

**Near-Term Strategies to Improve Pediatric Surge Capacity
During Infectious Disease Outbreaks**

**A Report of the NACCD
Surge Capacity Work Group**

2015.04.28

Table of Contents

Table of Contents 2

I. Introduction 4

 A. About the National Advisory Committee on Children and Disasters..... 4

 B. Exploring Short Term Surge Capacity..... 4

 C. Methods..... 5

 D. Recommendations and Gaps 5

 E. Limitations..... 5

II. Task 1: The current state of readiness to transport infectious children..... 6

 A. Findings 6

 B. Summary and Recommendation 7

 C. Additional Research Questions 7

III. Task 2: The current state of general emergency/pediatric emergency surge capacity..... 7

 A. Findings 7

 B. Summary and Recommendation 8

 C. Additional Research Questions 8

IV. Task 3: The current readiness of children’s hospitals to surge during an infectious disease outbreak..... 8

 A. Findings 8

 B. Summary and Recommendation 9

 C. Additional Research Questions 9

V. Task 4: The current state of non-pediatric facilities to care for children in large-scale disease outbreaks 10

 A. Findings 10

 B. Summary and Recommendation 10

 C. Additional Research Questions 11

VI. Task 5: A summary of potential mitigation strategies for identified gaps..... 11

 A. Findings 11

 B. Summary and Recommendations..... 12

 C. Additional Research Questions 12

VII. Task 6: A review of best practices and a summary of practical tools to help build health care coalitions aimed at increasing community readiness to care for children 12

 A. Findings 12

B.	Summary and Recommendations.....	13
C.	Additional Research Questions.....	14
VIII.	Recommendations Summary.....	14
IX.	Conclusion.....	14
X.	Resources.....	16
XI.	References.....	17
	Appendix A: ASPR Task Letter to NACCD.....	21
	Appendix B: NACCD Voting Member Roster.....	23
	Appendix C: Surge Capacity Work Group Member Roster.....	25
	Appendix D: Subject Matter Experts Invited To Present To the Surge Capacity Work Group.....	26

I. Introduction

A. About the National Advisory Committee on Children and Disasters

The National Advisory Committee on Children and Disasters (NACCD) was established in 2014 by the [Pandemic and All-Hazards Preparedness Reauthorization Act of 2013](#) (PAHPRA) to provide expert advice and consultation to the Secretary of the U.S. Department of Health and Human Services (HHS) and the Assistant Secretary for Preparedness and Response (ASPR) on the medical and public health needs of children related to all-hazards emergencies, and to provide input on preparedness activities such as disaster drills and exercises, as well as input on medical and public health grants and cooperative agreements.

The 15-member NACCD (see Appendix B) comprises public health and medical experts from federal, state, and local health agencies and child experts experienced in disaster preparedness and response. NACCD members understand that children have unique needs and should not be treated like little adults when it comes to public health emergencies and disasters. The NACCD seeks to build upon the foundational work already accomplished by many organizations and individuals to ensure the health needs of children are met nationwide during public health emergencies and disasters.

B. Exploring Short Term Surge Capacity

In November 2014, the ASPR sent a task letter (see Appendix A) to the NACCD requesting an assessment of the current state of readiness nationally for a surge of very ill, contagious pediatric patients due to an infectious disease outbreak. With scenarios such as influenza and Enterovirus (EV) D68 threatening to overwhelm local pediatric care capabilities and Ebola Virus Disease (EVD) posing additional concerns to health care and public health professionals during the fall of 2014, the ASPR invited the NACCD to expediently examine these or other potential infectious disease threats and provide strategies to improve national pediatric surge capacity in the near-term. This report summarizes the methods, limitations, gaps, key findings, and results of the NACCD's assessment of current national pediatric surge capacity with attention paid to the following areas as delineated in the ASPR task letter:

- The current state of readiness to transport large numbers of critically ill children
- The current state of general emergency/pediatric emergency surge capacity
- The current readiness of children's hospitals to surge during an infectious disease outbreak
- The current state of non-pediatric facilities to care for children in large-scale disease outbreaks
- A summary of potential mitigation strategies for identified gaps
- A review of best practices and a summary of practical tools to help build health care coalitions aimed at increasing community readiness to care for children.

C. Methods

The NACCD formed the Surge Capacity Work Group (see Appendix C) under its auspices to respond to the task letter. The Work Group invited subject matter experts (SMEs) (see Appendix D) from across the country to provide, based on their extensive knowledge, background, and training, their expertise, perspectives, and real-world experiences as related to pediatric surge capacity. The Work Group also assessed the literature to gather additional information on pediatric surge capacity. As the Work Group deliberated on the topic of a surge of infectious children and how that would evolve nationally, members considered the essential question: ***what could the ASPR and the HHS Secretary do and/or influence to strengthen pediatric surge capacity?***

D. Recommendations and Gaps

Many gaps identified by the Work Group and during discussions with SMEs in pediatric disaster preparedness concerned local, public, or private institutional policies and practices, which were deemed outside the sphere of federal authority, influence, or responsibility. This report, therefore, provides insights into strategic issues that are within the scope the ASPR and the HHS Secretary and aims to ***increase federal situational awareness of local preparedness for pediatric surge to inform potential policy decisions***. While the strategies below are suggestions for near-term solutions, the NACCD concluded that a need remains for additional long-term strategies to ensure pediatric surge capacity in the event of a severe infectious disease outbreak.

The gaps highlighted in this report are those assessed as requiring the specific attention of federal partners and illuminating big-picture gaps in national pediatric surge capacity.

E. Limitations

The Surge Capacity Work Group existed in the midst of the 2014-2015 Ebola Virus Disease Outbreak, the 2014 Enterovirus D68 Outbreak, and a 2014 flu season, with a less effective vaccine due to virus drift. The timing and time constraints of the ASPR tasking presented a unique and intensive opportunity to evaluate pediatric surge in the midst of multiple real-world scenarios. There were qualitative benefits of learning from the real time evolution of these responses and from the experience of clinicians, public health officials, and health care coalition experts actively involved in responding to an infectious disease threat. The task also presented significant quantitative limitations as accessible data were especially limited and constantly evolving. In many cases, data-sets were not readily available – a limitation and a pediatric surge capacity gap in itself. The report, therefore, includes additional research questions, sparked by the lack of readily available data, which need to be explored in the future.

The NACCD explored available data sources but found data sets to be scarce and not helpful to this short turn-around task.

II. Task 1: The current state of readiness to transport infectious children

A. Findings

The NACCD focused on assessing national capacity to respond to at least a multi-state or regional infectious disease outbreak, especially one that is rapidly spreading. The Work Group found substantial gaps within the national pediatric transport capability. The readiness to move large numbers of infectious children is limited and variable across the country. There are no current systems to relay and assess needed information on general transport, let alone pediatric transport. The core categories investigated include:

- Staff: the quality and quantity of training and personnel qualifications
- Supplies: all supplies, particularly specialized equipment and containment units, needed for pediatric transport
- Systems: existing systems to smoothly transport infectious children across jurisdictions

Pediatric air transport publications have indicated substantial experience by air paramedics and nurses, who reported an average of 12 years of in-flight airway management practice. During these events, aircraft have usually been supplied by either private owners in desperate situations, or by aircraft agencies that have had pre-disaster agreements with hospitals in the region.^{1,2} Having pre-planned transportation is critical in times of large public health emergencies, as it allows for aircraft to be properly equipped and prepared for utilization. Critical equipment includes neonatal and age- and size-appropriate airway supplies, machines, and medications needed for intubation and resuscitation.² The literature also recommends creating and implementing a traffic control plan into the incident command system (ICS) to minimize obstruction and transport times.^{1,3}

Key Finding: The NACCD finds a need for nationally coordinated emergency medical services to move large numbers of infectious pediatric patients.

In discussions with SMEs, the Work Group identified two key federal level partners as potentially playing important roles in strengthening pediatric transport capacity:

- **EMSC:** The HHS Health Resources and Services Administration (HRSA) Emergency Medical Services for Children (EMSC) Program leads the coordination effort of national pediatric transport resources, surveys transport coalitions, and identifies best practices for regions to replicate.
- **The Department of Defense:** Military aircraft could be readily accessible via the ICS response, particularly when air transport is required in circumstances of limited transport capability.^{1,2,4} The DoD is a valuable national stakeholder with a potential to support pediatric transport and, therefore, should be part of the national discussion.

Discussions and literature revealed that some parts of the country have established transport coalitions based on jurisdictions or Memorandums of Understanding (MOUs) between hospital systems. These coalitions present a promising practice. The NACCD concludes that **expanded collaboration via coalitions would strengthen national emergency medical system readiness for pediatric patients.**

Key Finding: Replicating successful regional approaches to pediatric and neonatal transport is an efficient use of time and resources for communities lacking such approaches individually and/or with limited means.

Planning for the medical and infection control aspects of emergently transporting infected children should be addressed within emergency preparedness plans for all facilities – not just medical but also educational, childcare, juvenile justice, and other community settings and facilities—responsible for the care of children. Those plans should address liability issues pertaining to the Health Insurance Portability and Accountability Act ([HIPAA](#)) and the Family Educational Rights and Privacy Act ([FERPA](#)).

B. Summary and Recommendation

The lack of national real-time data on pediatric transport capacity led the NACCD to rely upon the experience and perspectives of SMEs and recent experience of Work Group members during the 2014-2015 Ebola response, the 2014 Enterovirus D68 outbreak, and the 2014 flu season. It became clear that the United States has a patient transport system of dedicated professionals and advanced supplies. While it is much better than it was a decade ago, the system is still diverse and fragmented across counties, regions, and jurisdictions. This fragmentation is even greater for pediatric transport, which requires additional specific expertise. Based on discussions, the Work Group finds the most effective use of HHS Secretary and the ASPR's scope of authority is to facilitate discussions among stakeholders. By bringing together decision makers, the ASPR would be facilitating the development of relationships and networks, which is the first step in addressing existing gaps in pediatric transport and integrating pediatric transport discussions into overall patient transport plans.

Recommendation A: The NACCD recommends that the ASPR develop a national network of stakeholders to examine issues and address barriers, and, ultimately, implement solutions to family (child and adult caregiver) transport needs during an infectious disease crisis.

C. Additional Research Questions

- *What options exist for real-time monitoring of transport inventory?*
- *How can collaboration be expanded to ensure coverage of areas with scarce resources?*
- *What are the liability issues pertaining to HIPAA and FERPA and how can they be resolved?*

III. Task 2: The current state of general emergency/pediatric emergency surge capacity

A. Findings

The NACCD found data sources that provide a national perspective on pediatric infectious disease readiness to be scarce and the input provided to the Work Group by SMEs was anecdotal and experiential. While some information exists in various locations and in variable quantities and quality, the information is not necessarily collated into a usable source to be generalizable nationally to provide a needed overarching picture. Subject matter expert perspectives revealed a lack of current preparedness in the United States emergency medical system. The Work Group found that jurisdictional viewpoints, while helpful, highlighted the lack of nationally based, real-time, situational awareness of actual pediatric infectious disease surge readiness and much desire for this.

Key Finding: The NACCD concludes that a national conversation aimed at developing a system to address general emergency/pediatric surge capacity should be established.

There is a deficiency in national preparedness guidelines and federal recommendations and existing guidance has not fully penetrated to the level of pediatric emergency physicians. The result is varying degrees of compliance with recommendations and inconsistent management of patients across the nation, especially in the face of supply constraints.^{5,6} Lack of health care professional training and preparedness has also poorly affected responses to pediatric surges; these gaps require specific attention to providing health care staff with proper instruction. Furthermore, institutional issues and uncooperative administrative personnel hinder implementation of necessary interventions to manage surge.⁷ Hence, additional federal influence on the enforcement of surge capacity policies would provide a stronger collaborative response.⁷ The NACCD concludes that the majority of hospitals are generally ready for normal flu/respiratory surges, but they are not prepared for highly infectious disease outbreaks or high acuity, emerging infections that could spread rapidly and impact many regions and states across the country.

Key Finding: The clinical and organizational frameworks of mature trauma centers, which are prepared to respond to large-scale disasters, could be utilized to provide well-developed management protocols for large public health emergencies.⁸

B. Summary and Recommendation

A national perspective is needed to coordinate across regions and to eliminate jurisdictional boundaries, which hinder and do not reflect the interconnected nature of health care delivery during large-scale emergencies. Utilizing regional experiences may provide direction for the development of national guidelines.

Recommendation B: The NACCD recommends that the ASPR develop a national-level, real-time system to monitor pediatric resources, usage, and surge capacity, including pediatric primary and specialty care practitioners, pediatric transport, pediatric hospitals, network communications, pediatric medical equipment and pharmaceutical caches.

C. Additional Research Questions

- *What are the key indicators of surge capacity?*
- *What are the key measures for the assessment and evaluation of surge capacity of the health care system?*

IV. Task 3: The current readiness of children’s hospitals to surge during an infectious disease outbreak

A. Findings

A fundamental point of view among pediatric SMEs is that children’s hospitals are specialized regional centers of care within their communities, not only for infectious diseases, but also multiple other specialties and diseases with expertise and resources. As such, serving as the principal response focus

for a surge of very ill, infectious patients is challenging. Yet, children's hospitals are oftentimes the organizational leaders in the preparedness and response charge within their communities. Since the majority of children actually are not treated in children's hospitals, these hospitals should not be the expected primary providers of health care for large numbers of very ill, infectious children. Rather, children's hospitals, in addition to providing care to the most critically ill children, offer a leadership or guiding role in supporting non-children's hospitals to prepare and respond to a pediatric surge.

Key Finding: The NACCD emphasizes the need for a strong national children's hospital leadership role with central coordination of preparedness and pediatric surge measures.
--

In the past, prominent children's hospitals throughout the United States have improvised surge plans in the face of emerging pandemics, in particular the 2009 H1N1 influenza outbreak.⁹⁻¹⁴ Many facilities established hospital incident command centers that were activated immediately upon detection of the surge.¹¹ The incident command system (ICS) incorporated planning, operations, logistics, and finance, with designated leadership positions reporting back to the command center.¹³ Defining roles, authoritative positions, and specific responsibilities provided structure to the system. One institution in particular prepared an emergency operations plan, which outlined the principles, procedures, and activities for the hospital.¹³ A multidisciplinary influenza task force, which was responsible for coordinating planning, met regularly to identify gaps in the system and to adapt to the dynamic nature of the epidemic.¹⁴ Communication amongst these arms, as well as between facilities, was vital for a successful surge. This is a model that should be replicated elsewhere and for other infectious disease emergencies. Guidelines should attempt to expand on these principles to implement a system that can be adopted by all hospitals.

B. Summary and Recommendation

Subject matter expert interviews, recent experience, and the literature indicate that children's hospitals have the expertise and adaptability to quickly respond to emerging needs. Previous events have provided models for the role and approaches for children's hospitals. Again, the scarcity of available data sets limited the ability to assess current readiness.

Recommendation C: Without data to quantifiably assess readiness of children's hospitals, the NACCD recommends that the ASPR bring together key stakeholders from children's hospitals to discuss current readiness, define the role of children's hospitals, and determine next steps for improving the capacity of all hospitals to quickly respond in an infectious disease crisis with national safety implications.

C. Additional Research Questions

- *Percent and location of children's hospitals that have established an ICS*
- *Percent and location of children's hospitals that have relationships with local emergency planners*
- *Percent location of children's hospitals that regularly conduct drills*
- *The type of drills regularly conducted by children's hospitals*
- *Percent and location of children's hospitals that are integrated into local or regional networks for surge preparedness*

- *Relationship between children’s hospitals and other hospitals currently serving pediatric patients or which may need to in an infectious disease crisis*
- *Perceived role of children’s hospitals in infectious disease crises*
- *Perceived value of preparedness activities by children’s hospital executives*

V. Task 4: The current state of non-pediatric facilities to care for children in large-scale disease outbreaks

A. Findings

As mentioned above, the majority of children are seen in predominantly adult care or general hospital facilities. These essentially non-pediatric facilities will likely bear the brunt of the pediatric care burden in addition to the adult care burden in the event of an infectious disease surge. It is imperative that these facilities understand the implications of providing care to large numbers of children and meet the challenges of this responsibility well in advance of an event. Therefore, it is critical to involve them in pediatric surge capacity discussions and preparedness activities.

Recent research has implied that current hospital infectious disease surge capacity is insufficient to accommodate a large influx of pediatric patients.¹⁵ Studies have revealed that hospitals most prepared for pediatric surges are those that manage pediatric patients on a daily basis and those that have either separate pediatric wards or are located in a large metropolitan area.¹⁶ For hospitals with fewer resources or that do not manage a critical pediatric population, written transfer agreements with other hospitals should be arranged. However, in large-scale pandemics, during which children’s hospitals will be overwhelmed, such care facilities must be prepared in both staffing and resources to provide care for children.¹⁶

Key Finding: The NACCD considers the lack of national guidelines and/or standards for general hospital systems on baseline pediatric care skills and resources to be a serious gap in capacity. A valuable starting point for general hospitals is the EMSC [Checklist](#).

There is a need to elevate pediatric care expertise on a routine basis and thereby enhance the ability to respond to a pediatric surge. This capacity is needed throughout the country, especially in communities which cannot rely on nearby children’s hospitals to support a surge of severely ill, infectious children.

B. Summary and Recommendation

Non-pediatric hospitals will be involved in the care of children during a large scale disease outbreak. Without sufficient planning, the involvement of non-pediatric facilities in the care of children may be detrimental. EMSC has provided valuable information that can be built upon. Baseline pediatric care guidelines should be developed. In addition, mechanisms to recognize those hospitals that meet the guidelines could encourage readiness and improve outcomes during a large scale disease outbreak.

Recommendation D: The NACCD recommends that the HHS Secretary take steps to mitigate the gaps identified in the HRSA [EMSC Readiness Study](#).

C. Additional Research Questions

- *Percent and location of non-children’s hospitals with an established ICS*
- *Percent and location of non-children’s hospitals that have relationships with local emergency planners*
- *Percent and location of non-children’s hospitals that have developed an emergency response plan in collaboration with neighboring children’s hospitals*
- *Percent and location of non-children’s hospitals that regularly conduct drills involving pediatric patients*
- *Relationship between children’s hospitals and other hospitals currently serving pediatric patients or may need to in an infectious disease crisis*
- *Perceived role of hospitals in infectious disease crises*
- *Perceived value of preparedness activities by hospital executives*

VI. **Task 5: A summary of potential mitigation strategies for identified gaps**

A. Findings

Key Finding: Much of the research yielded gaps in four particular areas: staffing, age-appropriate resources, space to accommodate the influx of patients, and a structured, clearly-defined system through which institutions can coordinate a successful pediatric surge.^{1, 3, 9, 17, 18}

Mitigation strategies that have been identified revolve around the core components of surge capacity:

1. Staff: There needs to be focused training for health care staff and a means of instituting competent team members, both non-medical volunteers and health-care-related individuals, to respond to activation of the ICS.¹⁹⁻²⁴
2. Supplies: An adequate supply of age-appropriate and size-appropriate emergency medical system resuscitation supplies and medications must be available at all sites and in all transportation methods.^{16, 17, 25-27} To mitigate lack of supplies in real-time, the strategic national stockpile (SNS) could function as a stop-gap to address pediatric needs.
3. Space: Alternate care sites, including mobile sites and public venues, should be pre-determined to accommodate the influx of pediatric patients; of these, proper isolation quarters and procedures should be planned.^{11, 28-32}
4. Systems: Lastly, the functionality of a hospital depends on the proper structuring of all roles and responsibilities, inter-hospital and intra-hospital communications and transport, medical education, media, and medical-legal issues, including credentialing, and ethics.^{1, 4, 9, 10, 13, 26, 33-38}
5. Planning requires community awareness and cooperation, isolation and quarantine guidance, infection prevention precautions, in addition to local, regional, and federal partnerships.³⁹⁻⁴³

Key Finding: The NACCD found, in the process of this assessment, a complete system identifying potential gaps to be lacking, with only disparate parts with varying levels of detail or information currently existing.

A deeper understanding of the gaps in pediatric surge capacity is required to recommend additional mitigation strategies. For example, the EVD 2014 Response uncovered for the medical and public health communities unanticipated and unforeseen breaches in protocols, practices, and resources despite

numerous guidance documents and conversations. Certain problems were identified only when they were put into practice. For instance, guidance pivoted from a universal response to the development of specialized care facilities. Issues regarding the quarantine of children and parents/guardians in the context of the family unit also needed to be developed.

B. Summary and Recommendations

Mitigation strategies to address gaps in pediatric surge should focus on four areas: staffing, age-appropriate resources, space to accommodate the influx of pediatric patients, and a structured, clearly-defined system through which institutions can coordinate a successful pediatric surge. Additional consideration will be helpful to better define the gaps and opportunities for improvement.

Recommendation E:	The NACCD recommends that the ASPR facilitate an ongoing workgroup of SMEs to develop pediatric surge strategies and guidelines to address staff, supplies, space, and systems that are flexible to be imposed at a local, state, regional, or national level.
-------------------	--

Recommendation F:	The NACCD recommends an ongoing, HHS-guided national discussion and review of potential future challenges and strategies and a regular means to disseminate what is developed and current to streamline efforts during infectious disease crises. A range of diverse perspectives and expertise is needed to uncover gaps and develop and share strategies.
-------------------	---

C. Additional Research Questions

- How do systems creatively modify staffing structures to meet the needs of children in a surge situation?
- Are there simple adaptations of readily available equipment and supplies to meet the needs of children?

VII. Task 6: A review of best practices and a summary of practical tools to help build health care coalitions aimed at increasing community readiness to care for children

A. Findings

Key Finding:	Strong health care coalitions reduce dependence on outside and/or federal resources during emergencies by encouraging the sharing of resources and expertise.
--------------	---

Effective pediatric health care coalitions encompass the entire span of health care delivery: children's hospitals, community hospitals, pediatricians, emergency medical systems, pre-hospital services, urgent care, ambulatory care, pharmacies, public health, and schools.⁴⁴⁻⁴⁶ Effective coalitions require the uniting of health systems with government agencies in coordinating, mandating, and financing care in large-scale epidemics.^{1,43} This will allow for better immediate health care delivery, as well as preservation of national reserves for unforeseen circumstances that may deplete resources and result in rationing care. Not only will these organizations provide standardization of care, but they will also allow for proper allocation of limited supplies, such as ventilators and vaccines.⁴⁷⁻⁵² Adult facilities are critical

members of these coalitions and would bear the majority of the responsibility for the care of ill children, especially when regular capacity is exceeded in pediatric settings.

Poly-institutional strategies necessitate communication among agencies for pre-event planning; it will be critical for creating an efficient health care coalition, and should include appointing public health officials and designating leadership roles.^{39, 53-56} HHS should guide a national conversation among pediatric subject matter experts and stakeholders on pediatric surge capacity in the face of infectious disease outbreaks. Coalitions would benefit from partnering to share information, strategies, resources, and challenges, and thus identify many unused and unrecognized tools existing at the local, regional, and national levels and ultimately avoid reinventing the wheel with each response to an infectious disease crisis. [CDC's Health Care Preparedness Activity](#) has provided a workbook to assist communities to build coalitions to address surge and could serve as a model.

Key Finding: Pediatric surge capacity is enhanced and demands on emergency department and inpatient settings are lessened when all aspects of health care are involved in coalitions. ^{11, 53}

Health care coalitions require a constant and reliable source of funding to sustain their progress, whether it comes from the federal government and/or from other sources.¹ They cannot be expected to function on uncertain or shoe-string budgets and staffs of one. Coalition success also depends on key individuals within organizations with an interest in forming strong collaborations. At a higher level, an organization to serve in a central coordinating role is required to hold the coalition together and ensure focused, concerted efforts. Departments of health and academic institutions could be utilized as coordinating organizations while also providing unique research skills to test and analyze what does and does not work.

B. Summary and Recommendations

Healthcare coalitions exist in different forms throughout the country. Work has been done to determine optimal coalition structures to meet pediatric surge needs. Key components include a strong central coordination hub with regular gathering of key stakeholders. Building upon this work, further guidance to communities would benefit readiness. The NACCD suggests building on the existing research about optimal coalitions to develop an adaptable model for communities to use. In addition, best practices could be promoted in a repository that catalogues community-based surge to promote strategies, programs, templates, surveys, and reports illustrating key components for a successful coalition. Coalitions should also be encouraged to exercise frequently to maintain readiness.

Recommendation G: The NACCD urges the ASPR to ensure constant and reliable funding of health care coalitions.

Recommendation H: The NACCD calls on the ASPR to support convening pediatric health care coalition and preparedness stakeholders <u>annually</u> to assess strategic planning, gap analysis, and mitigation tactics for addressing pandemic and emerging infectious disease threats with national implications.

Recommendation I: The NACCD recommends that the ASPR guide a national conversation among pediatric SMEs and health care coalition stakeholders on pediatric surge capacity during large scale infectious disease outbreaks.

C. *Additional Research Questions*

- How can infectious disease scenario modeling provide predictions for testing surge capacity?
- What other techniques could be used to test surge capacity estimates?

VIII. Recommendations Summary

- A. The NACCD recommends that the ASPR develop a national network of stakeholders to examine issues and address barriers, and, ultimately, implement solutions to family (child and adult caregiver) transport needs during infectious disease crises.
- B. The NACCD recommends that the ASPR develop a national-level, real-time system to monitor pediatric resources, usage, and surge capacity, including pediatric primary and specialty care practitioners, pediatric transport, pediatric hospitals, network communications, and pediatric medical equipment and pharmaceutical caches.
- C. Without data to quantifiably assess surge readiness of children’s hospitals, the NACCD recommends that the ASPR bring together key stakeholders from children’s hospitals to discuss current readiness, define the role of children’s hospitals, and determine next steps for improving the capacity of all hospitals to quickly respond in an infectious disease crisis with national safety implications.
- D. The NACCD recommends that the HHS Secretary take steps to mitigate the gaps identified in the HRSA [EMSC Readiness Study](#).
- E. The NACCD recommends that the ASPR facilitate an ongoing workgroup of SMEs to develop pediatric surge strategies and guidelines to address staff, supplies, space, and systems that are flexible to be imposed at a local, state, regional, or national level.
- F. The NACCD recommends an ongoing HHS-guided, national discussion and review of potential future challenges and strategies and determine a regular means to disseminate what is developed and current to streamline efforts during infectious disease crises. A range of perspectives and expertise is needed to uncover gaps and to develop and share strategies.
- G. The NACCD urges the ASPR to ensure constant and reliable funding of health care coalitions.
- H. The NACCD calls on the ASPR to support convening pediatric health care coalition and preparedness stakeholders annually to assess strategic planning, gap analysis, and mitigation tactics for addressing pandemic and emerging infectious disease threats with national implications.
- I. The NACCD recommends that the ASPR guide a national conversation among pediatric SMEs and health care coalition stakeholders on pediatric surge capacity during infectious disease outbreaks.

IX. Conclusion

Children are a quarter of the nation’s population and millions of them receive emergency care each year. When daily health care systems are prepared to care for children, this strengthens the capacity of those systems during unexpected pediatric surge events. The resources, space, and trained staff for routine care are often in short supply in communities when large outbreaks occur.

An expanded regionalized approach to pediatric surge capacity is needed to mitigate many challenges local provider and facilities confront during infectious disease outbreaks.

Communities need to coordinate plans for sharing scarce resources. A central problem is sustaining health care coalitions that support regional plans for public health emergencies when funding is unstable and unpredictable. Children's hospitals are key players in supporting regionalized pediatric networks.

Moving forward, the NACCD concludes that the ASPR plays a key role in convening these stakeholders to examine current and long-term readiness, gaps, barriers confronted by systems affected by infectious disease outbreaks, and lessons learned from previous outbreaks. The NACCD also concludes that it is in the federal scope to develop nation-wide systems to monitor pediatric surge readiness and develop a repository of strategies, programs, templates, surveys, and reports for easy access and use by local communities. Several SMEs were critical of the fact that so much useful information already exists, and yet the wheel keeps getting re-invented in every community trying to further their readiness.

The NACCD urges the ASPR to recommend funding streams to organizations for research efforts to model and analyze infectious disease outbreak scenarios that would strain local response capabilities in different unexpected ways depending on the specific situation.

The lack of readily available data sets and complete national pediatric surge protocols makes it difficult to fully analyze the United States' current preparedness to respond to an infectious disease outbreak with many ill children.

A major challenge that remains is the wide variation and disproportionate capacity that exists from one community to the next, nationwide. The data available, although informative about observed issues in the system, lacks generalizability across all health care systems in the nation. It does, however, provide insight into issues that need to be targeted and areas in the health care and federal systems that require attention.

The NACCD heard from a number of SMEs, who are well-informed of the recent literature and latest research in pediatrics, about pockets of excellence, locally and regionally, and innovative, creative activities and accomplishments. This premiere NACCD report provides recommendations to the ASPR for near-term solutions to address gaps identified in pediatric surge capacity. The efforts of this Work Group were rigorous, thorough, and worthwhile and raise important national gaps in pediatric surge capacity. Certainly more work is needed and will be done in the near future. As the Surge Capacity Work Group sunsets, the NACCD continues to take a deeper dive into the issues of pediatric health care preparedness with the goal of further strengthening the nation's ability to care for children during all types of public health emergencies.

This is a tremendous opportunity for the ASPR to serve as a convening authority to advance conversations, collaboration, and coalitions to improve pediatric surge in communities throughout the United States, thereby increasing overall capability of the nation to provide appropriate care for children during an infectious disease outbreak.

Preparedness for responding to infectious disease outbreaks affecting pediatric populations has made significant improvement in the past years. Lessons learned from September 11, H1N1, Sandy Hook, Katrina, and other natural and man-made disasters have improved our system dramatically. ASPR has been a major part of this success, and the NACCD lauds the continued commitment of HHS to ask tough questions and search for opportunities to better prepare for serving our nation's children in times of public health crises.

X. Resources

[Southeastern Regional Pediatric Disaster Response Surge Network](#)

[EMSC National Pediatric Readiness Project](#)

[New York City Pediatric Disaster Coalition](#)

[Los Angeles County Pediatric Surge Plan](#)

[CDC's Health Care Preparedness Activity](#)

XI. References

1. Christian MD, Devereaux AV, Dichter JR, Rubinson L, Kissoon N. Introduction and Executive Summary: Care of the Critically Ill and Injured During Pandemics and Disasters: CHEST Consensus Statement. *Chest*. 2014;146(4 Suppl):8s-34s.
2. Tollefsen WW, Brown CA, 3rd, Cox KL, Walls RM. Two hundred sixty pediatric emergency airway encounters by air transport personnel: a report of the air transport emergency airway management (NEAR VI: "A-TEAM") project. *Pediatr Emerg Care*. 2013;29(9):963-968.
3. Waseem M, McInerney JE, Perales O, Leber M. Impact of Operational Staging to Improve Patient Throughput in an Inner-City Emergency Department During the Novel H1N1 Influenza Surge A Descriptive Study. *Pediatric Emergency Care*. 2012;28(1):39-42.
4. Stalcup SA, Oscherwitz M, Cohen MS, Crast F, Broughton D, Stark F, et al. Planning for a pediatric disaster -- experience gained from caring for 1600 Vietnamese orphans. *N Engl J Med*. 1975;293(14):691-695.
5. Nager AL, Khanna K. Emergency department surge: models and practical implications. *J Trauma*. 2009;67(2 Suppl):S96-99.
6. Rubinson L, Mutter R, Viboud C, Hupert N, Uyeki T, Creanga A, et al. Impact of the fall 2009 influenza A(H1N1)pdm09 pandemic on US hospitals. *Med Care*. 2013;51(3):259-265.
7. Filice CE, Vaca FE, Curry L, Platis S, Lurie N, Bogucki S. Pandemic planning and response in academic pediatric emergency departments during the 2009 H1N1 influenza pandemic. *Acad Emerg Med*. 2013;20(1):54-62.
8. Michaels AJ, Hill JG, Bliss D, Sperley BP, Young BP, Quint P, et al. Pandemic flu and the sudden demand for ECMO resources: a mature trauma program can provide surge capacity in acute critical care crises. *J Trauma Acute Care Surg*. 2013;74(6):1493-1497.
9. Fieldston ES, Scarfone RJ, Biggs LM, Zorc JJ, Coffin SE. Pediatric integrated delivery system's experience with pandemic influenza A (H1N1). *Am J Manag Care*. 2012;18(10):635-644.
10. Scarfone RJ, Coffin S, Fieldston ES, Falkowski G, Cooney MG, Grenfell S. Hospital-based pandemic influenza preparedness and response: strategies to increase surge capacity. *Pediatr Emerg Care*. 2011;27(6):565-572.
11. Van Cleve WC, Hagan P, Lozano P, Mangione-Smith R. Investigating a pediatric hospital's response to an inpatient census surge during the 2009 H1N1 influenza pandemic. *Jt Comm J Qual Patient Saf*. 2011;37(8):376-382.
12. Fieldston E, Ragavan M, Jayaraman B, Metlay J, Pati S. Traditional measures of hospital utilization may not accurately reflect dynamic patient demand: findings from a children's hospital. *Hosp Pediatr*. 2012;2(1):10-18.
13. Cannava P, Cicillini D, Higgins M, McGrath A, O'Leary J. Response to H1N1 influenza outbreak in a pediatric children's hospital: challenges faced and lessons learned. *J Pediatr Nurs*. 2010;25(5):375-381.

14. Graham J, Shirm S, Storm E, Lyle K, Linam WM, Romero J. Challenges and solutions: pandemic 2009 H1N1 influenza A in a pediatric emergency department. *Am J Disaster Med*. 2011;6(4):211-218.
15. Rebmann T. Preparing for pandemic influenza. *J Perinat Neonatal Nurs*. 2008;22(3):191-202; quiz 203-194.
16. Burt CW, Middleton KR. Factors associated with ability to treat pediatric emergencies in US hospitals. *Pediatr Emerg Care*. 2007;23(10):681-689.
17. King JC, Ajao A, Lichenstein R, Magder LS. Surge in Hospitalizations Associated With Mechanical Ventilator Use During Influenza Outbreaks. *Disaster Med Public Health Prep*. 2014:1-7.
18. Sugerman D, Nadeau KH, Lafond K, Cameron W, Soetebier K, Jhung M, et al. A survey of emergency department 2009 pandemic influenza A (H1N1) surge preparedness--Atlanta, Georgia, July-October 2009. *Clin Infect Dis*. 2011;52 Suppl 1:S177-182.
19. Seib K, Gleason C, Richards JL, Chamberlain A, Andrews T, Watson L, et al. Partners in immunization: 2010 survey examining differences among H1N1 vaccine providers in Washington state. *Public Health Rep*. 2013;128(3):198-211.
20. Fernandez JB, Glotzer DL, Triola MM, Psoter WJ. A unique role for dental school faculty: telephone triage training and integration into a health departments' emergency response planning. *Am J Disaster Med*. 2008;3(3):141-146.
21. Mace SE, Jones JT, Bern AI. An analysis of Disaster Medical Assistance Team (DMAT) deployments in the United States. *Prehosp Emerg Care*. 2007;11(1):30-35.
22. Wood D, Kalinowski EJ, Miller DR, Newton TJ. Pediatric continuing education for emergency medical technicians. The National Council of State Emergency Medical Services Training Coordinators. *Pediatr Emerg Care*. 2004;20(4):261-268.
23. Markenson D, Woolf S, Redlener I, Reilly M. Disaster medicine and public health preparedness of health professions students: a multidisciplinary assessment of knowledge, confidence, and attitudes. *Disaster Med Public Health Prep*. 2013;7(5):499-506.
24. Wallace D, Gillett B, Wright B, Stetz J, Arquilla B. Randomized controlled trial of high fidelity patient simulators compared to actor patients in a pandemic influenza drill scenario. *Resuscitation*. 2010;81(7):872-876.
25. Care of children in the emergency department: guidelines for preparedness. *Pediatrics*. 2001;107(4):777-781.
26. The Pediatric Emergency Care Applied Research Network (PECARN): rationale, development, and first steps. *Pediatr Emerg Care*. 2003;19(3):185-193.
27. Bohn D, Kanter RK, Burns J, Barfield WD, Kissoon N. Supplies and equipment for pediatric emergency mass critical care. *Pediatr Crit Care Med*. 2011;12(6 Suppl):S120-127.
28. Kanter RK, Moran JR. Hospital emergency surge capacity: an empiric New York statewide study. *Ann Emerg Med*. 2007;50(3):314-319.
29. Cruz AT, Patel B, DiStefano MC, Codispoti CR, Shook JE, Demmler-Harrison GJ, et al. Outside the box and into thick air: implementation of an exterior mobile pediatric emergency response team for North American H1N1 (swine) influenza virus in Houston, Texas. *Ann Emerg Med*. 2010;55(1):23-31.

30. Cinti S. Pandemic influenza: are we ready? *Disaster Manag Response*. 2005;3(3):61-67.
31. Charney RL, Armbrecht ES, Kennedy BR, Flood RG. Pandemic influenza extension areas in an urban pediatric hospital. *Prehosp Disaster Med*. 2012;27(1):75-80.
32. Dayton C, Ibrahim J, Augenbraun M, Brooks S, Mody K, Holford D, et al. Integrated plan to augment surge capacity. *Prehosp Disaster Med*. 2008;23(2):113-119.
33. Strikas RA, Neff LJ, Rotz L, Cono J, Knutson D, Henderson J, et al. US Civilian Smallpox Preparedness and Response Program, 2003. *Clin Infect Dis*. 2008;46 Suppl 3:S157-167.
34. Johnson EM, Diekema DS, Lewis-Newby M, King MA. Pediatric triage and allocation of critical care resources during disaster: northwest provider opinion. *Prehosp Disaster Med*. 2014;29(5):455-460.
35. Beigi R, Davis G, Hodges J, Akers A. Preparedness planning for pandemic influenza among large US maternity hospitals. *Emerg Health Threats J*. 2009;2:e2.
36. Staes CJ, Wuthrich A, Gesteland P, Allison MA, Leecaster M, Shakib JH, et al. Public health communication with frontline clinicians during the first wave of the 2009 influenza pandemic. *J Public Health Manag Pract*. 2011;17(1):36-44.
37. Savoia E, Testa MA, Viswanath K. Predictors of knowledge of H1N1 infection and transmission in the U.S. population. *BMC Public Health*. 2012;12:328.
38. Kiltz L, Fonseca D, Rodriguez C, Munoz P. Assessment of pandemic preparedness in a socially vulnerable community in south Texas. *J Health Hum Serv Adm*. 2013;36(2):164-207.
39. Osterholm MT. How to vaccinate 30,000 people in three days: realities of outbreak management. *Public Health Rep*. 2001;116 Suppl 2:74-78.
40. Taylor-Clark K, Blendon RJ, Zaslavsky A, Benson J. Confidence in crisis? Understanding trust in government and public attitudes toward mandatory state health powers. *Biosecur Bioterror*. 2005;3(2):138-147.
41. Powell T. Family participation in the care of patients in public health disasters. *J Clin Ethics*. 2010;21(4):288-293.
42. Kids and the flu. *State Legis*. 2009;35(9):25.
43. Dichter JR, Kanter RK, Dries D, Luyckx V, Lim ML, Wilgis J, et al. System-Level Planning, Coordination, and Communication: Care of the Critically Ill and Injured During Pandemics and Disasters: CHEST Consensus Statement. *Chest*. 2014;146(4 Suppl):e87S-e102S.
44. Gupta R. Enhancing community partnerships during a public health emergency: the school-located vaccination clinics model in Kanawha County, WV during the 2009 influenza A (H1N1) pandemic. *W V Med J*. 2011;107(6):28-34.
45. Siegel JD. Pandemic influenza planning in Texas: the pediatric perspective. *Tex Med*. 2007;103(10):48-53.
46. Fishbane M, Kist A, Schieber RA. Use of the emergency Incident Command System for school-located mass influenza vaccination clinics. *Pediatrics*. 2012;129 Suppl 2:S101-106.

47. Bhanot KK. What defines a public health emergency? An analysis of the strategic national stockpile and the National Childhood Vaccine Injury Act: the need for prevention of nonterror national medical emergencies. *J Contemp Health Law Policy*. 2004;21(1):137-167.
48. Chamberlain AT, Wells K, Seib K, Kudis A, Hannan C, Orenstein WA, et al. Lessons learned from the 2007 to 2009 Haemophilus influenzae type B vaccine shortage: implications for future vaccine shortages and public health preparedness. *J Public Health Manag Pract*. 2012;18(3):E9-e16.
49. Gaglia MA, Jr., Davis MM. States' emergency orders regarding the 2004-05 influenza vaccine shortage. *Hum Vaccin*. 2006;2(1):34-37.
50. Kim KM, Cinti S, Gay S, Goold S, Barnosky A, Lozon M. Triage of mechanical ventilation for pediatric patients during a pandemic. *Disaster Med Public Health Prep*. 2012;6(2):131-137.
51. Moriarty LF, Omer SB, Seib K, Chamberlain A, Wells K, Whitney E, et al. Changes in Immunization Program Managers' Perceptions of Programs' Functional Capabilities During and After Vaccine Shortages and pH1N1. *Public Health Rep*. 2014;129 Suppl 4:42-48.
52. Klaiman T, O'Connell K, Stoto MA. Learning from successful school-based vaccination clinics during 2009 pH1N1. *J Sch Health*. 2014;84(1):63-69.
53. Martin SD. Code Flu: common-sense steps to the development of an agency pandemic flu plan for home care. *Home Healthc Nurse*. 2007;25(9):595-601.
54. Veenema TG. Diagnosis, management, and containment of smallpox infections. *Disaster Manag Response*. 2003;1(1):8-13.
55. Ginter PM, Wingate MS, Rucks AC, Vasconez RD, McCormick LC, Baldwin S, et al. Creating a regional pediatric medical disaster preparedness network: imperative and issues. *Matern Child Health J*. 2006;10(4):391-396.
56. Veenema TG. Safeguarding our nation's children: the diagnosis, management, and containment of smallpox in infants and children. *Biol Res Nurs*. 2003;4(4):295-304.

Appendix A: ASPR Task Letter to NACCD



DEPARTMENT OF HEALTH & HUMAN SERVICES

Office of the Secretary

Assistant Secretary for
Preparedness & Response
Washington, D.C. 20201

Michael R. Anderson, MD, MBA, FAAP
Chair, National Advisory Committee on Children and Disasters
11100 Euclid Avenue
Cleveland, OH 44106

Dear Dr. Anderson and Members of the NACCD:

The Department of Health and Human Services (HHS) Office of the Assistant Secretary for Preparedness and Response (ASPR) is a leader in preparing the Nation and its communities to prepare for, respond to, and recover from public health and medical disasters and emergencies. Section 2811 of the Public Health Service (PHS) Act, with the addition of the 2006 Pandemic and All-Hazards Preparedness Act (PAHPA) and amended by the 2013 Pandemic and All-Hazards Preparedness Reauthorization Act (PAHPRA), established the ASPR as the principal adviser to the HHS Secretary, responsible for providing integrated policy coordination and strategic direction with respect to all matters related to public health, medical preparedness, and deployment of the federal response for public health emergencies and incidents. As you are also aware, in 2014, the National Advisory Committee on Children and Disasters (NACCD) was established pursuant to section 2811A of the PHS Act. The NACCD was formed specifically to inform the Secretary and the ASPR on matters related to the health and well-being of children affected by disasters.

I would like the NACCD to address the current state of readiness across the nation for a surge of pediatric patients and mass-transport this fall and winter. Pediatric surge and the need for pediatric transport in the event of an outbreak of influenza, Enterovirus D68, Ebola, or a combination of these potential events, could overwhelm present local pediatric care capabilities. The committee's report should focus on these infectious diseases and how pediatric health care organizations would currently cope with large numbers of patients, as well as on strategies to improve their readiness capabilities in the short term.

I would appreciate it if the committee could specifically examine the following in the context of readiness for a surge of pediatric patients this fall and winter:

1. The current state of readiness to transport large numbers of critically ill children.
2. The current state of general emergency/pediatric emergency surge capacity.
3. The current readiness of children's hospitals to surge during an infectious disease outbreak.
4. The current state of non-pediatric facilities to care for children in large scale disease outbreaks.
5. A summary of potential mitigation strategies for identified gaps.
6. A review of best practices and a summary of practical tools to help build health care coalitions aimed at increasing community readiness to care for children.

I believe, given the NACCD's expertise, that this report will generate a great deal of insight on this important topic. I look forward to receiving the NACCD's recommendations by February 27, 2015.

Thank you for your continued support in the work of ensuring the public health preparedness of our nation.

Sincerely,

Nicole Lurie, MD, MSPH
Assistant Secretary for Preparedness and
Response

Appendix B: NACCD Voting Member Roster

Michael R. Anderson, MD, MBA, FAAP
Chief Medical Officer
University Hospitals Case Medical Center

Alex Amparo
Deputy Assistant Administrator
Recovery Directorate
Office of Response and Recovery
Federal Emergency Management Agency
U.S. Department of Homeland Security

Allison Blake, PhD, LSW
Commissioner
New Jersey Department of Children and Families

David G. Esquith
Director
Office of Safe and Healthy Students
U.S. Department of Education

Robin H. Gurwitch, PhD
Clinical Psychologist
Duke University Medical Center
Department of Psychiatry and Behavioral Sciences

Lisa Kaplowitz, MD, MSHA
Deputy Assistant Secretary for Policy
Office of the Assistant Secretary for Preparedness and Response
U.S. Department of Health and Human Services

Linda M. MacIntyre, PhD, RN
Chief Nurse
American Red Cross

Mary Dianne Murphy, MD
Director, Office of Pediatric Therapeutics
Office of the Commissioner
Food and Drug Administration
U.S. Department of Health and Human Services

Scott Needle, MD
Chief Medical Officer
Healthcare Network of Southwest Florida

Sarah Park, MD
State Epidemiologist and Chief
Disease Outbreak Control Division
Hawaii Department of Health

Georgina Peacock, MD, MPH, FAAP
Director, Division of Human Development and Disability
National Center for Birth Defects and Developmental Disabilities
Centers for Disease Control and Prevention
U.S. Department of Health and Human Services

Sally Phillips, RN, PhD
Acting Principal Deputy Assistant Secretary of Health Affairs
U.S. Department of Homeland Security

Mary J. Riley, MPH, RN, CPH
CAPT, U.S. Public Health Service
Director, OHSEPR
Agency for Children and Families
U.S. Department of Health and Human Services

Jeffrey Scott Upperman, MD
Director, Trauma Program
Associate Professor of Surgery
Division of Pediatric Surgery
Children's Hospital Los Angeles
Keck School of Medicine
University of Southern California

Anne Zajicek, MD, PharmD, FAAP
Branch Chief
Obstetric and Pediatric Pharmacology and Therapeutics Branch
Eunice Kennedy Shriver National Institute of Child Health and Human Development
National Institutes of Health
U.S. Department of Health and Human Services

Appendix C: Surge Capacity Work Group Member Roster

Michael R. Anderson, MD, MBA, FAAP
Chief Medical Officer
University Hospitals Case Medical Center

Alex Amparo
Deputy Assistant Administrator
Recovery Directorate
Office of Response and Recovery
Federal Emergency Management Agency
U.S. Department of Homeland Security

Lisa Kaplowitz, MD, MSHA
Deputy Assistant Secretary for Policy
Office of the Assistant Secretary for Preparedness and Response
U.S. Department of Health and Human Services

Scott Needle, MD
Chief Medical Officer
Healthcare Network of Southwest Florida

Sarah Park, MD
State Epidemiologist and Chief
Disease Outbreak Control Division
Hawaii Department of Health

Georgina Peacock, MD, MPH, FAAP
Director, Division of Human Development and Disability
National Center for Birth Defects and Developmental Disabilities
Centers for Disease Control and Prevention
U.S. Department of Health and Human Services

Sally Phillips, RN, PhD
Acting Principal Deputy Assistant Secretary of Health Affairs
U.S. Department of Homeland Security

Jeffrey Scott Upperman, MD
Director, Trauma Program
Associate Professor of Surgery
Division of Pediatric Surgery
Children's Hospital Los Angeles
Keck School of Medicine
University of Southern California

Appendix D: Subject Matter Experts Invited To Present To the Surge Capacity Work Group

Bridget Berg, MPH
Trauma Surge Coordinator, Trauma Program
Children's Hospital Los Angeles

Michael Christian, MD, MSPH
Critical Care and Infectious Diseases
Mount Sinai Hospital
Toronto, Ontario

Sarita Chung, MD
Assistant Professor
Department of Pediatrics
Harvard Medical School
Boston Children's Hospital

Elizabeth Edgerton, MD
Director, Division of Child, Adolescent, and Family Health
Maternal Child Health Bureau
Health Resources and Services Administration
U.S. Department of Health and Human Services

Michael Frogel, MD
Co-Principal Investigator
New York City Pediatric Disaster Coalition

Patricia Frost, RN, MS
Director of Emergency Services
Contra Costa Health Services

Peter Ginter, PhD
Professor
Department of Health Care Organization and Policy
School of Public Health
University of Alabama at Birmingham

Niranjen Kissoon, MD
Associate Head and Professor
Division of Critical Care
Department of Pediatrics
University of British Columbia

Gregg Margolis
Director, Division of Health Systems and Health Care Policy
Office of the Assistant Secretary for Preparedness and Response
U.S. Department of Health and Human Services

Andrew Rucks, PhD
Professor
Department of Health Care Organization and Policy
School of Public Health
University of Alabama at Birmingham

Lori Upton, RN, BSN, MS
Director, Regional Preparedness and Operations
Southeast Texas Regional Advisory Council