in all respondents' plans. All city respondents reported no planning elements as being a local decision.

The longest ground transport distances or times most frequently reported by state respondents were 200-250 miles and 2-3 hours (18% each), with transport distance to the RESPTC being the second most common (15%). States that reported the longest mission distance as 2 hours or less also provided the reason for this decision as being the length of time personnel can safely operate in PPE. States that reported the greatest distances and times consistently provided the reason for the selected distance/time as being the anticipated travel distance/time from one facility to another. The responses for city respondents demonstrated a similar pattern. Findings from this question lead the authors to question whether the term "entire mission" was interpreted differently by respondents (e.g. transport mission from start to finish vs. one leg of the transport). Due to the probable different interpretations of the question terminology, the reader is cautioned to interpret the data findings with this in mind. Regardless, the findings still provide valuable information. Of interest is that 18% of state respondents indicated that a maximum distance is not identified in their plan, leading one to question the comprehensiveness level of said plans if the scope of the mission is not clearly defined.

Approximately the same number of state respondents indicated that they have the capability to transport one patient (30%) at a time as the number of respondents who reported the capability for the simultaneous transport of more than four (4) patients (28%). One city respondent reported capabilities for transporting one patient at a time while the other two reported capabilities for the simultaneous transport of 4 or more patients. Overall, states and cities appear to have developed robust capabilities for the simultaneous transport of patients. This finding supports the notion that the majority

of states and cities have redundant transport capabilities and have worked to expand their pool of available resources to ensure that the transport capability is always available.

Recommendations

The companion project to this capabilities assessment report is the development of a planning template to help states/cities develop/refine their special pathogen patient interfacility transport plans. The template identifies a comprehensive list of planning elements that states/cities should consider including in their jurisdictions' plans. States and cities are encouraged to crosswalk their existing plans with this template and address any areas identified as missing.

States without a clearly defined mission scope must work to clarify the transport mission and use this information to refine their plans. States that reported shorter timeframes/distances than the longest geographical distance they may need to transport a patient are encouraged to review their plans to ensure that the plan in its entirety addresses the longest geographical distance as well as the one reported.

While having robust transport capabilities is valuable, the challenge remains maintaining the same level of capability for the long term. Maintenance efforts require providing training for personnel, rotating supplies, maintaining specialized equipment, and routinely exercising the capabilities. All of these things require an investment of both personnel time at both the state and local level as well as financial resources. States and cities must start the process of planning for the maintenance of transport capabilities now since this will likely involve a long-term funding solution. Funding from the FY 2015-2019 Emergency Funding for Ebola Domestic Response (Consolidated and Further Continuing Appropriations Act, 2015 H.R.83) was used to provide states and cities with funding to initiate the development/enhancement of special pathogen patient transport capabilities. While two years of this supplemental funding remain, it is unknown if additional federal funding for the maintenance of capabilities developed with monies from this appropriation will be available. States must begin the process now of identifying alternative funding streams in case further federal funding is not available.

Concept of Operations

Question:
Does your Plan have a process in place for the following:
Total Responses: n=46
(not all respondents provided an answer for each planning element listed)

TABLE 3 – PROCESSES IN PLACE, STATES (n=43)

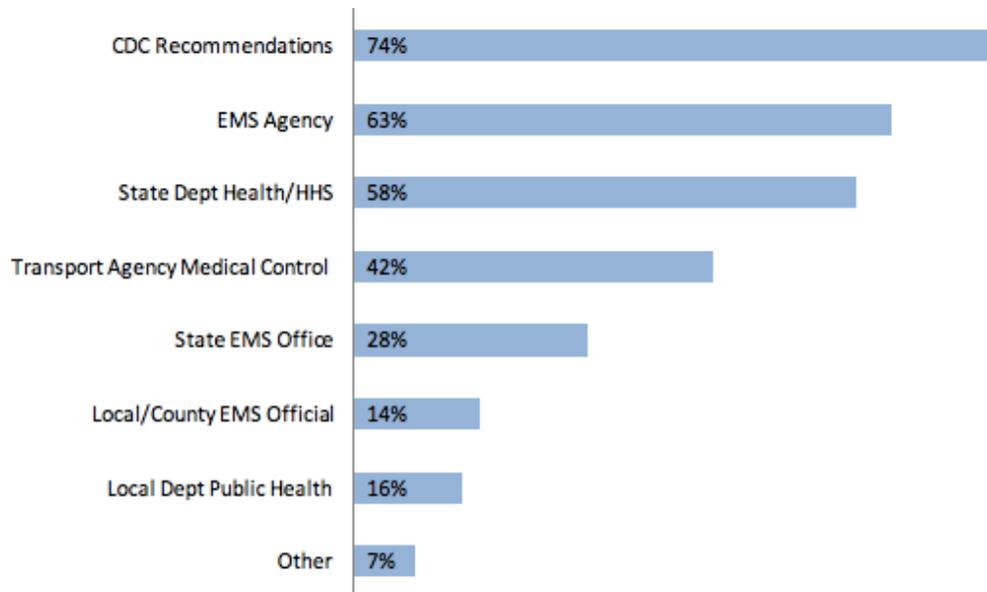
	Yes	No	Local Decision	Don't Know
Identification of who authorizes transport	79%	2%	19%	0%
Identification of factors considered in determining facility for patient placement	87%	2%	9%	2%
Criteria for selecting pre-approved transport provider	67%	12%	19%	2%
Family considerations for the patient	26%	37%	28%	9%
Conduct of a law enforcement threat assessment in advance of transport	35%	37%	19%	9%
Handling a patient death mid-transport	42%	30%	21%	7%
Returning EMS unit back to service	53%	14%	28%	5%

TABLE 4 – PROCESSES IN PLACE, CITIES (n=3)

	Yes	No	Local Decision	Don't Know
Identification of who authorizes transport	100%	0%	0%	0%
Identification of factors considered in determining facility for patient placement	100%	0%	0%	0%
Criteria for selecting pre-approved transport provider	100%	0%	0%	0%
Family considerations for the patient	67%	0%	0%	33%
Conduct of a law enforcement threat assessment in advance of transport	67%	0%	33%	0%
Handling a patient death mid-transport	67%	33%	0%	0%
Returning EMS unit back to service	67%	0%	33%	0%

Question:
Who determines the appropriate PPE to be worn by the transport crew?
Respondents could select “all that apply”:
Total Responses: n=46

FIGURE 26 –DETERMINATION OF APPROPRIATE PPE, STATES (n=43)

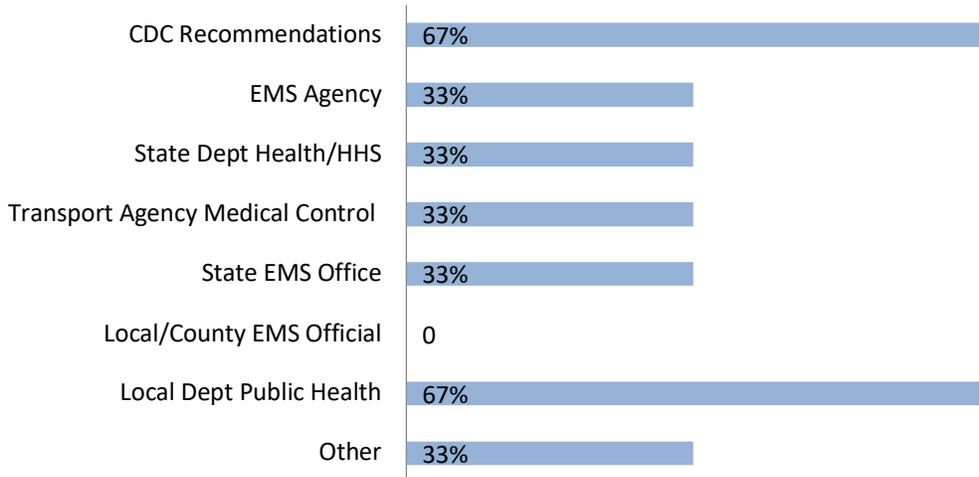


“Other” Comments, States (n=3)

- Occupational Safety and Health Administration
- Medical Control of Receiving Facility
- Incident Commander or safety officer as well infection prevention consultant

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FIGURE 27 –DETERMINATION OF APPROPRIATE PPE, CITIES (n=3)



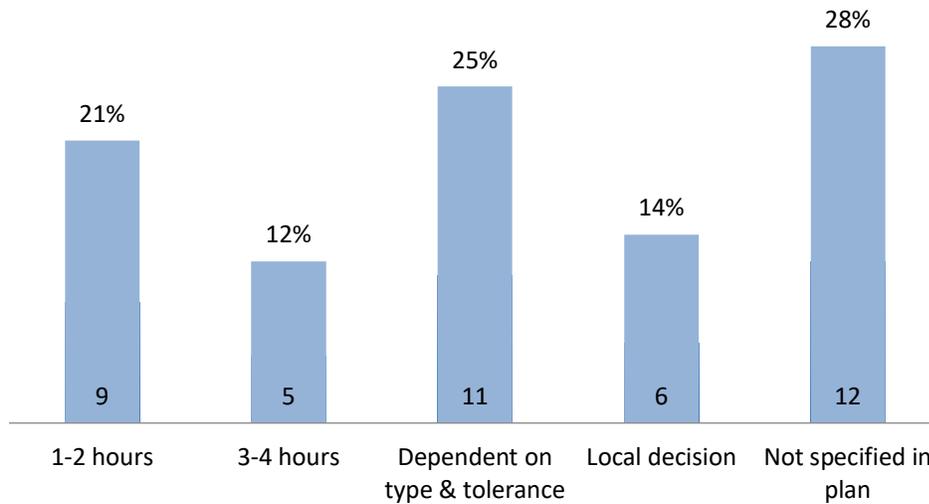
“Other” Comments, Cities (n=1)

- Local Public Health based ASPR recommendations

Question:
If specified in the Plan, what is the length of time EMS personnel can wear PPE?
Total Responses: n=46

Please explain how the number of hours personnel can wear PPE was determined.
Total Responses: n=15

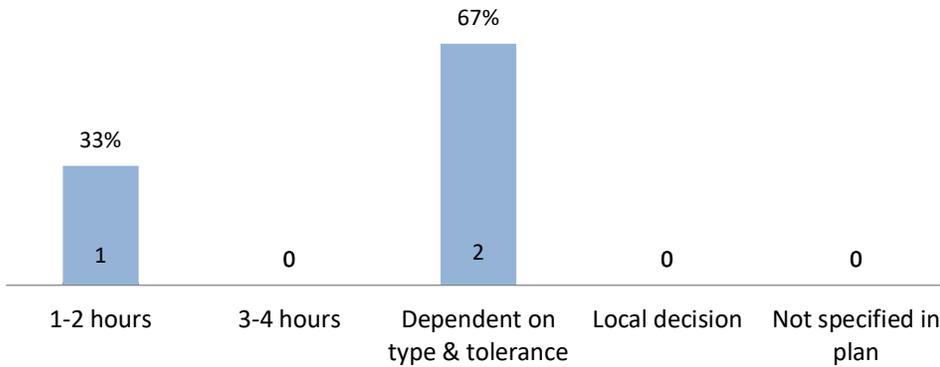
FIGURE 28 – LENGTH OF TIME PPE CAN BE WORN, STATES (n=43)



Comments, States (n=14)

The reasons for how the length of time personnel can wear PPE was determined varied among respondents. The most comment reason provided was guidance from a recognized authority, with 29% of respondents citing CDC recommendations, 14% citing experience and recommendations from NETEC and Emory, and 14% citing other state/regional plans and guidelines. Fourteen percent of respondents also cited direct observation of providers practicing in PPE either during real-world incidents or exercises as impacting their decision making process. Other justifications provided include: a consensus among impacted EMS providers (7%); the distance between planned crew change locations (7%); environmental issues related to PPE such as donning and doffing times and battery life (7%); recommendations for hazardous materials incidents (7%); and available literature on the physical impact of PPE on the health of the provider (7%).

FIGURE 29 – LENGTH OF TIME PPE CAN BE WORN, CITIES (n=3)



Comments, Cities (n=1)

One city cited local expertise as influencing the decision for how long transport crewmembers may operate in PPE.

Question:
Does the Plan pre-identify crew change locations?

Total Responses: n=46

FIGURE 30 – PRE-IDENTIFY CREW CHANGE LOCATIONS, STATES (n=43)

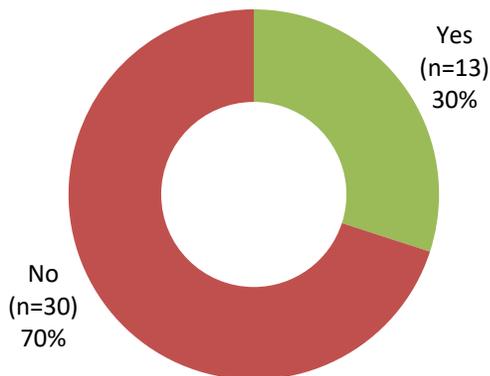
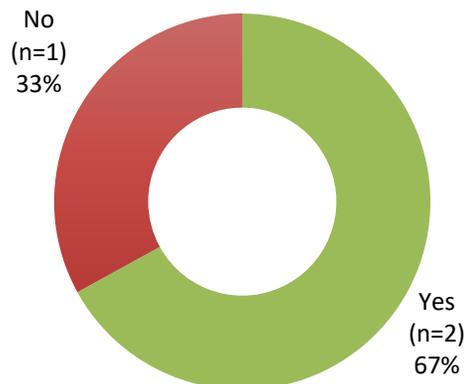


FIGURE 31 – PRE-IDENTIFY CREW CHANGE LOCATIONS, CITIES (n=3)



Question:
What percentage of selected crew change locations have formal agreements been established with?
Total Responses: n=15

FIGURE 32 – FORMAL CREW CHANGE LOCATION AGREEMENTS, STATES (n=13)

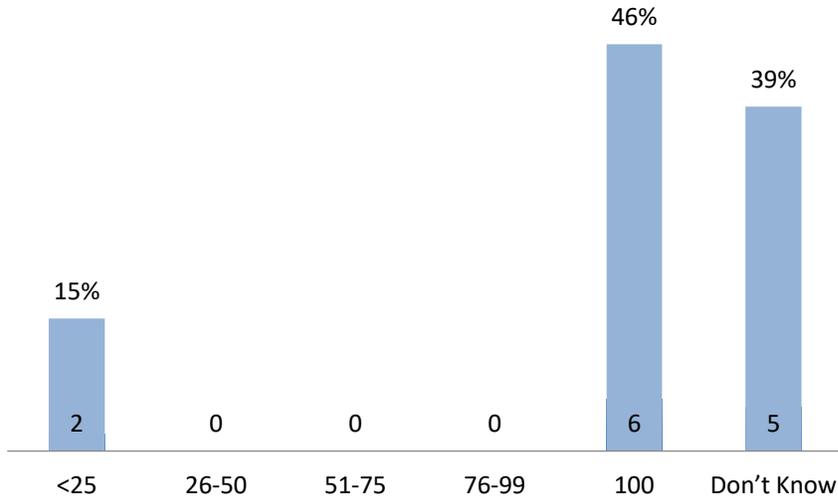
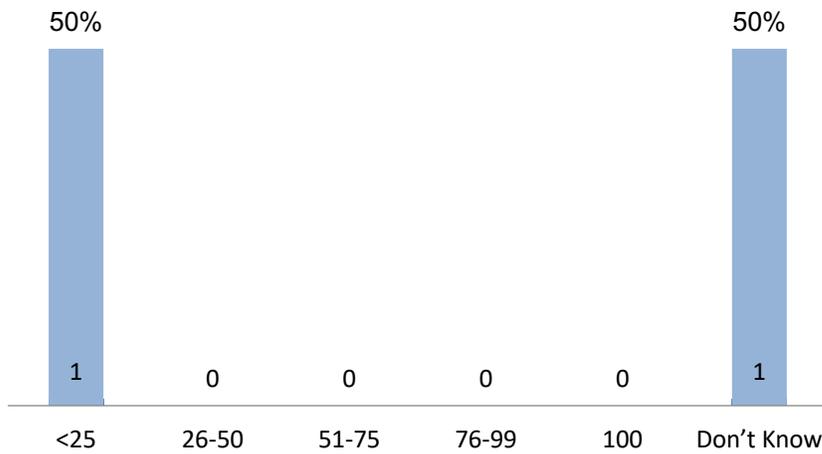


FIGURE 33 – FORMAL CREW CHANGE LOCATION AGREEMENTS, CITIES (n=2)



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Question:
*Are there Standing Medical Orders/policies for the following transport of special
 pathogen patient scenarios:*
Total Responses: n=44

FIGURE 34 – STANDING MEDICAL ORDERS / POLICIES, STATES (n=41)

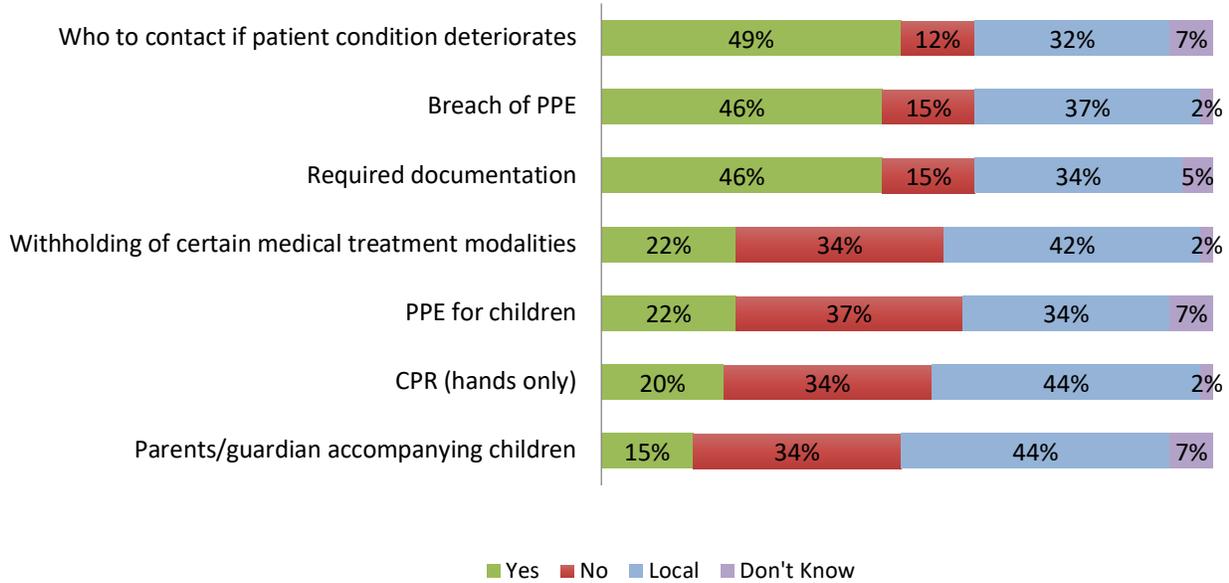
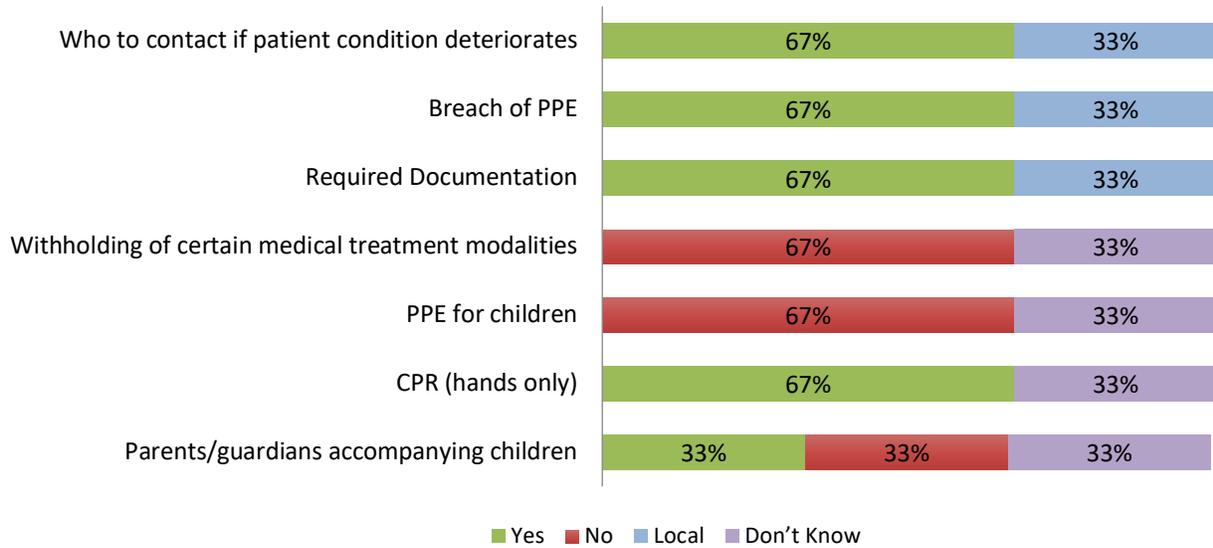


FIGURE 35 – STANDING MEDICAL ORDERS / POLICIES, CITIES (n=3)

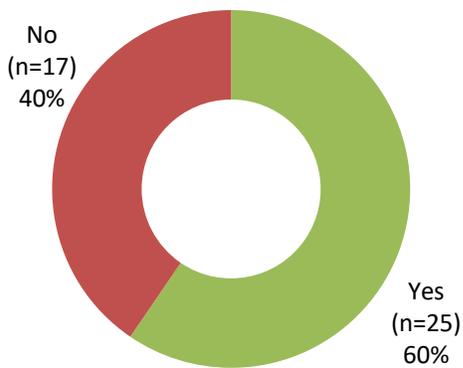


Question:

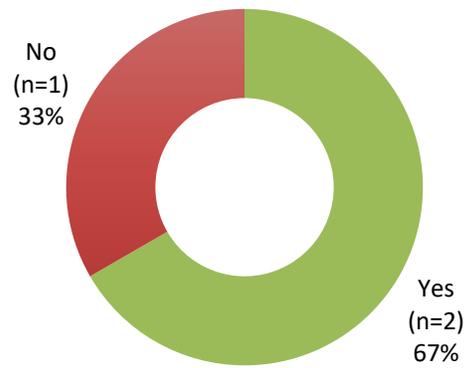
*Do your Standing Medical Orders (SMO)/Policies account for differences in disease
modes of transmission?*

Total Responses: n=45

**FIGURE 36 – SMOs / POLICIES INCLUDE
DIFFERENT MODES OF TRANSMISSION, STATES
(n=42)**



**FIGURE 37 – SMOs / POLICIES INCLUDE
DIFFERENT MODES OF TRANSMISSION, CITIES
(n=3)**



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Question:
What standards are used for waste management? (select all that apply)
Total Responses: n=46

FIGURE 38 – WASTE MANAGEMENT STANDARDS USED, STATES (n=43)

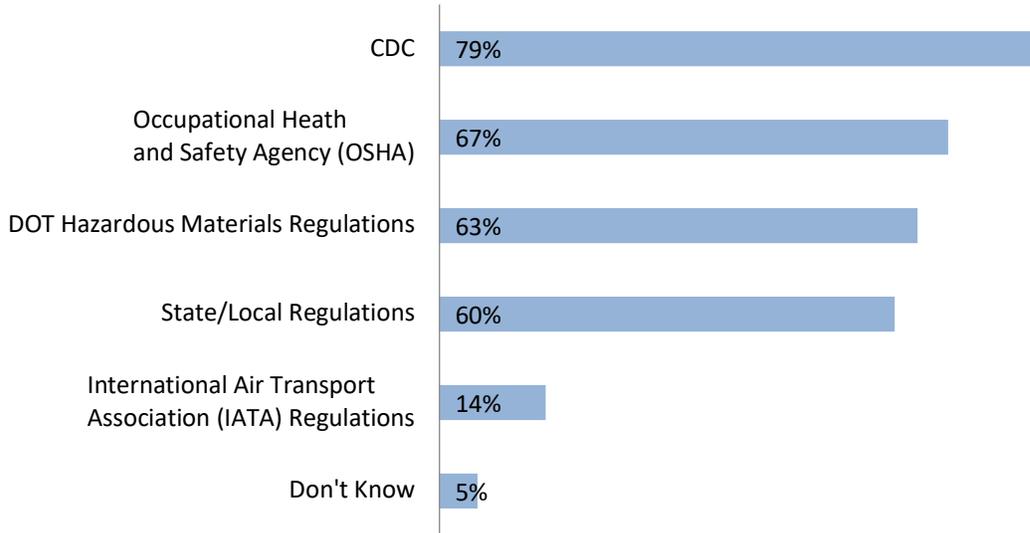
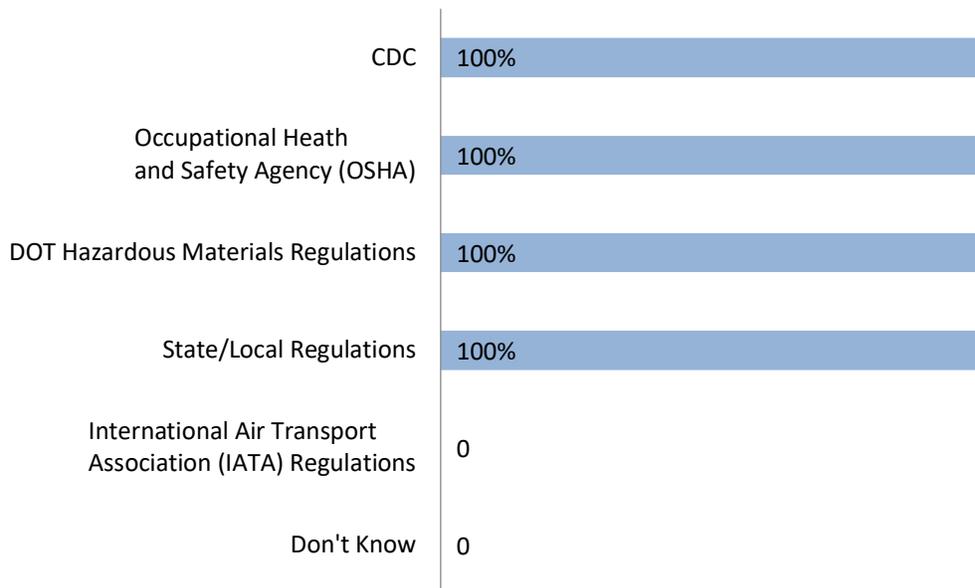
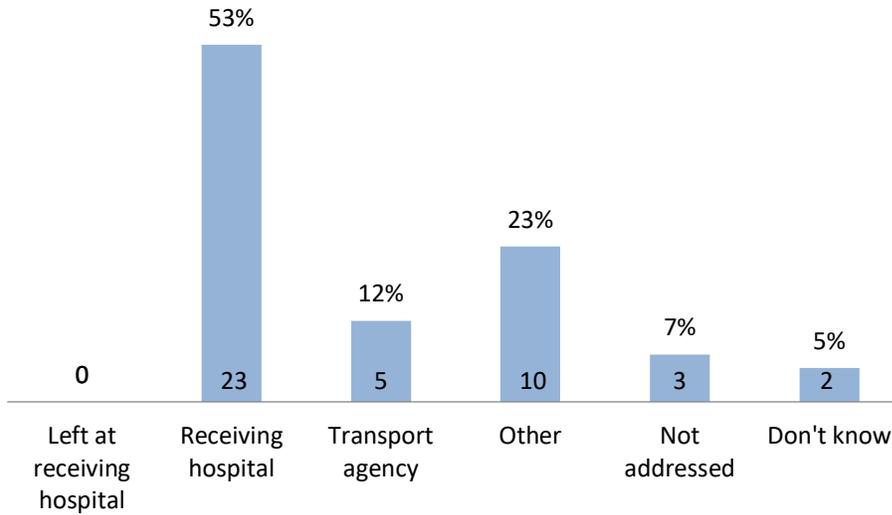


FIGURE 39 – WASTE MANAGEMENT STANDARDS USED, CITIES (n=3)



Question:
How is hazardous waste generated during the transport disposed?
Total Responses: n=46

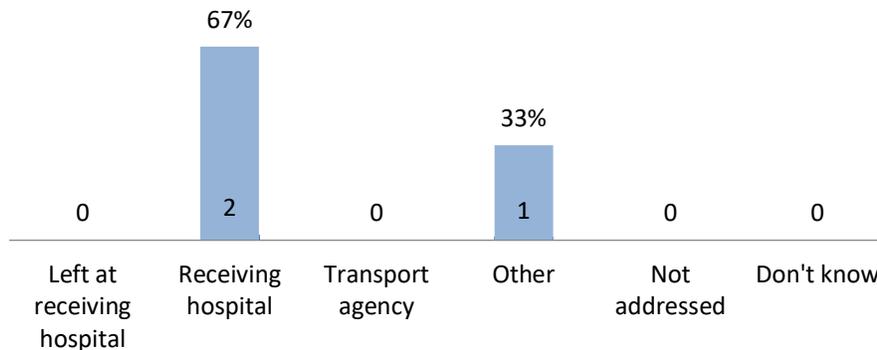
FIGURE 40 – DISPOSAL OF HAZARDOUS WASTE, STATES (n=43)



“Other” Comments, States (n=10)

Three respondents indicated that disposal of hazardous waste varies based on local jurisdiction, hospital, and/or EMS agency. Three respondents reported that it is either left at the receiving facility or disposed of by the transport provider. One respondent each reported that hazardous waste is either left at the receiving hospital or patient transfer point; disposed of by contractors at an off-site disposal facility in accordance with the Hazardous Materials Regulations (HMR, 49 C.F.R. Parts 171-180); or disposed of in accordance with Department of Health and Environment's policy. One respondent is still working on a solution for out-of-state transports.

FIGURE 41 – DISPOSAL OF HAZARDOUS WASTE, CITIES (n=3)



“Other” Comments, Cities (n=1)

Left at receiving hospital or disposed of by the transport agency

Question:
Who has primary responsibility for post-transport medical monitoring, including psychological evaluation and/or treatment, if necessary, of the transport crew?
Total Responses: n=48

FIGURE 42 – RESPONSIBILITY FOR POST-TRANSPORT MEDICAL MONITORING, STATES (n=45)

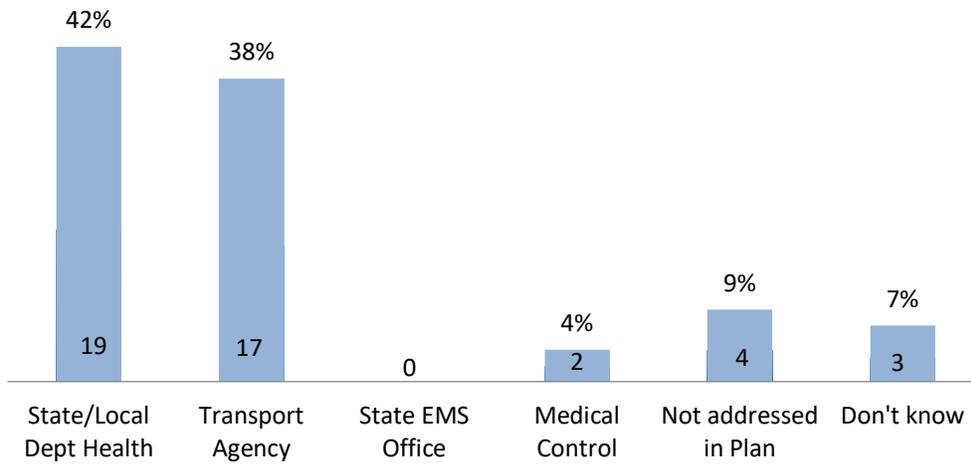
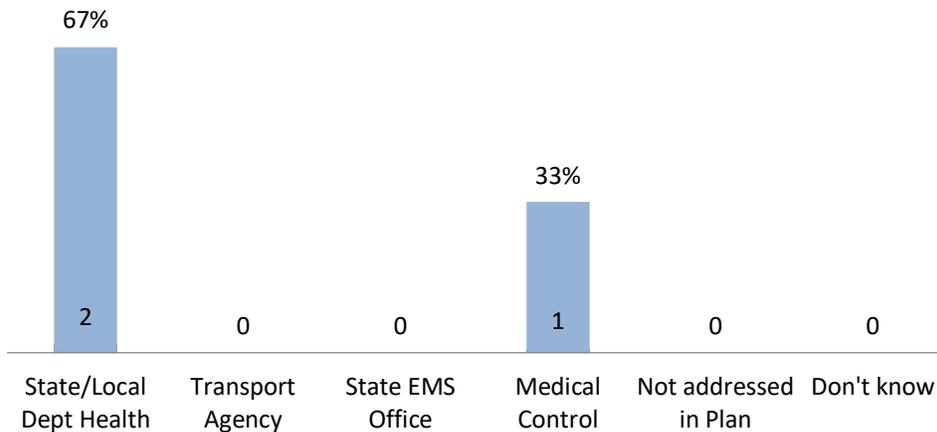


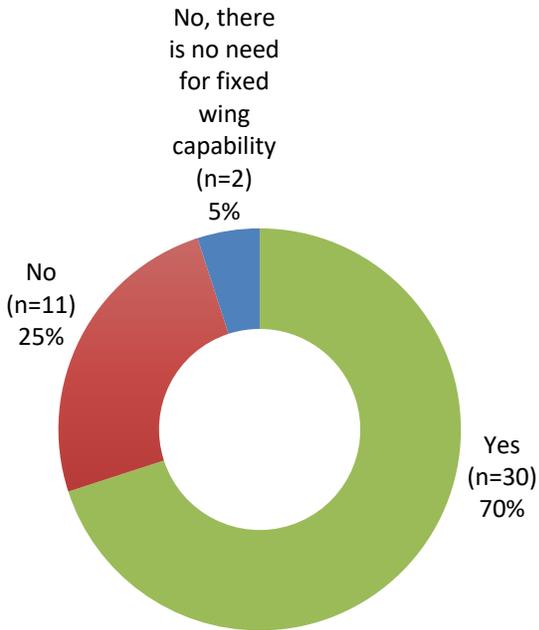
FIGURE 43 – RESPONSIBILITY FOR POST-TRANSPORT MEDICAL MONITORING, CITIES (n=3)



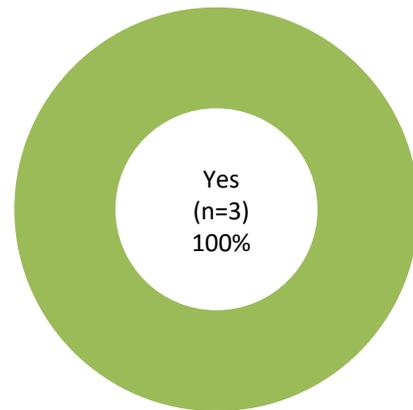
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Question:
Does your Plan include provisions for fixed-wing air ambulance transport?
Total Responses: n=46

**FIGURE 44 – FIXED-WING AIR AMBULANCE
TRANSPORT, STATES (n=43)**



**FIGURE 45 – FIXED-WING AIR AMBULANCE
TRANSPORT, CITIES (n=3)**



Question:
*Who is the fixed-wing air ambulance provider?
If contractual implications prevent you from listing the provider by name, please
describe the transport capacity.
[free text response]*
Total Responses: n=33

FIGURE 46 - COMMENTS ON WHO IS THE FIXED-WING PROVIDER, STATES (n=30)

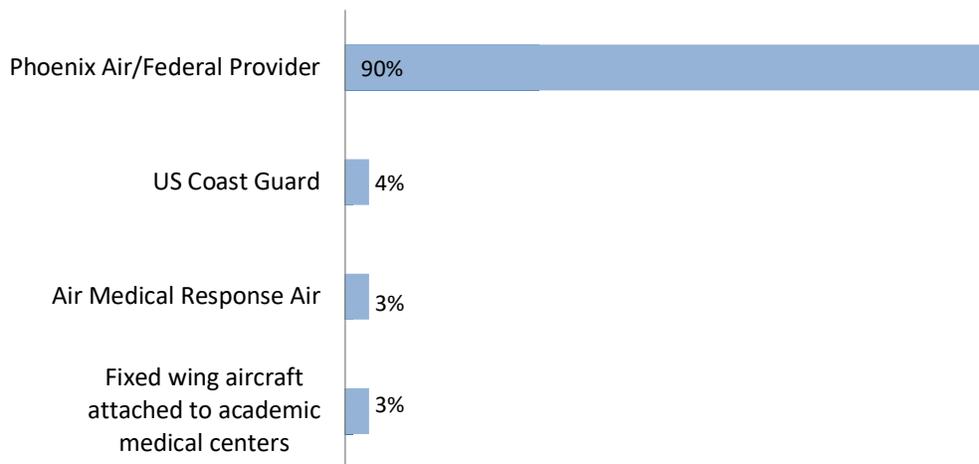
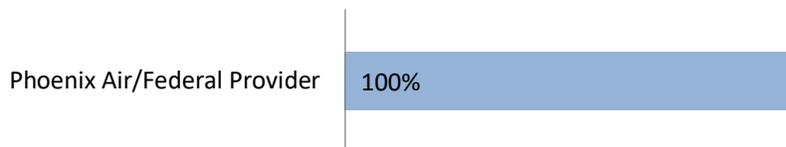


FIGURE 47 – COMMENTS OF WHO IS THE FIXED-WING PROVIDER, CITIES (n=3)



Summary & Discussion

For all seven of the planning elements inquired about in the assessment, at least 54% of state respondents reported that their plan has a process in place or that the planning element is a local decision. However, respondents identified family considerations for the patient (37%), conduct of a law enforcement threat assessment in advance of the transport (37%), and handling a patient death mid-transport (30%) as the planning elements that are most commonly not addressed in plans. This information suggests that some states may need to expand the stakeholder group included in their planning

processes and/or further explore important issues that relate to the interfacility patient transport but do not involve direct patient care.

City respondents reported that five of the seven planning elements are addressed in their plan or that the planning element is a local decision. Family considerations for the patient and handling a patient death mid-transport were the two planning elements that the respondent was unsure whether it is addressed/not addressed.

CDC recommendations were the most frequently cited source used for determination of the appropriate PPE to be worn by the transport crew by both states and cities. Over 50% of states also reported that the EMS agency and/or state department of health was a reference source for this decision. Two thirds of city respondents reported that the local department of public health input also impacts this decision. While a few sources were consistently reported as the predominant source of information for PPE decisions, the fact that other entities were also identified but at a lesser frequency highlights the fact of inconsistency across the country in regards to the PPE that will be worn by transport crew members during an interfacility special pathogen patient transport. However, it must be acknowledged that a limitation of the question construction prevents the authors from knowing if and how the lesser reported entities responsible for making PPE decisions use information regarding PPE issued by the CDC and/or state/city health departments.

The responses from state survey participants regarding how long EMS personnel can wear PPE varied, with "not specified in plan" (28%) and "dependent on type and tolerance" (25%) being the most frequently reported answers. Two-thirds of cities reported that length of time for wearing PPE is "dependent on type and tolerance". The length of time PPE can be worn is a difficult issue to tackle. There are currently no validated recommendations in regards to this issue for interfacility special pathogen patient transports, yet providing transport crew members with optimal protections is a critical planning factor. The logistics involved in wearing PPE and changing transport crew members during long-distance transports create unique complexities for which planners must devise solutions. Having the capability to change crews mid-transport requires a significant amount of pre-planning and logistical coordination during an

actual transport. However, only 30% of states and 67% of cities reported having pre-identified crew change locations.

EMS practitioners operate on standing medical orders (SMOs) and direction provided via communications with their designated medical control. However, approximately one third of states reported that they did not have SMOs in place for withholding treatment (34%), PPE for children (37%), CPR (34%), and parents/guardians accompanying children (34%). Sixty-seven percent of cities reported that SMOs are not in place for withholding treatment and PPE for children. Sixty percent of states and 67% of cities confirmed that their SMOs/policies account for the different modes of disease transmission. While it is evident that states and cities have made significant progress with developing SMOs/policies for certain special pathogen patient transport scenarios, there is still more work to be done in order for states, cities, and EMS providers to be fully prepared to transport special pathogen patients.

The standards for waste management that were most frequently cited are CDC, OSHA, the Department of Transportation Hazardous Materials Regulations, and state/local regulations. Both states and cities reported that hazardous waste is most commonly left at the receiving hospital, with the transport agency being the second most common entity responsible for waste disposal.

Post-transport medical monitoring was reported by states to be primarily a responsibility of state/local health departments (42%) or the transport agency (38%). Two-thirds of cities reported that the state/local health department is responsible for post-transport medical monitoring and medical control bears this responsibility in the other city.

Seventy percent of states and 100% of cities reported that their plan includes provisions for fixed-wing air ambulance transport. Phoenix Air Group was cited by 90% of states and 100% of cities as the fixed-wing air ambulance provider upon whom their plan relies. It is encouraging to see that such a large percentage of plans include air ambulance transport provisions since aircraft can cover geographic distances in a shorter amount of time than traditional ambulances, which decreases the amount of time a patient is in transit. However, it is concerning that the overwhelming majority of

states and cities are relying on the same fixed-wing air ambulance resource, which is a federal resource via a State Department contract.

Recommendations

Efforts to strengthen planning and preparedness are an on-going process, with capabilities evolving as new information is learned and plans revised. State/cities are encouraged to utilize the newly developed *Special Pathogen Patient Interfacility Transport Plan Template* to identify gaps in their plans that must be addressed and/or to incorporate best practice recommendations. The *Template* identifies a number of planning elements, SMOs/policies, and stakeholder involvement that states/cities should consider in order to enhance their preparedness posture. The *Template* should be cross-walked with existing plans and SMOs/policies to identify gaps and steps to close the identified gaps initiated. The *Template* can be found at <https://netec.org/exercises/>.

While guidance from nationally recognized organizations (e.g., CDC, National Association of EMS Physicians, etc.) does exist as to the type of PPE required to protect a healthcare provider against diseases transmitted by different routes, a validated determination of how long said PPE can be worn continues to be an unresolved issue. Further research is needed in this area in order to be able to provide states/cities with sound guidance on this topic. Federal, higher education, and/or private sector partner engagement is needed in order to effectively study this issue further.

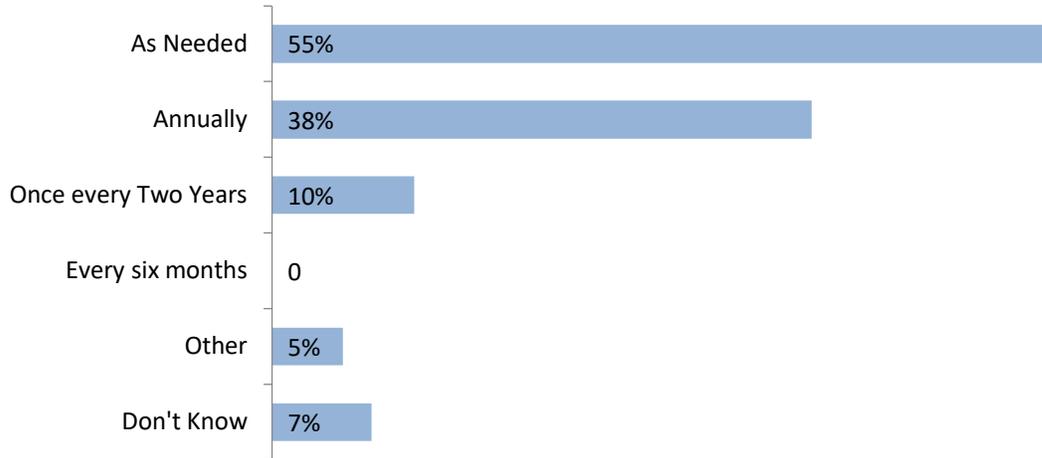
Executing agreements with locations to conduct crew changes is an area of planning that in general needs strengthening. States/cities should continue to pursue formal agreements with locations that are anticipated as being used for changing out crew members so all involved parties are knowledgeable of one another's responsibilities and the potential risks associated with serving as a crew change location.

The identification of additional fixed-wing air ambulance capabilities is needed. Given the expense involved in creating/maintaining this capability, doing such is likely beyond the financial means of both state and city governments. State/cities should continue to work with federal partners to identify air ambulance resources that may be available to them and develop written procedures on how to access these resources and pay for their usage.

Review and Exercises

Question:
How often is the Special Pathogen Interfacility Patient Transport Plan reviewed?
(select all that apply)
Total Responses: n=45

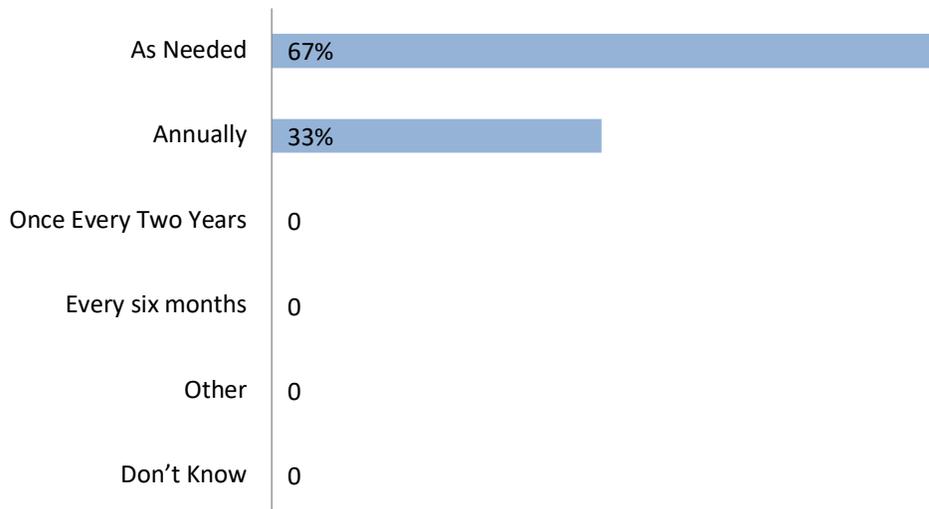
FIGURE 48 – PLAN REVIEW CYCLE, STATES (n=42)



“Other” Comments, States (n=2)

- Every 4 years
- Monthly

FIGURE 49 – PLAN REVIEW CYCLES, CITIES n=3)



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Question:
Has an exercise on the Plan been conducted?
Total Responses: n=46

FIGURE 50 – PLAN EXERCISED, STATES (n=43)

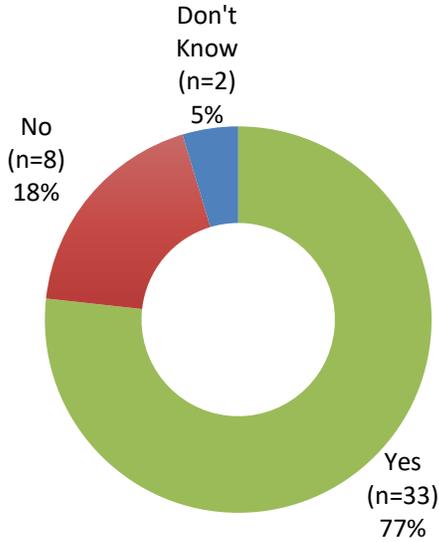
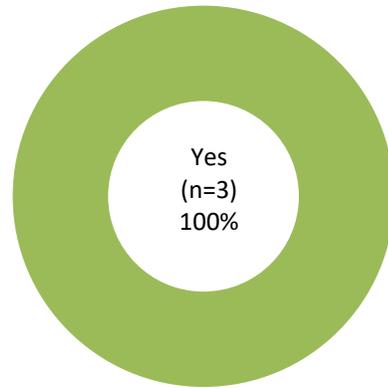


FIGURE 51 – PLAN EXERCISED, CITIES (n=3)



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Question:
Please identify the type of exercise(s) conducted and outcome.
Type of Exercise:
Total Responses: n=33

FIGURE 52 – TYPES AND OUTCOMES OF EXERCISES, STATES (n=30)

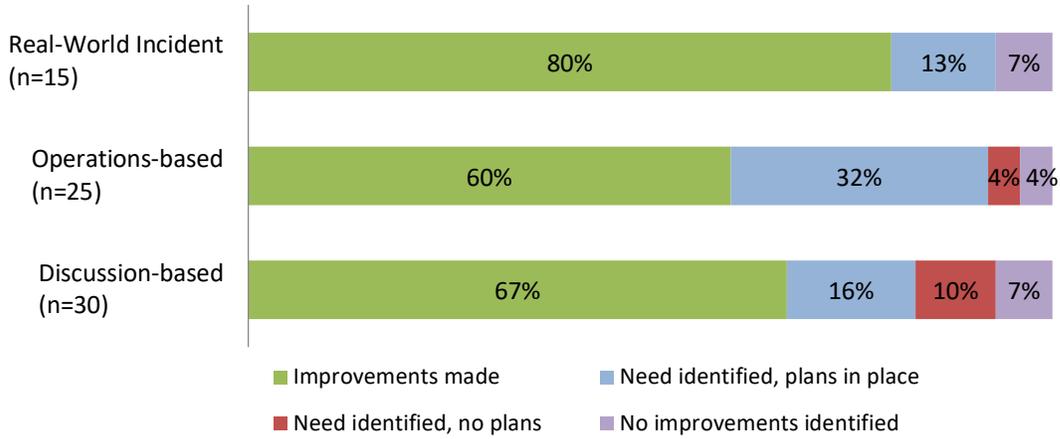
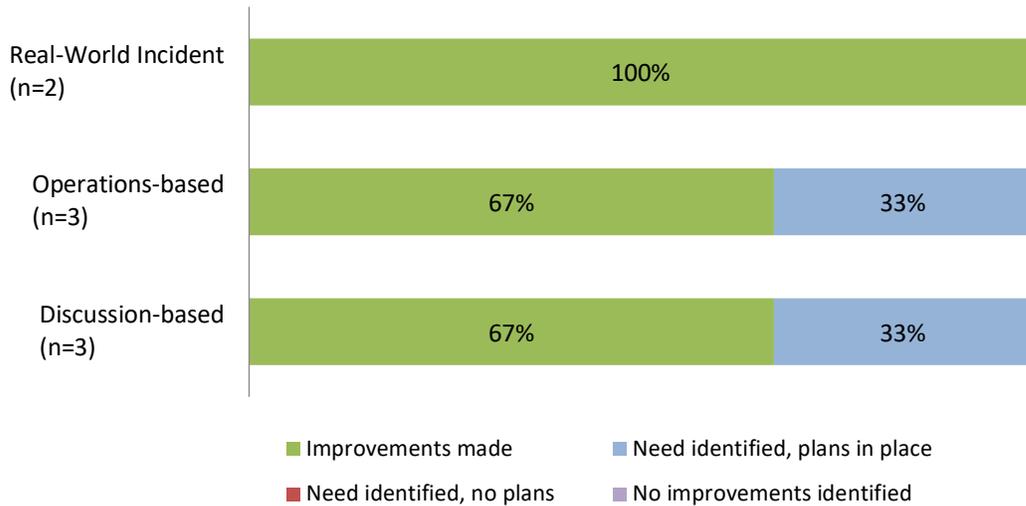


FIGURE 53 – TYPES AND OUTCOMES OF EXERCISES, CITIES (n=3)



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Question:
Please identify the status of training and exercises for each of the below items.
Please indicate if training and exercises are a local function.
Total Responses: n=34

TABLE 5 – STATUS OF TRAINING EXERCISES, STATES (n=32)

	Training developed	Training conducted	Exercised; No action needed	Exercised; Needs improvement	Real world test, No action needed	Real world test, Needs improvement	Training & exercises local responsibility	Don't know
Criteria for determining the ground transport route	9% (n=3)	25% (n=8)	41% (n=13)	9% (n=3)	16% (n=5)	0% (n=0)	28% (n=9)	9% (n=3)
# of personnel needed for transport	13% (n=4)	25% (n=8)	34% (n=11)	9% (n=3)	22% (n=7)	0% (n=0)	34% (n=11)	13% (n=4)
Criteria use for Identification of appropriate PPE	19% (n=6)	31% (n=10)	38% (n=12)	9% (n=3)	13% (n=4)	3% (n=1)	38% (n=12)	9% (n=3)
Crew change procedures	19% (n=6)	22% (n=7)	25% (n=8)	9% (n=3)	3% (n=1)	0% (n=0)	34% (n=11)	16% (n=5)
PPE donning and doffing procedures	19% (n=6)	25% (n=8)	28% (n=9)	25% (n=8)	16% (n=5)	3% (n=1)	38% (n=12)	19% (n=6)
Removal/disposal of hazardous waste	19% (n=6)	25% (n=8)	25% (n=8)	13% (n=4)	13% (n=4)	9% (n=3)	28% (n=9)	16% (n=5)
Ground to air/air to ground handoff	19% (n=6)	22% (n=7)	16% (n=5)	9% (n=3)	6% (n=2)	3% (n=1)	22% (n=7)	25% (n=8)
Pediatric capability	13% (n=4)	9% (n=3)	6% (n=2)	9% (n=3)	3% (n=1)	0% (n=0)	28% (n=9)	34% (n=11)
Patient isolation procedures	22% (n=7)	28% (n=9)	38% (n=12)	16% (n=5)	13% (n=4)	0% (n=0)	25% (n=8)	9% (n=3)
Environmental controls	13% (n=4)	28% (n=9)	16% (n=5)	16% (n=5)	13% (n=4)	6% (n=2)	31% (n=10)	16% (n=5)
Preparing transport unit for return to in-service	16% (n=5)	25% (n=8)	28% (n=9)	9% (n=3)	13% (n=4)	9% (n=3)	38% (n=12)	9% (n=3)

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TABLE 6 – STATUS OF TRAINING EXERCISES, CITIES (n=3)

	Training developed	Training conducted	Exercised; No action needed	Exercised; Needs improvement	Real world test, No action needed	Real world test, Needs improvement	Training & exercises local responsibility	Don't know
Ground transport route criteria	0% (n=0)	0% (n=0)	67% (n=2)	0% (n=0)	67% (n=2)	0% (n=0)	0% (n=0)	0% (n=0)
# of personnel needed for transport	0% (n=0)	0% (n=0)	33% (n=1)	33% (n=1)	33% (n=1)	33% (n=1)	0% (n=0)	0% (n=0)
Identification of PPE criteria	67% (n=2)	67% (n=2)	33% (n=1)	0% (n=0)	33% (n=1)	33% (n=1)	0% (n=0)	0% (n=0)
Crew change procedures	33% (n=1)	33% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	67% (n=2)
PPE donning/ doffing procedures	67% (n=2)	67% (n=2)	33% (n=1)	0% (n=0)	33% (n=1)	33% (n=1)	0% (n=0)	0% (n=0)
Removal/disposal of hazardous waste	33% (n=1)	33% (n=1)	33% (n=1)	0% (n=0)	33% (n=1)	33% (n=1)	0% (n=0)	33% (n=1)
Ground to air/air to ground handoff	33% (n=1)	33% (n=1)	67% (n=2)	0% (n=0)	33% (n=1)	0% (n=0)	0% (n=0)	33% (n=1)
Pediatric capability	33% (n=1)	33% (n=1)	33% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	67% (n=2)
Patient isolation procedures	67% (n=2)	67% (n=2)	33% (n=1)	0% (n=0)	0% (n=0)	33% (n=1)	0% (n=0)	0% (n=0)
Environmental controls	67% (n=2)	67% (n=2)	33% (n=1)	0% (n=0)	33% (n=1)	33% (n=1)	0% (n=0)	0% (n=0)
Preparing transport unit for return to in-service	33% (n=1)	33% (n=1)	33% (n=1)	0% (n=0)	33% (n=1)	33% (n=1)	0% (n=0)	33% (n=1)

Question:
Does the State EMS Office participate in the after action review (AAR) process for "real-world" interfacility transports of special pathogen patients?
Total Responses: n=46

FIGURE 54 – STATE EMS OFFICE INVOLVEMENT IN AAR, STATES (n=43)

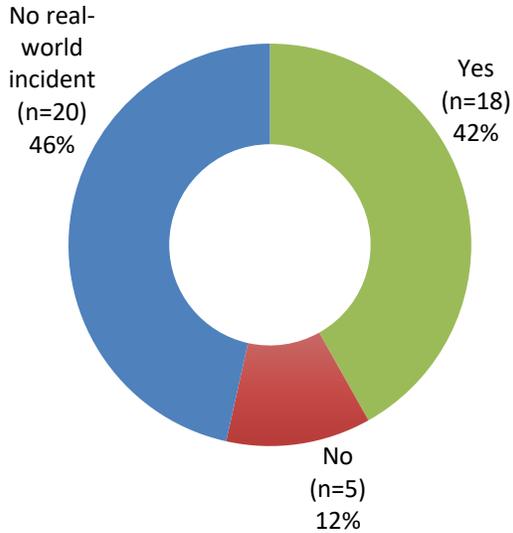
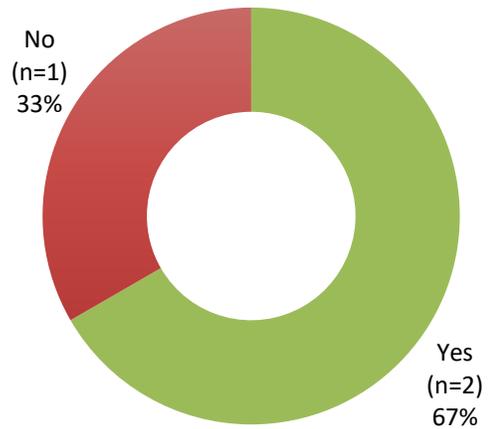


FIGURE 55 – STATE EMS OFFICE INVOLVEMENT IN AAR, CITIES (n=3)



Summary & Discussion

The dynamic and ever changing landscape of the world of special pathogens and EMS response presents unique challenges for ensuring that jurisdictions and individual EMS practitioners are as prepared as possible to safely execute the interfacility transport of any type of special pathogen patient at any given time. Due to the highly specialized care that some special pathogen patients require, there are a limited number of healthcare facilities that are equipped and have appropriately trained personnel to handle these types of patients; often resulting in the need to move patients over large geographic distances. The complexities involved in such transports and the potential for exposure to the pathogen by EMS/healthcare workers necessitates that jurisdictions have comprehensive plans and training programs in order to facilitate transports in the safest manner possible. Adhering to the principles contained in the National Incident Management System (NIMS) cycle of planning, jurisdictions must continuously plan, train, equip, exercise, evaluate, and take corrective action in order to be as prepared as possible to effectively respond to the potential hazards that are faced.

Findings from the capabilities assessment identified that the majority of states have routine schedules for review and update of their special pathogen patient interfacility transport plans. Furthermore, the majority of state respondents and all city respondents indicated that they have provisions for review and update of their plans as needed (e.g. after an exercise, after a real-world incident). These findings are significant in that they demonstrate a commitment to ensuring that plans remain current and that jurisdictions are dedicated to having the best plans as possible by incorporating new information that is learned after the plan was originally written.

In a high-stress environment, first responders are said to operate on "muscle memory"; drawing upon their bank of knowledge acquired through training and technical skills they have practiced over and over in order to perfect. Exercises not only provide opportunities to identify strengths and areas for improvement in a plan, they provide those charged with plan execution opportunities to practice the critical procedures they must perform under simulated, safe conditions. The analysis of respondent answers to the survey found that 77% of states and 100% of cities have exercised their special pathogen patient interfacility transport plan. Given the commitment of time and resources required to plan and conduct an exercise and the numerous other critical issues that compete for the attention of the same personnel and resources, the high percentage of plans that have been exercised is impressive.

There are two basic types of exercises, discussion-based and operations-based, with multiple choices of exercise format for each type (e.g. discussion-based: workshop, tabletop; operations-based: functional, full-scale.) There are benefits and limitations to each type of exercise. Planners often select the most appropriate type of exercise based on the status of plan development and participant experience level with the subject matter. While there is direct value to those who participate in an exercise, the biggest impacts of an exercise are typically the actions taken post- exercise to strengthen areas identified as in need of improvement. Eighty-three percent of state respondents and 100% of city respondents revealed that for the discussion-based exercises conducted, improvements to their plan have already been made or that there is a plan in place to make the improvements that are needed. For operations-based exercises, 92% of state and 100% of city respondents indicated the same.

Regardless of how well planned an exercise may be, simulated experiences rarely match the opportunities for learning created through real-world incidents. While not all jurisdictions included in the assessment have experienced a real-world incident related to the interfacility transport of a special pathogen patient, 45% of state respondents and 67% of city respondents have. Ninety-three percent of state respondents who have experienced a real-world incident and 100% of city respondents who have experienced a real-world incident reported that improvements to their plans have been made or plans are in place to make the improvements based on the lessons learned from their experiences. These entities have clearly taken advantage of the opportunity to learn from their experiences and strengthen their level of preparedness for responding to the next incident of similar nature.

The capability assessment survey examined 11 specific components of a special pathogen patient interfacility transport plan that require specific training for personnel to determine the status of training and whether each component had been exercised. Only 32 states answered this question. For each component, between nine (9) and 25% of respondents indicated that training has been developed and 13-31% reported that training has been conducted. However, with the exception of "ground to air/air to ground handoff" and "pediatric capability," a higher percentage of respondents for each component reported that exercises and/or real-world tests have been conducted. Ideally, training will occur before an exercise or real-world incident. It is unknown as to why exercises/real-world tests are occurring with greater frequency than training.

Results from the three reporting cities regarding the training and exercise status of the 11 plan components examined were somewhat different than the results reported by the states. For the most part, it appears that there has been a greater focus on developing and conducting training in the cities prior to conducting exercises. The reasons for this are unknown.

The after action review (AAR) of a real-world incident is a great opportunity to identify practices that were effective and should be memorialized and areas in need of improvement. To be most effective, all stakeholders involved in an operation should be represented in the AAR meeting and follow-up discussions. State EMS offices play a

critical role in the interfacility transport of special pathogen patients and, therefore, should be included in all AARs of real-world incidents. Of the 23 states that reported a real-world incident, 78% of EMS offices were included in the AAR. Sixty-seven percent (67%) of cities reported that the State EMS office was included in their AAR. While these numbers are relatively high, the goal should be for inclusion of the state EMS office 100% of the time.

Recommendations

States and cities should continue to review and update their plans on a routine, pre-scheduled basis. Those respondents that did not report adhering to a plan review schedule and/or updating plans between scheduled review periods if new information is learned are encouraged to develop a schedule and incorporate provisions for "as needed" review and update.

States and cities are encouraged to continue incorporating lessons learned and addressing areas for improvement in their plans learned through exercises and real-world incidents with a continued emphasis on integration with key partners. While the vast majority of respondents are currently doing this, an on-going commitment to continue this practice must be made. As other new and time-consuming issues confront EMS and public health leaders, it will become more and more challenging to remain so diligent in maintaining interfacility transport plans. However, to pay less attention to this issue creates the potential for decreasing the capabilities that currently exist.

A greater emphasis on developing and conducting training for critical components of the special pathogen patient interfacility transport plan is needed. While exercises do provide valuable learning opportunities, they are less effective if the personnel participating in an exercise are not fully trained on how to execute their responsibilities. Training and exercising should be thought of as a two-step process, with training being the first step.

NASEMSO has developed three exercises that can be used by states/cities to exercise their plans for the interfacility transport of special pathogen patients. Two of the exercises are discussion-based and one is operations-based. All three exercises are compliant with Homeland Security Exercise and Evaluation Program (HSEEP)

requirements. The exercise scenarios address both inter- and intra-state transport and the simultaneous transport of multiple patients. The exercises were developed in a modular format; allowing state/city exercise planners to select one or more modules to be included in their exercise. States/cities are encouraged to utilize these exercises to test their plans.

All states and cities should strive to include the state EMS office in the AAR of all real-world incidents 100% of the time.

Direction, Control, and Coordination

Question:
Is there an identified lead agency or Unified Command for overall coordination and control for interfacility special pathogen patient transports?
Total Responses: n=46

FIGURE 56 – IDENTIFIED LEAD / UNIFIED COMMAND IDENTIFIED FOR PATIENT TRANSPORT, STATES (n=43)

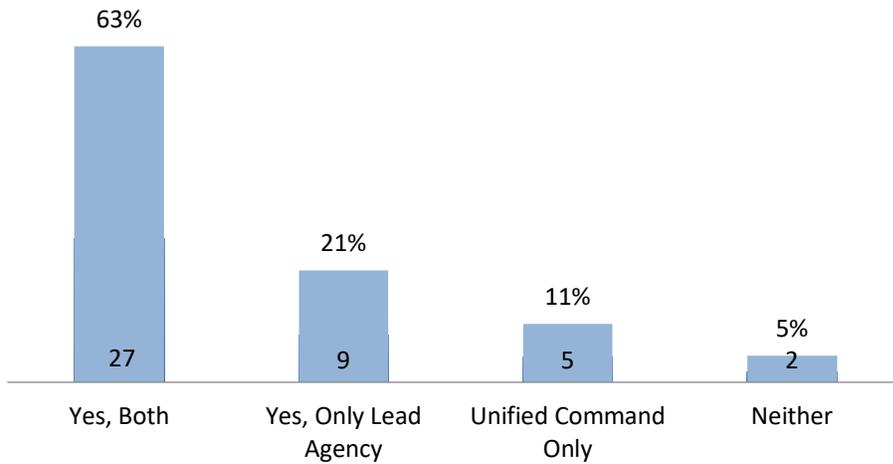
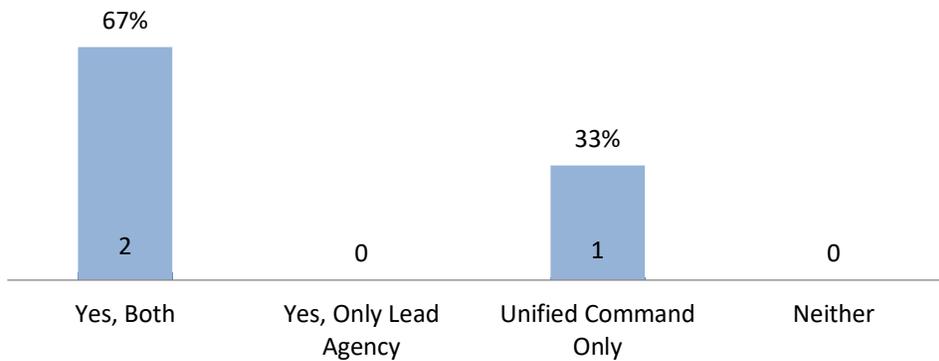


FIGURE 57 – IDENTIFIED LEAD / UNIFIED COMMAND IDENTIFIED FOR PATIENT TRANSPORT, CITIES (n=3)



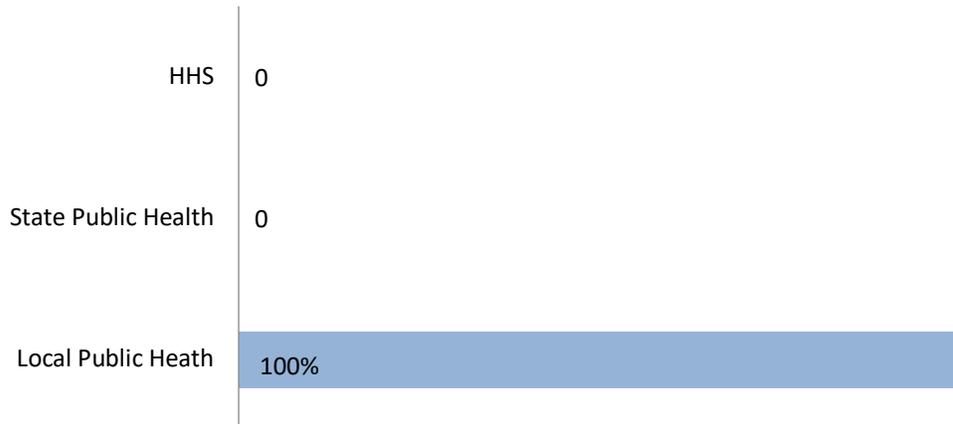
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Question:
What agency is identified as the lead agency?
Total Responses n=38

FIGURE 58 – LEAD AGENCY, STATES (n=36)



FIGURE 59 – LEAD AGENCY, CITIES (n=2)



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Question:

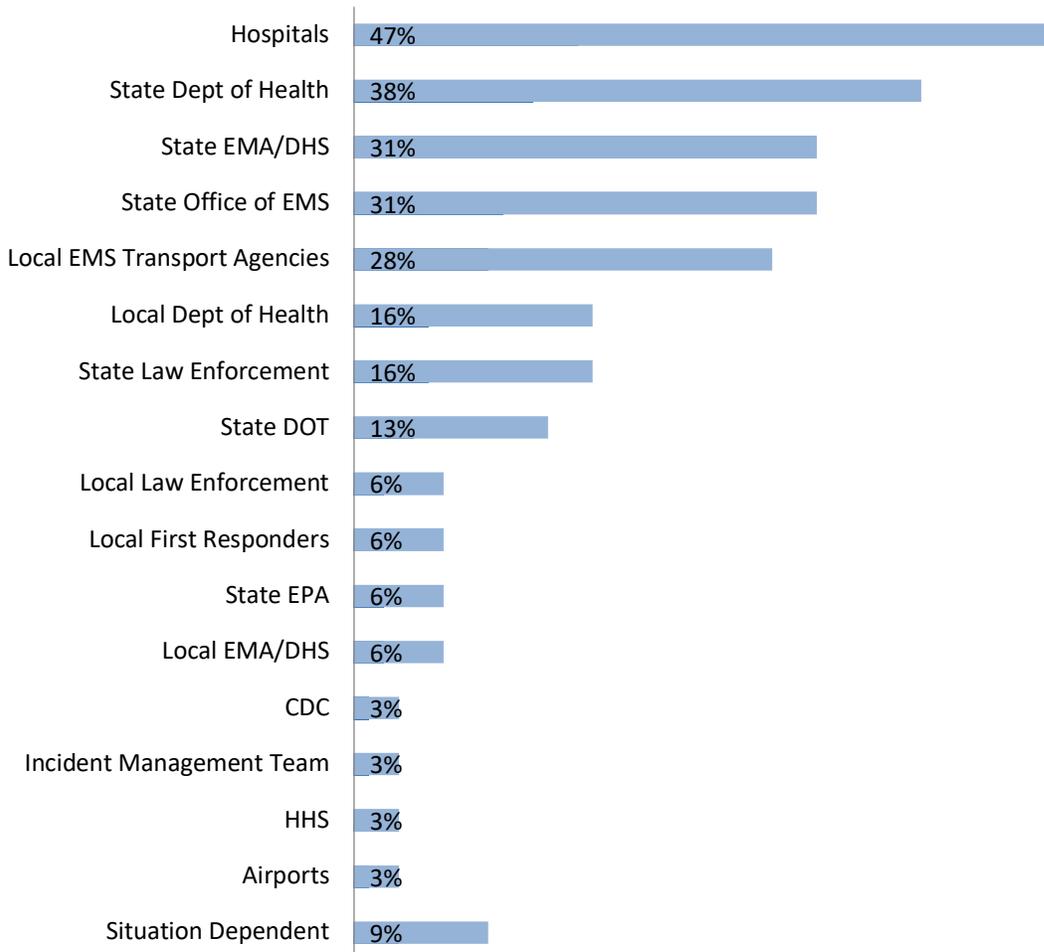
*What agencies are identified as members of the Unified Command?
Please enter "N/A" if your Plan does not identify one of the categories listed.*

[free text response]

Total Responses n=39

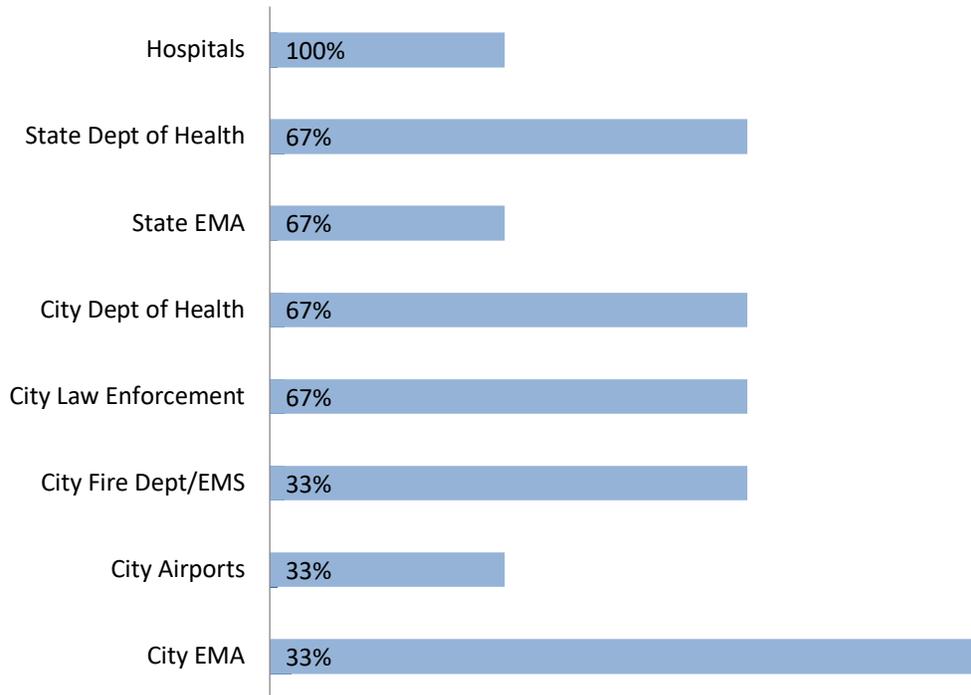
No two states or jurisdictions are organized exactly the same and/or have the same operational needs during the interfacility transport of a special pathogen patient. Therefore, it is expected that the composition of each state and cities Unified Command will be different. However, respondents' answers to this question demonstrated that there is some overlap in Unified Command composition among states and cities. The information in the below figures represents the percentage of time each given agency was reported as being included in a state's/city's Unified Command.

FIGURE 60 - UNIFIED COMMAND – STATES (n =32)



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FIGURE 61 – UNIFIED COMMAND – CITIES (n=3)



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Question:
*Has the command and control function for an interfacility special pathogen
 patient transport been tested?*
Total Responses: n=45

FIGURE 62 – COMMAND AND CONTROL FUNCTION TESTED FOR PATIENT TRANSPORT, STATES (n=42)

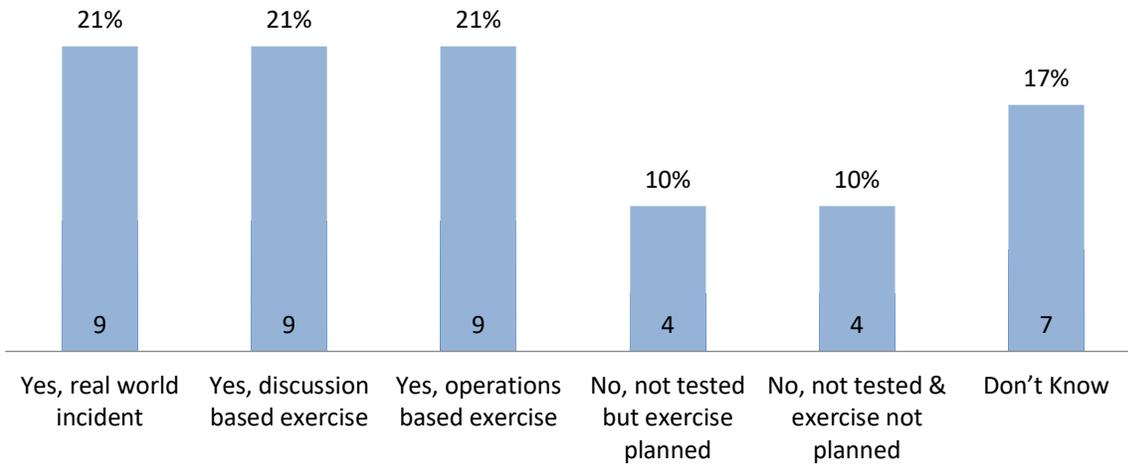
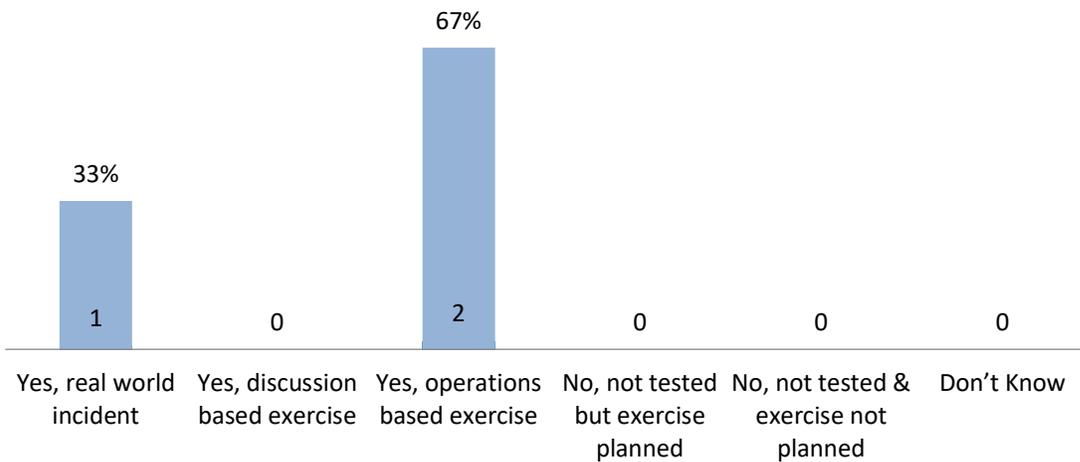


FIGURE 63 – COMMAND AND CONTROL FUNCTION TESTED FOR PATIENT TRANSPORT, CITIES (n=3)



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Question:
*Is the state/territory/city Emergency Management Agency (EMA) role(s)
identified in the Plan?*
Total Responses: n=46

FIGURE 64 – EMA ROLES IDENTIFIED, STATES (n=43)

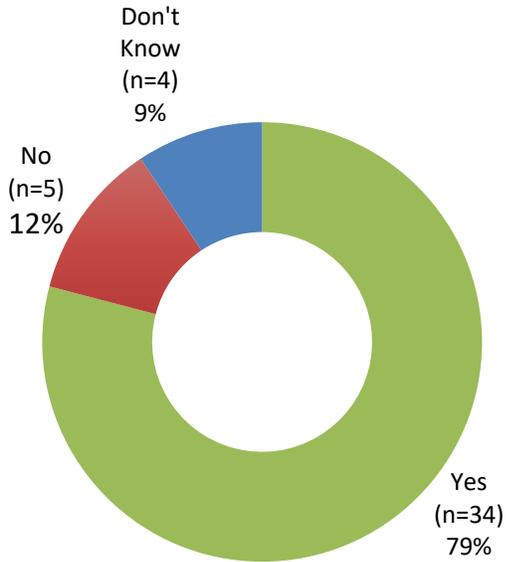
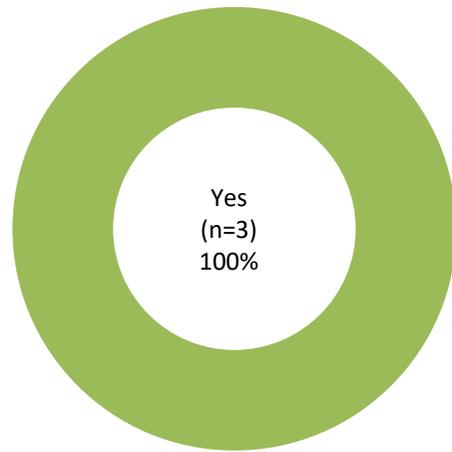
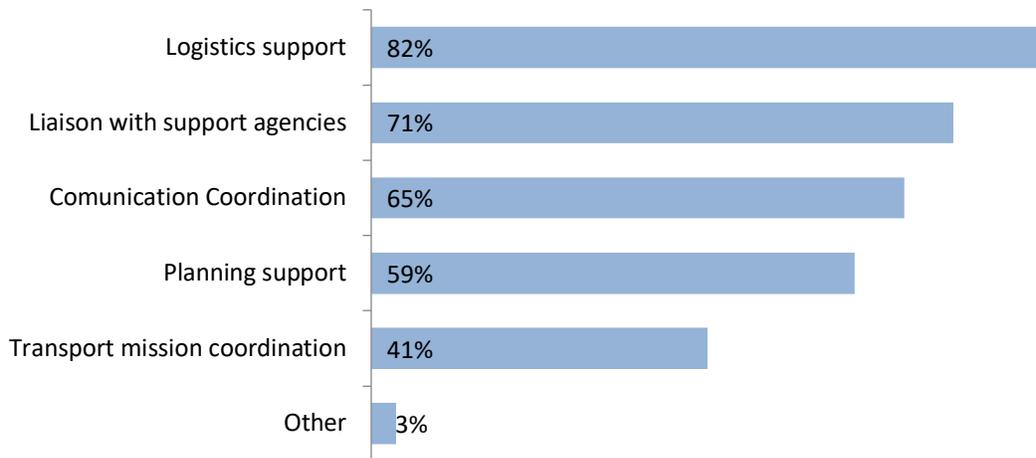


FIGURE 65 – EMA ROLES IDENTIFIED, CITIES (n=3)



Question:
What is the identified role(s) for the state/territory/city Emergency Management Agency? Select all that apply.
Total Responses: n=37

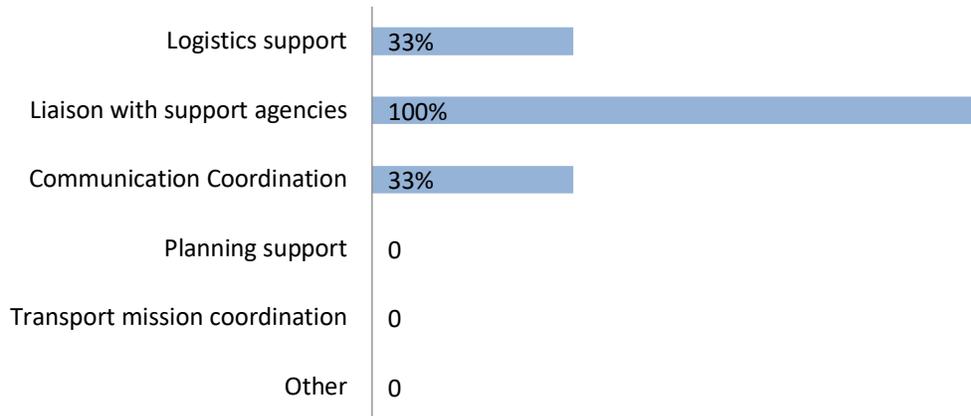
FIGURE 66 – EMA ROLES, STATES (n=34)



“Other” Comments – States (n=1)

Health and medical operational part of the state emergency management system

FIGURE 67 – EMA ROLES, CITIES (n=3)



Summary & Discussion

NIMS defines *command* as the act of directing and/or controlling resources by virtue of explicit legal, agency, or delegated authority and *coordination* as the process of

systematically analyzing a situation, developing relevant information and informing appropriate command authority of viable alternatives for selection of the most effective combination of available resources to meet specific objectives. The command function is either carried out by an Incident Commander from the Lead Agency or through Unified Command. The Lead Agency/Incident Commander is the entity responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources. When there is more than one agency with incident jurisdiction or when incidents cross political jurisdictions, Unified Command is often implemented as a coordination strategy. In Unified Command, agencies work together to establish a common set of objectives and strategies and a single incident Action Plan. A clearly defined command structure is critical for executing any type of emergency response operation in an efficient and effective manner. While there are both pros and cons of using a designated Lead Agency/Incident Command vs. Unified Command, the type of command selected is often less important than the fact that a command structure is in place and clearly defined.

Survey responses revealed that 95% of states and 100% of cities have a command structure identified in their plans. The majority of respondents, 63% of states and 67% of cities, indicated that both a lead agency and unified command agencies are identified in their plans. These findings are significant because it shows that the majority of jurisdictions have thought through what stakeholders possess the responsibilities, authorities, and expertise to successfully lead the execution of the jurisdiction's special pathogen patient interfacility transport plan.

While the Department of Public Health was identified as the lead agency nearly all of the time, the agencies that comprise Unified Command varied by jurisdiction. This variability was expected since no two states or cities are organized exactly the same; resulting in agencies with the same title (e.g. State Emergency Management Agency, State Department of Environment) having different authorities and responsibilities in each individual state or city.

Given the criticality of the command function, it is important for the entities who will comprise the command function to train and exercise together. Doing so will help each entity better understand the responsibilities, authorities, and expertise of other

stakeholders, which should translate into improved decision-making capabilities during an incident. Impressively, 63% of state respondents and 100% of city respondents indicated that the command function has already been tested through either a real-world incident or an exercise. An additional 10% of state respondents identified that an exercise to test this function has been planned.

Whether it is a single agency response or a multi-agency, multi-jurisdictional response, the response to all emergencies requires that operations be executed in a coordinated manner. While EMS, public health, law enforcement, and other emergency service agencies are experts in carrying out the responsibilities for which they have authority, their individual authorities rarely give them jurisdiction over the resources of other stakeholders, even if the resources are required to mitigate the incident for which said agency has responsibility. Emergency Management Agencies (EMAs) traditionally play a significant role in helping to bridge this gap by providing planning and logistical support to the overall operation and expertise in coordinating among stakeholder agencies. But to leverage the resources that an EMA can provide, planners must first identify what it is they desire the EMA to do in support of the overall mission. The vast majority of state respondents (79%) and all of the city respondents reported that the EMA roles were clearly defined in their plans. Respondents identified the primary roles for EMAs as logistical and planning support, liaison with support agencies, and communication coordination - all traditional areas of EMA expertise.

Recommendations

Jurisdictions that have not yet identified a command structure and/or the entities that will serve in a command function should do so immediately as the command structure is responsible for setting the incident objectives, allocating the resources required to meet the objectives, and coordinating overall response operations. Without a command structure in place, a jurisdiction will likely not be able to respond effectively to a special pathogen patient incident. Jurisdictions should develop the command structure by position title, not the names of individuals who currently occupy specific titles.

The saying "an emergency is not the time to exchange business cards" speaks to the importance of exercising the command function on a regular basis. In order to be as effective as possible, personnel filling command functions must be familiar with the

responsibilities of other stakeholders and ideally have experience in working through collaborative decision-making processes with individuals from other agencies who will serve in a command function during a special pathogen patient interfacility transport incident. While exercises are an effective means to practice implementation of the command function and are encouraged, jurisdictions are also encouraged to take advantage of real-world incidents to exercise the command and coordination functions that will be executed during plan activation. Ideally, the same or a similar command structure used for special pathogen patient transports should be used to manage many different types of public health incidents. While doing so may require extra effort on the part of some stakeholders for incidents in which they do not play a predominant role, utilizing real-world incidents to exercise the command function will provide regular practice in working together, as well as increase situational awareness of the larger public health and EMS issues among stakeholders.

Jurisdictions that have not yet clearly defined the role of EMA during plan execution must initiate discussions with EMA representatives to collaboratively define the plan's requirements for emergency management and determine whether the state and/or local EMA can fulfill these requirements. If an EMA is unable to meet the requirements, it is best to identify this now so that alternate solutions can be developed in advance of the need to activate the plan. Jurisdictions that currently do have EMA roles identified in their plans should establish a schedule for regular interagency collaboration (agency in charge of plan development and maintenance and EMA) to review responsibilities and identify any elements that need to be updated to reflect changes to organizational missions and resources.

All jurisdictions should consider working with the EMAs to incorporate the exercising of the command and control function into their state's/city's exercise calendar. EMAs are typically responsible for maintaining the state/city Homeland Security Exercise and Evaluation Program Exercise Calendar. Leveraging this resource will likely provide opportunities to exercise this critical function without having to plan a separate exercise to do so. In an exercise of the command and control function, the experience of work through a collaborative decision-making process together is more important than the subject matter discussed during the process. Once developed, the collaborative decision-making skills will be easily transferable to other subject matter areas.

Communications

Question:
*Is there an operational communications plan in place to support interfacility
special pathogen patient transports?*
Total Responses: n=46

FIGURE 68 – ESTABLISHED COMMUNICATIONS
PLAN, STATES (n=43)

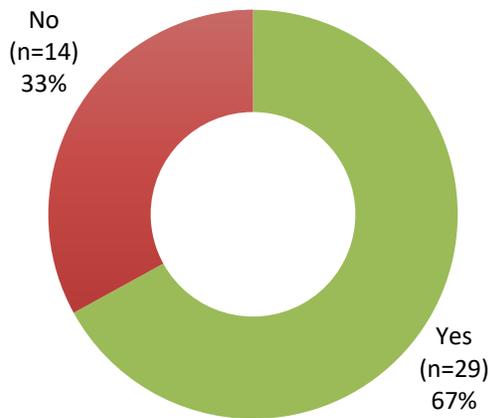


FIGURE 69 – ESTABLISHED COMMUNICATIONS
PLAN, CITIES (n=3)



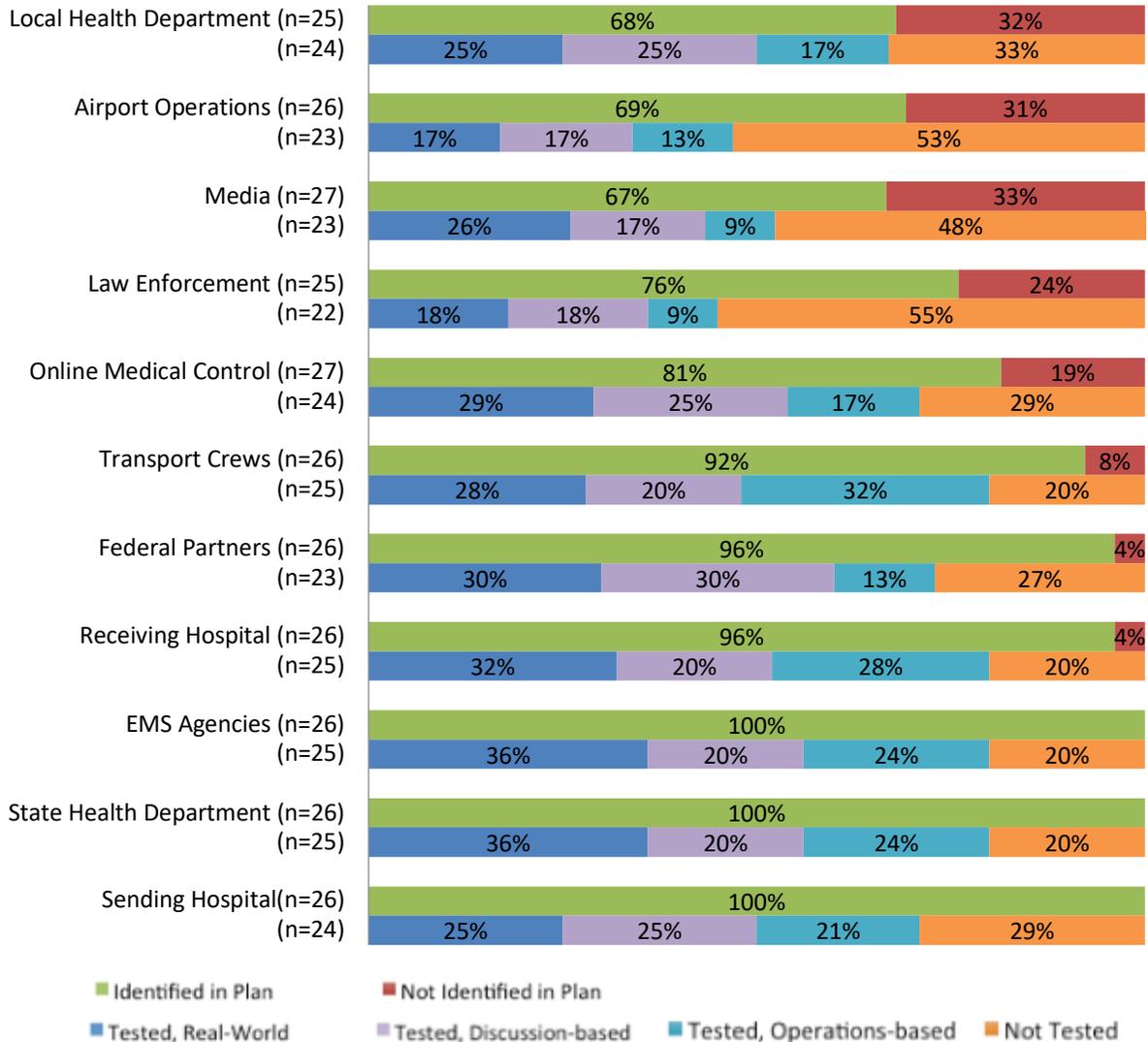
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Question:
Does the Plan specify processes for information sharing among the following?
Total Responses: n=30

Please identify if and how communications have been tested.
Total Responses: n=28

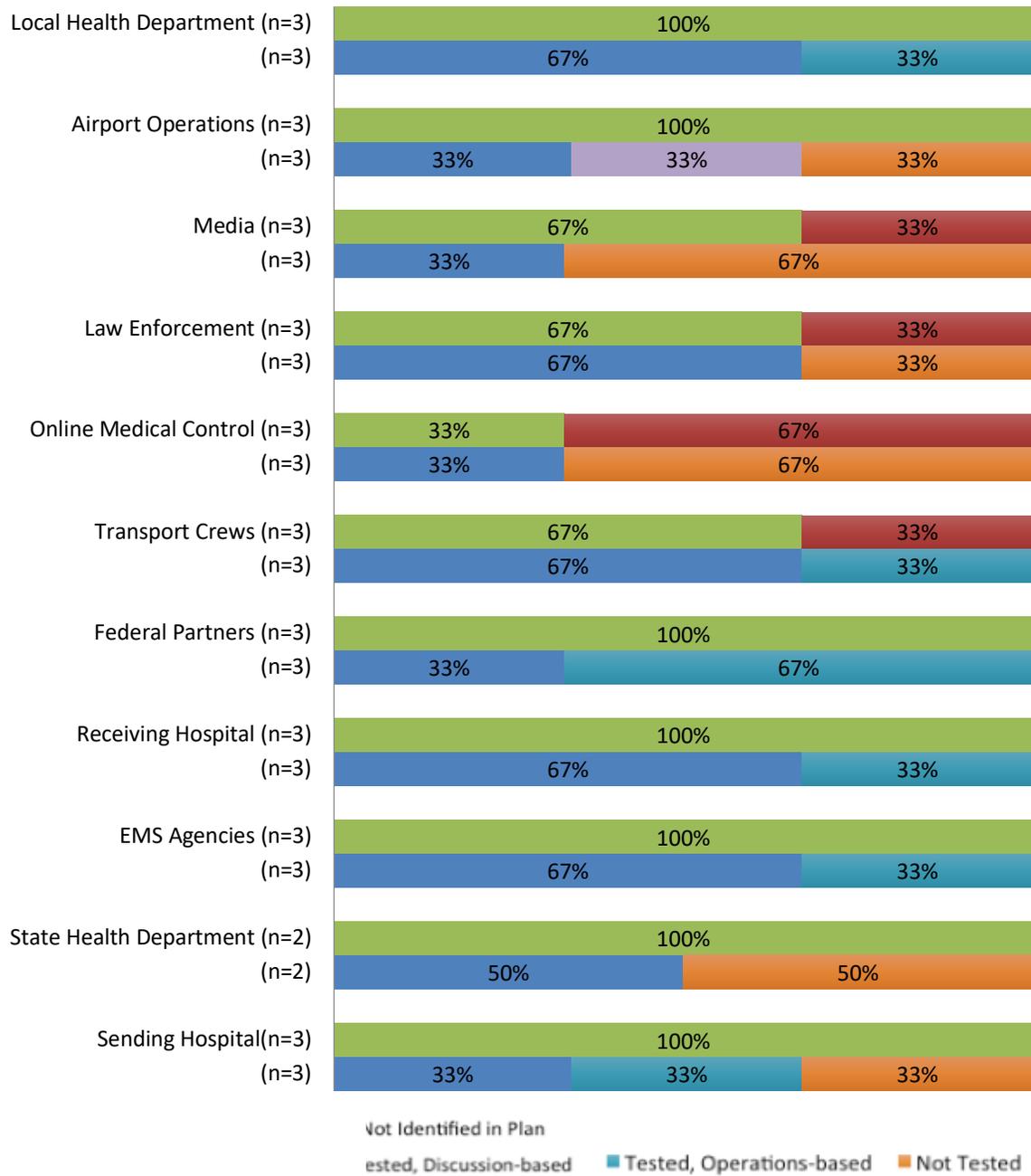
For each entity listed, the first line depicts whether an information sharing process has been specified in the plan and the second identifies how communications have been tested.

**FIGURE 70 – PROCESS FOR INFORMATION SHARING, STATES (n=27)
COMMUNICATIONS TESTED, STATES (n=25)**



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**FIGURE 71 – PROCESS FOR INFORMATION SHARING, CITIES (n=3)
COMMUNICATIONS TESTED, CITIES (n=3)**



Summary & Discussion

Upon the critique of the response to a real-world incident and/or an emergency preparedness exercise, a breakdown in communications is commonly cited as an area in

need of improvement. However, no matter how many times this same issue is identified and number of improvement plans that are put in place to correct the communication challenges identified, communication breakdowns still tend to present again during future incidents and exercises. Ensuring effective and timely communications among all stakeholders during an incident is hard and often times takes the dedication of a significant amount of human and material resources in order to accomplish. However, the lack of effective communication plans (strategies and procedures) and personnel trained to execute the plans can singlehandedly derail the entire response plan for an incident that stakeholders were otherwise well prepared to execute.

Sixty-seven percent of state and 100% of city respondents reported that their state/city has an operational communication plan in place to support operations for transporting special pathogen patients. States indicated that processes for sharing information with sending hospitals, the state health department, and EMS agencies were contained in the plan 100% of the time and that processes for information exchange with receiving hospitals, federal partners, and transport crews were specified greater than 90% of the time. Inclusion of procedures for communicating with online medical control, law enforcement, the media, airport operations, and local health departments were found 68-81% of the time. The reported results indicate fairly high percentages for thinking through communication processes with key stakeholders. However, the fact that each stakeholder group did not result in a reported percentage of 100 means that many states have a number of potential opportunities for communication failure, and thus opportunities to derail the entire response operation, solely because processes for communicating with key stakeholders were not fully thought through.

With the exceptions of law enforcement, airport operations, and the media, states reported having tested communication procedures with other key stakeholders between 67-94% of the time, with 80% being the statistical mode. Procedures for exchanging information with law enforcement, airport operations, and the media were reportedly tested less than 53% of the time. States are commended for their efforts to date with testing communication procedures among stakeholder partners. However, the findings of less than 100% of testing for communication procedures with all stakeholders creates

missed opportunities to identify areas of weakness and correct the identified vulnerabilities prior to the occurrence of a real-world incident.

While cities generally reported a higher percentage of stakeholders for which operational communication plans are in place and plans that have been tested, the only stakeholders for which information sharing plans have been 100% included *and* 100% tested are receiving hospitals, local health departments, federal partners, and EMS agencies. The fact that lesser percentages were reported for other stakeholders creates the same vulnerabilities as described above for the states.

Recommendations

To ensure an optimal level of preparedness, all states and cities must strive for development and testing of information exchange procedures with all stakeholders 100% of the time. To do any less is a disservice to those who will be tasked with coordinating plan execution at the incident management level, the frontline EMS personnel and healthcare workers providing direct care to special pathogen patients, and the actual patients being transported. State and city leaders charged with the responsibility for plan development and maintenance are encouraged to work with all stakeholders to collaboratively select and/or develop information exchange processes that can be implemented during plan activation. If processes for communications among stakeholders are currently in place for operational communications in other topic areas, planners should consider adopting the same processes for special pathogen patient transports vs. creating new systems. The most effective communications systems are likely those that are used on a routine basis. The need to transport a special pathogen patient from one facility to another is a low probability, high consequence event. If a special system for information exchange is created specific to special pathogen patient transports, it is likely that those expected to use the system during a real-world incident will be unfamiliar with it. No matter how robust a process may seem, if the personnel tasked with implementing the process are not well versed in execution, the end result will be a decrease in communication capabilities.

Alternatively, leveraging systems that are used for other purposes will increase the likelihood that personnel will be knowledgeable of the system, facilitating opportunities for effective information exchange. Additionally, if the plan relies on existing system that are used on a regular basis, the need to conduct staged communication exercises in

support of the special pathogen patient interfacility patient transport plan will be decreased since communication procedure effectiveness can be validated through periodic evaluation of how the process is implemented for other areas of business, a savings of both time and money.

Continuing Education and Training

Question:
Does your state/territory/city maintain a list of approved local continuing medical education (CME) for special pathogen disease-related classes?
Total Responses: n=46

FIGURE 72 – MAINTAIN LIST OF APPROVED CME, STATES (n=43)

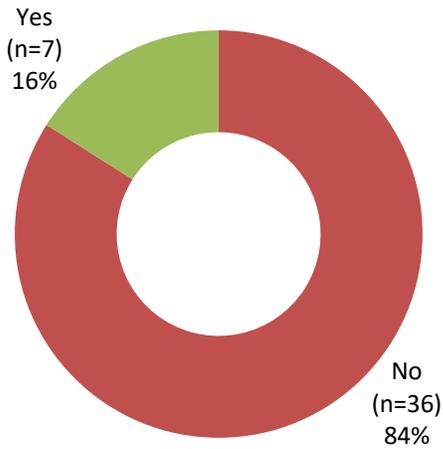
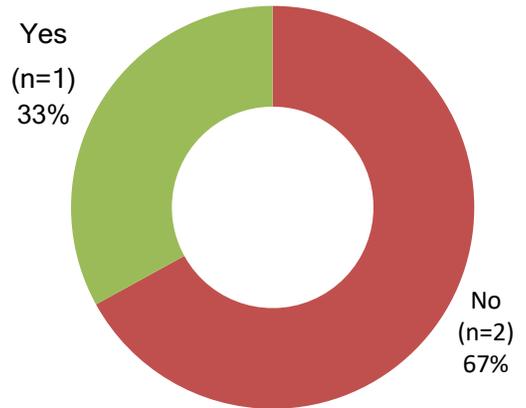


FIGURE 73 – MAINTAIN LIST OF APPROVED CME, CITIES (n=3)

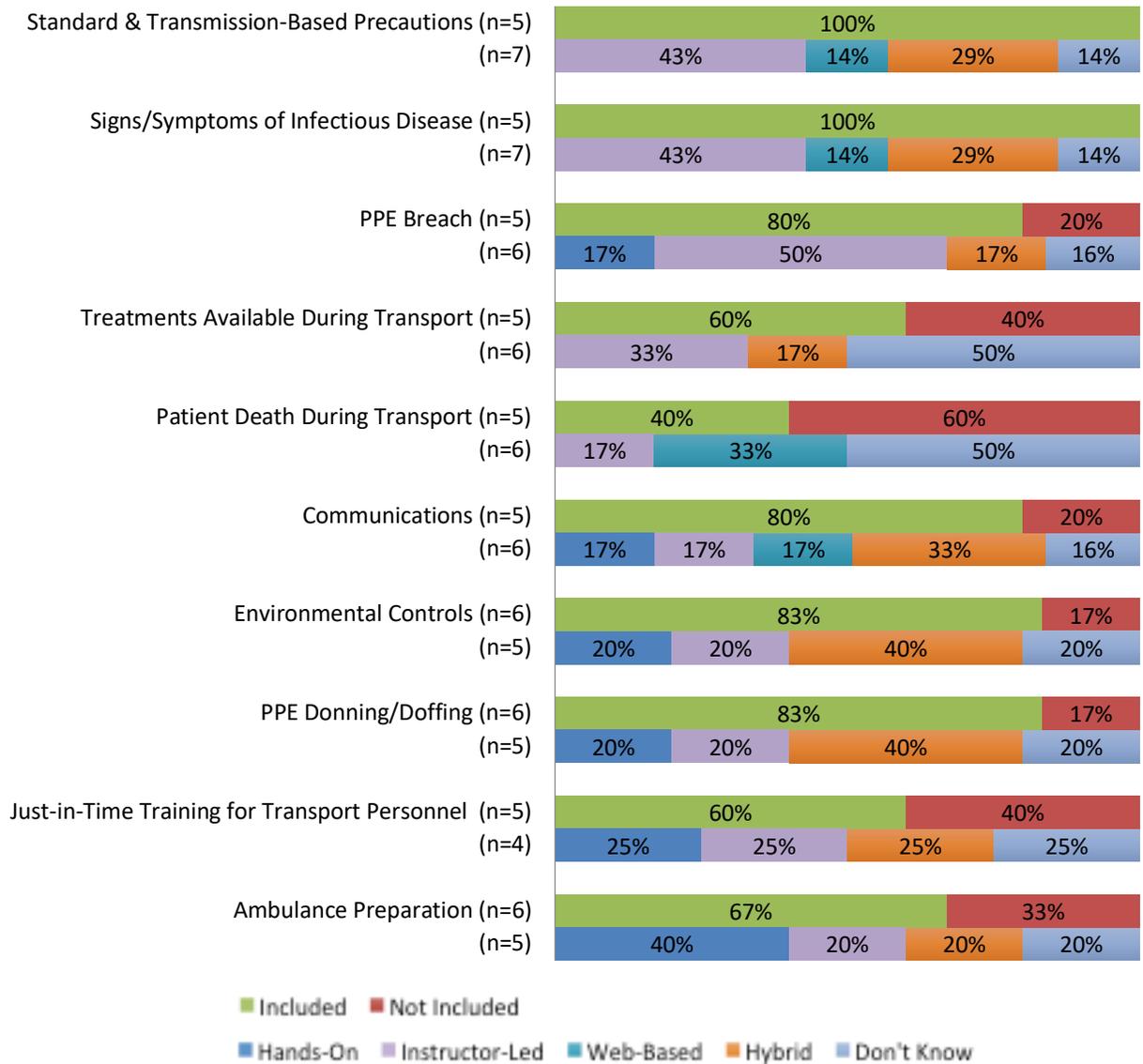


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Question:
*{only asked to those who responded 'yes' to the question
 represented in Figures 72 & 73}*
*Please identify which topics, if any, for which training is being conducted at the
 local/regional level in support of special pathogen patient transport.*
Total Responses: n=8

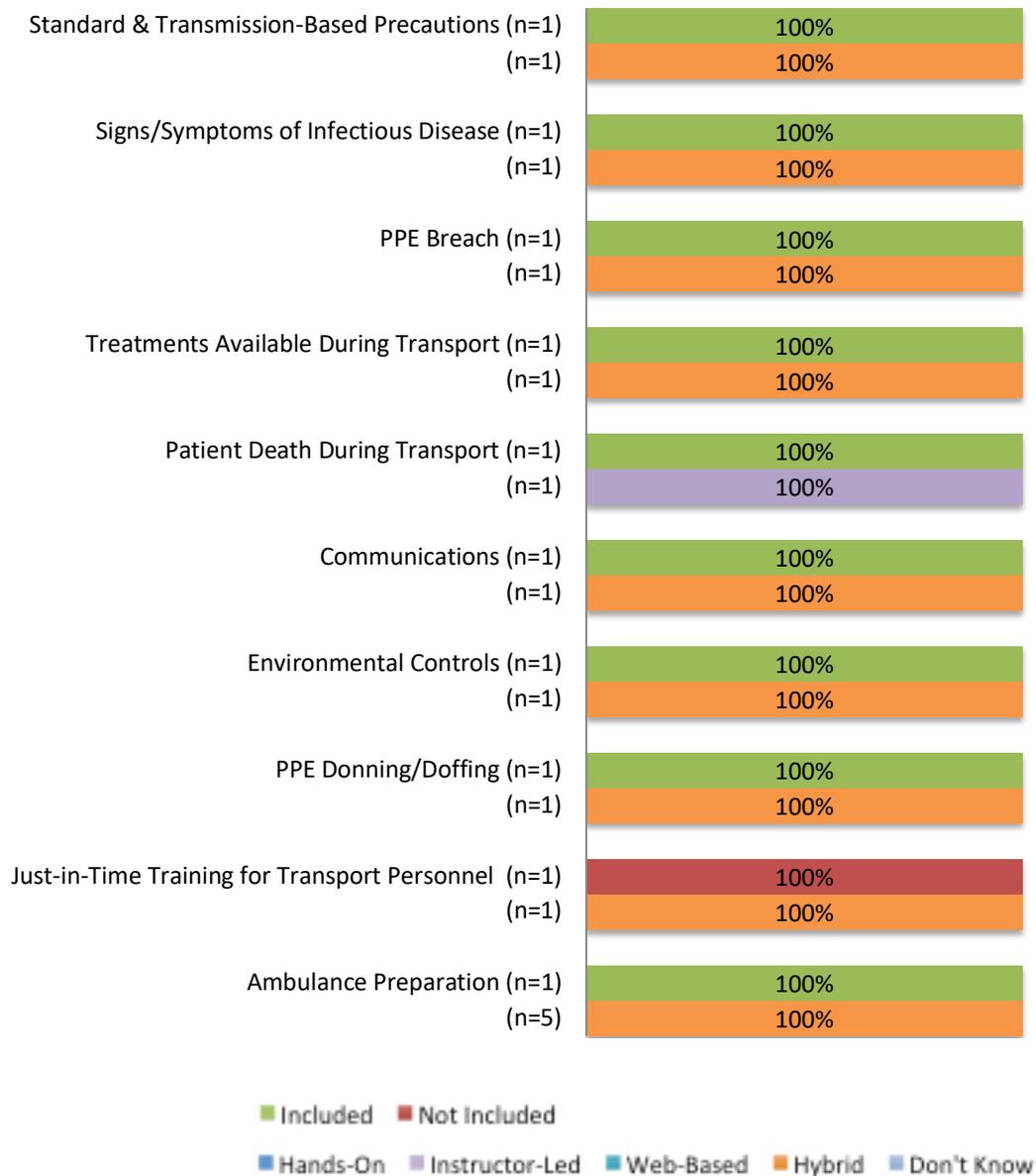
For each entity listed, the first line depicts whether training on each topic listed is being conducted at the local/regional level and the second identifies what type of training it is.

FIGURE 74 – TRAINING TOPICS, STATES (n=6)
TYPE OF TRAINING, STATES (n=7)



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FIGURE 75 – Training Topics, CITIES (n=1)
Type of Training, CITIES (n=1)



Summary & Discussion

Survey respondents were asked to identify whether they maintain a list of *approved* local continuing medical education for special pathogen disease-related classes. Only 16% of states and 33% of cities responded in the affirmative.

Only 14% of the universe of survey participants answered the questions regarding the specific topics for which training is being conducted. While the information provided by these respondents is valuable, it cannot be generalized that the reported results are an accurate representation of the national status of special pathogen disease-related classes. While it is beyond the scope of this assessment and therefore unknown, it is highly probable that many local jurisdictions throughout the country are providing special pathogen disease related classes for EMS personnel but that this information is just not being captured on a list of *approved* continuing medical education training at the respective state level.

Training topics for which respondents reported being conducted more than 80% of the time include: signs and symptoms of infectious disease, standard and transmission-based precautions, environmental controls, PPE donning/doffing, PPE breach, and communications. With the exception of "patient death during transport" which was reported as being conducted only 40% of the time, the other training topics received response rates between 60-67%. Respondents reported a pretty even mix of the type of training (e.g. hands-on, instructor-led, web-based, hybrid) being conducted.

Recommendations

Further discussion at a national level on whether there is value in tracking locally offered special-pathogen disease related continuing medical education courses at the state level is warranted. An argument can be made that better tracking and/or a state approval process may positively impact the quality of course content being taught since a greater level of oversight than what currently exists in the majority of states would be implemented. Furthermore, state-level tracking and/or approval may also better position states to identify areas of training deficiency; theoretically providing states with opportunities to address training gaps before EMS personnel are called upon to transport a special pathogen patient from one facility to another. Conversely, asking states to increase tracking and/or implement continuing medical education course approval processes will require additional resources. The benefits must be weighed against the costs as part of the national-level discussion.

Barriers

Question:

What are your state's/territory's/city's top three barriers to executing interfacility special pathogen patient transport operations?

[free text response]

Total Responses: n=45

STATES:

42 States listed the barriers to interfacility special pathogen patient transport as:

Multiple Responses

- Funding (n=16)
- Training, education and exercising (n=15)
- Geographic distances (n=7)
- Limited Resources (n=5)
- Geographical distance to a Regional Ebola Treatment Center (n=5)
- EMS agency availability (n=5)
- Maintaining focus on Ebola / HCID (n=4)
- Lack of personnel (n=3)
- Resources (n=2)
- Time in Transport (n=2)
- Home rule (n=2)
- Competing priorities (n=2)
- Conflicting and non-specific PPE guidelines (n=2)
- Not all plans are fully completed and tested (n=2)
- Response to more rural areas of the state (n=2)

Hospital Issues

- Intra-hospital system controls (desire to keep patients "in-network")
- Standardization of safety protocols across hospitals regarding visitors
- Patient surge capability
- Limited facilities' capabilities
- Existing hospital referral relationships

- Assuring Hospitals do not make transport arrangements without going through State Health Plan
- Differing hospital expectations related to receiving/transferring patients
- Limited number of facilities capable of receiving such patients
- Lack of consensus from hospital association on hospital designation

EMS Issues

- Liability/responsibility of EMS hazardous waste disposal
- Most EMS services are volunteer
- Continued support to maintain capability of ambulance agencies
- Complexity of the EMS system across our state and its decentralized nature makes planning, training, and exercising difficult
- Review of Hospital policies by EMS Office
- Health Care Coalition Participation by EMS Office
- Availability

Transportation Issues

- Stigma of transporting highly infectious patient
- Special Pathogen Transport Supplies, Equipment Procurement
- Lack of interstate agreements for transporting patients
- Underdeveloped plan for long distance intrastate transport
- Special Pathogen dedicated transport resources
- Critical transportation capacity
- Death during transport
- Air transport

PPE

- PPE will always be an issue.
- Training in PPE annually

Geographical Concerns

- Rural perception of whether it could happen to them
- Demographics

- Variance in risk tolerance between jurisdictions

Other

- Maintaining continuity of transfer team members
- Capabilities of agencies involved
- Operational Coordination
- Synching various plans
- Sustainability
- Cooperation
- Logistics

CITIES:

Three cities listed the barriers to interfacility special pathogen patient transport as:

- A limited number of treatment beds available
- Maintaining competency of providers who are wearing PPE to provide interventions to special pathogen patients during transport (two respondents identified this issue)
- Cross jurisdictional boundary issues
- Maintaining the capability to transport and treat pediatric patients
- Maintaining knowledge of interfacility special pathogen patient transport plans and keeping the plans updated
- Transport crew exchange operations

CONCLUSION

States and cities are commended for the vast amount of work that has been done to create capabilities and capacities for the interfacility transport of special pathogen patients. The risks associated with a special pathogen patient transport require that planners pay great attention to detail and coordinate plans with all stakeholders and response partners. The results of the assessment reveal that the majority of states and cities are proactively taking steps toward mitigating the known risks and/or putting plans in place to minimize risks in advance of the need to move a special pathogen patient from one facility to another.

In spite of the progress made to date, much work remains. Assessment findings revealed that three critical activities should be prioritized by state, city, and federal stakeholders in an effort to improve upon our collective response posture.

- There is a significant need to better plan for the unique situation that is created when a pediatric patient with a suspect or confirmed special pathogen infection requires transport. States and cities are encouraged to work collaboratively with pediatric stakeholders to ensure that the comprehensive needs of such children are fully addressed in their plans.
- Stakeholders must continue to evolve their plans to ensure that they are prepared to handle the transport requirements of any type of special pathogen patient, not just a patient with Ebola Virus Disease.
- All interdisciplinary stakeholders must be included in the planning, training, and exercising cycle of special pathogen patient interfacility transport plans. The exclusion of a stakeholder in any phase of this cycle is not only a disservice to the specific stakeholder, but also to the other entities involved in the process and ultimately the patient(s) requiring transport.

The ongoing maintenance of plans and current capabilities requires a long-term commitment of human and financial resources. Plans must be exercised and updated on a regular schedule. The personnel who will be charged with plan execution must maintain or expand upon their current level of training specific to a special pathogen patient transport mission. States and cities are continuously being asked to do more and be prepared for more types of special situations, but the funding required to do so is frequently only available for a limited period of time. To ensure that the progress made does not regress, states and cities must be creative in their approaches to maintenance and begin the process now of strategically planning for long-term maintenance activities.

The assessment findings document that as a nation, we are developing robust capabilities to effectively move a special pathogen patient from one facility to another. The challenge of ensuring the continued future access to these capabilities in a timely manner in all areas of the country and our territories remains and is one that must be addressed collaboratively by all levels of government and private sector stakeholders.

No person can accurately predict when and where we will see the next special pathogen patient who requires an interfacility transport. Therefore, we must all remain vigilant and committed to being as prepared as possible to respond when called upon.

APPENDIX A – EXPERT PANEL ORGANIZATIONS

The following is a list of the organizations represented on the Expert Panel.

- American Ambulance Association (AAA)
- Association of Air Medical Services (AAMS)
- Association of Critical Care Transport (ACCT)
- Association of State and Territory Health Offices (ASTHO)
- Emory University
- EMS for Children Innovation and Improvement Center (EIIC)
- National Association of County and City Health Departments (NACCHO)
- National Association of Emergency Medical Technicians (NAEMT)
- National Association of EMS Physicians (NAEMSP)
- National Association of State EMS Officials (NASEMSO)
- National Ebola Training and Education Center (NETEC)

APPENDIX B - ACRONYMS & DEFINITIONS

Acronyms

AAR – After Action Report

ASPR - Assistant Secretary for
Preparedness and Response

CDC - Centers for Disease Control and
Prevention

CME - Continuing medical education

CPR – Cardiopulmonary Resuscitation

DOH - Department of Health

EMA - Emergency Management Agency

EMS - Emergency Medical Services

EPA - Environmental Protection Agency

ETC – Ebola Treatment Center

EVD - Ebola Virus Disease

HCID – Highly Contagious Infectious
Disease

HHS – Health and Human Services

HMR - Hazardous Materials
Regulations

HPP - Hospital Preparedness Program

HVAC - Heating, Ventilation, and Air
Conditioning

IATA – International Air Transport
Association

IC – Incident Command

NETEC – National Ebola Training and
Education Center

NASEMSO – National Association of
State EMS Officials

OSHA – Occupational Health and
Safety Agency

PHEP – Public Health Emergency
Preparedness

PPE – Personal Protective Equipment

PUI – Patient Under Investigation

RESPTC - Regional Ebola and Special
Pathogen Treatment Center

SMO – Standing Medical Orders

SOP – Standard Operating Procedures

Definitions

Ebola assessment hospital: hospitals that are prepared to receive and isolate a patient under investigation (PUI) and care for the patient until a diagnosis of Ebola can be confirmed or ruled out and until discharge or transfer is completed, which can take up to 96 hours. These hospitals are also equipped to effectively evaluate and treat other conditions (e.g. malaria, influenza) using appropriate diagnostics and therapies.

Ebola treatment center: hospitals that are prepared to provide comprehensive care to a person diagnosed with Ebola for the duration of a patient's illness.

Frontline healthcare facility: healthcare facilities that are prepared to rapidly identify and isolate patients who might have Ebola and promptly inform the hospital/facility infection control program and state and local public health agencies. These facilities will quickly transfer suspect cases to an Ebola assessment hospital or Ebola treatment center as recommended by state and local public health authorities.

Plan: Special Pathogen Interfacility Patient Transport Plan

Regional Ebola and Special Pathogen Treatment Center (RESPTC): hospitals that are able to treat at least two Ebola patients simultaneously, have respiratory infectious disease isolation capacity or negative pressure rooms for at least 10 patients, are able to treat pediatric patients with Ebola or another highly infectious disease, and are able to handle waste from such patients.

Special pathogen: a highly infectious agent that produces severe disease in humans. These diseases may include one or more of the following:

- High risk of mortality
- High risk of secondary cases
- Absence of effective vaccine, prophylaxis, or specific treatment
- Clinical or public assuredness concerns that can be mitigated by treating patients in a Special Pathogens Unit
- Optimally safe clinical care requires the use of personal protective equipment (PPE) beyond what is in daily use
- Optimally safe clinical care requires facility functionality that is different from

standard hospital facilities

- Waste and laboratory samples generated in the course of clinical management requires special handling.