

# CDC PUBLIC HEALTH GRAND ROUNDS

## Addressing Preparedness Challenges for Children in Public Health Emergencies



Accessible version: <https://youtu.be/zLRuR-3lZ7Q>

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U.S. Department of  
Health and Human Services  
Centers for Disease  
Control and Prevention

# Meeting the Needs of Children in Public Health Disasters



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# Terminology and Acronyms Used in Preparedness and Disaster Response

**MCM:** Medical countermeasures

**POD:** Point of Dispensing

**ASPR:** Assistant Secretary for Preparedness  
and Response

**NACCD:** National Advisory Committee on Children  
and Disasters

**NDMS:** National Disaster Medical System

**AAP:** American Academy of Pediatrics

# What is a Public Health Emergency?

## □ Types of public health emergencies

- An outbreak or epidemic with infectious agents
  - Pandemic influenza, Ebola or measles
- A terrorist attack with chemical, biological, or radiologic agents
  - Anthrax or a “dirty bomb”
- A natural disaster with public health implications
  - Earthquake or hurricane

# Public Health Emergency Preparedness

## ❑ “All Hazards” approach to public health emergency planning and preparedness

- Anticipate what might happen in a public health emergency
- Identify actions that can be taken ahead of a disaster to reduce negative impact

## ❑ Some populations require special planning

- Children
- Pregnant women
- Older adults
- Individuals with disabilities or chronic health conditions





# Unique Physiologic Needs of Children

## ❑ Children's bodies are different from adults' bodies

- Breathe more air per pound of body weight than adults
- Have thinner skin and higher body surface area to mass ratio
- Have less fluid in their bodies (more prone to dehydration)
- Spend more time outside and are closer to the ground



# Different Size and Physiology Requires Different Equipment

- ❑ **Pediatric-sized equipment needed**
  - Multiple sizes to meet size of child
  - Oxygen masks, endotracheal tubes
- ❑ **Adult-based devices may not work**
  - Ventilators, monitors, infusion pumps
- ❑ **Clinical care providers with experience caring for adults may not feel comfortable caring for children**



**Poor-fitting  
adult-size mask**

# Medical Countermeasures (MCM)

## Vaccines, Antibiotics and Other Treatments

- ❑ **MCMs are treatments that could be dispensed rapidly**
  - Points of Dispensing (PODs) sites are planned by public health departments
  - Some MCMs are adult formulation
- ❑ **Children's smaller size necessitates weight-based dosing for many MCMs**
- ❑ **Young children often cannot swallow pills**
  - Different formulations in the Strategic National Stockpile
  - Different dispensing guidance for public health departments
  - Different guidance for healthcare providers and parents



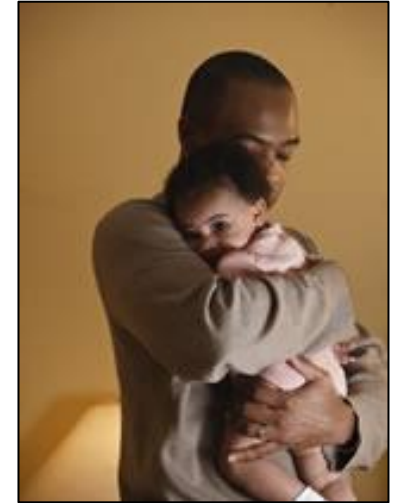
# Unique Social, Emotional, and Behavioral Needs of Children



- ❑ Children need help and support from adults during an emergency
- ❑ Mental stress from a disaster can be harder on children
  - Limit children's exposure to media

# Involving Parents and Caretakers in Planning for Disasters

- ❑ Engaging parents and caregivers to prepare before a disaster is critical
- ❑ Helping parents and caregivers be the first line of response when caring for children
- ❑ Keeping families together should be a priority in preparedness planning and response efforts



# Some Children Have Special Healthcare Needs

- ❑ **Children with a chronic physical, developmental, behavioral or emotional condition who require health and related services of a type or amount beyond that required by children generally**
- ❑ **In 2009–2010, an estimated 15% of US children were identified as having a special healthcare need**
  - 1 in 6 children
  - Includes children diagnosed with autism, attention deficit/hyperactivity disorder and other developmental delays, heart defects, muscular dystrophies, and blood disorders

# Coping with Special Healthcare Needs in Disasters

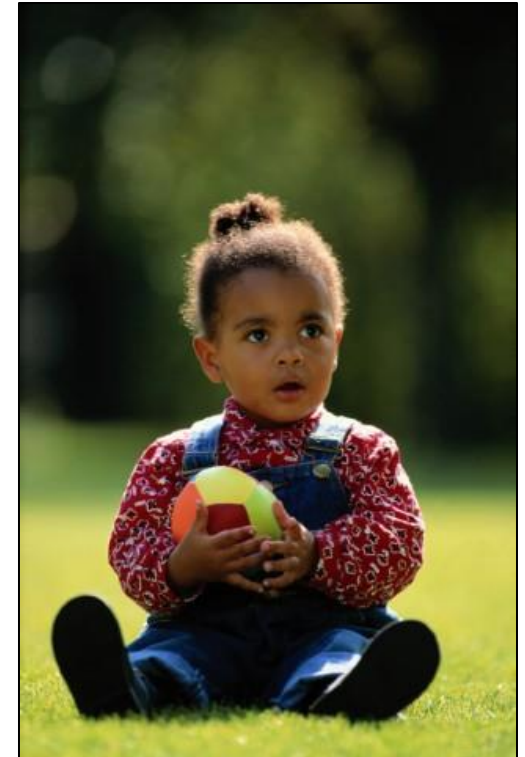
- Julie evacuated New Orleans with her family when Hurricane Katrina hit. Julie's son, Zac, has spina bifida, so she kept a week's worth of supplies and medicine with her. Like many families, Julie and Zac were evacuated for much longer than a week, and now Julie maintains a month's worth of supplies.



**Zac**

# Children with Special Healthcare Needs: Additional Considerations

- ❑ Medication lists and healthcare records
- ❑ Battery charging and backup for electronic devices and equipment
- ❑ Transportation and evacuation
- ❑ One week to one month of supplies
- ❑ After disaster, re-establish routines





# Putting Children First

- ❑ **Pediatric preparedness is a key component of an “All-Hazards” approach to public health emergencies**
- ❑ **Children have different physical and emotional needs than adults**
  - Different healthcare requirements (e.g., drugs and devices)
  - Family unit must be included in preparing for disasters
- ❑ **Children with special healthcare needs commonly live in the community and warrant additional planning due to greater complexity of health needs**

# Preparing Hospitals to Provide Pediatric Care During Disasters



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# First the Good News ...

- ❑ **Children are normally healthy, resilient and don't need intense pediatric services**
- ❑ **Children can be sources of strength and resilience in disasters**



# More Good News

## **Our nation has abundant pediatric resources**

- Leading children's hospitals with world-class teaching and research
- Pediatric practitioners
  - General pediatricians and pediatric specialists
  - Family medicine doctors
  - Nurse practitioners

## Now the Bad News ...

- ❑ Both pediatric and nonpediatric resources can become overwhelmed quickly with an influx or surge of children
- ❑ Children are vulnerable in times of disaster





# More Bad News

- ❑ **Majority of children receive urgent or emergent care in non-pediatric facilities**
  - Unique equipment, training and personnel needs
- ❑ **Previous disasters have not gone well for children**



# Lessons Learned: H1N1 in Ohio, 2009-2010

## Bed allotment for pediatric care

Nationally, over 700,000 cases and over 3,000 pediatric hospital admissions



## Pediatric Transport



## Triage of pediatric cases

# Keys to Successful Preparedness for Hospitals: Pediatric Preparedness Should be Routine

- ❑ **Non-pediatric hospitals need to establish readiness for children**
  - “The Disaster of One”
- ❑ **Pediatric liaison can advocate for the needs of children**
  - Mock codes
  - Mock disasters with children
  - Identify needs and personnel
    - Pediatric equipment list
    - PALS and EMSC Certification



# Keys to Successful Preparedness for Hospitals: Form and Lead Coalitions

## ❑ Include appropriate region or area

- Geographic boundaries

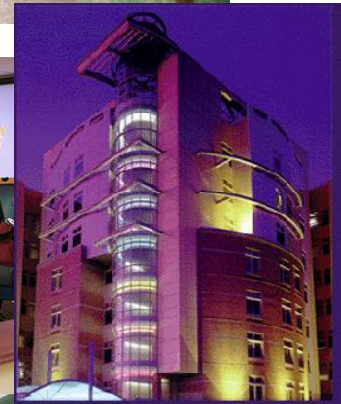
## ❑ Identify care providers

- Healthcare systems
- PCPs
- EMS

## ❑ Identify other stakeholders

- Law enforcement
- Public health agencies

## ❑ Determine potential regional risks and triggers





# Pediatric Coalitions

- ❑ **Staff – Pediatric physicians, nurses, and support staff**
- ❑ **Stuff – Pediatric equipment and supplies**
- ❑ **Space – Pediatric emergency rooms**  
**Pediatric beds in ICU, NICU and acute care**
- ❑ **Structure – Leadership and local governance**
- ❑ **Sustainability and funding – Ready for the next one**



# Example of Robust Pediatric Coalitions Los Angeles County (LAC)



**EMERGENCY MEDICAL  
SERVICES AGENCY**  
LOS ANGELES COUNTY

**Hospitals across LAC have clear understanding  
of their role in pediatric disaster based on tier**

		Hospital Tier	Tier Description	Number of Hospitals
Level of Acuity	Any age patient	1	Full Pediatric Complement	13
		2	Adult Trauma Centers (all Level II)	6
		3	Pediatric Acute Beds	11
	Patients over 8 years old	4	EDAP with no Pediatric Acute or PICU Care	18
		5	Not EDAP and No Pediatric In-patient Care	21
		6	No Emergency Services, Specialty Type Hospitals	8

EDAP: Emergency Department Approved for Pediatrics

[http://www.chla.org/atf/cf/%7B1CB444DF-77C3-4D94-82FA-E366D7D6CE04%7D/SurgePlan\\_06.10.14.pdf](http://www.chla.org/atf/cf/%7B1CB444DF-77C3-4D94-82FA-E366D7D6CE04%7D/SurgePlan_06.10.14.pdf)

# Keys to Successful Preparedness for Hospitals: Governance, Funding and Leadership

- ❑ **Need for national steering and organizing body for pediatric preparedness**

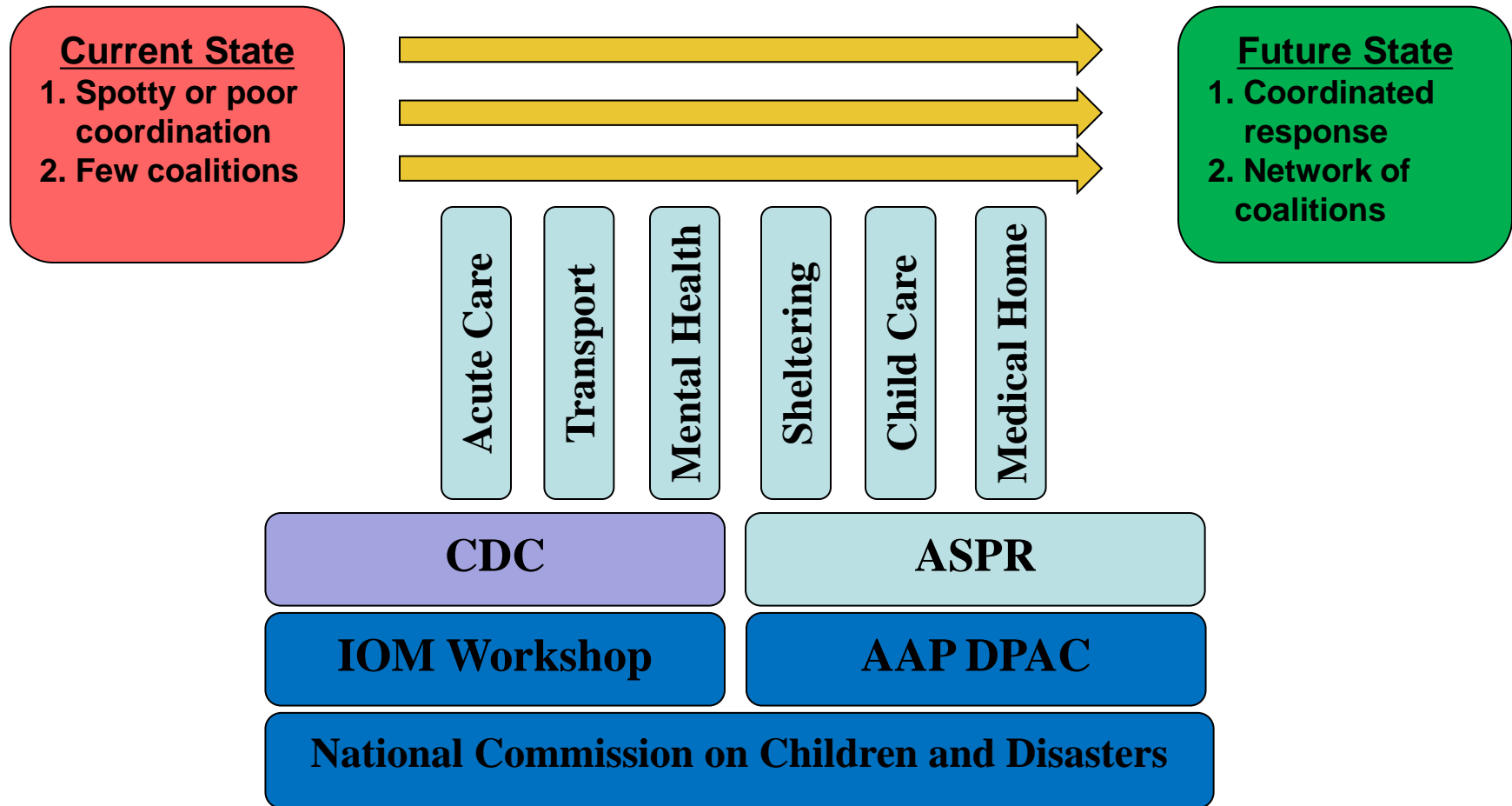


- ❑ **Need for consistent funding and support for coalitions**
  - Hospital Preparedness Program through ASPR
  - Public Health Emergency Preparedness through CDC
- ❑ **Need for ongoing leadership**

# Keys to Successful Preparedness for Hospitals: Constant Attention

- ❑ **Pediatric voice to include planning for children as an integral part of disaster preparedness**
  - Drills with pediatric cases
  - Surge issues
- ❑ **Crisis Standard of Care for children**
  - Doing the most good for the greatest number
- ❑ **Rapid development and deployment of treatment guidelines**
  - Disseminating up-to-date information

# National Advisory Committee on Children and Disasters



ASPR: Assistant Secretary for Preparedness and Response

IOM: Institute of Medicine

AAP DPAC: American Academy of Pediatrics Disaster Preparedness Advisory Council

# Together We Are More

***Bake pediatric readiness into routine regulatory planning ...***

***Use the power of population health and focus on resilience to assure a pediatric voice is heard.***



# Integrating Community Pediatric Practices into Disaster Preparedness in Pennsylvania



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# Goals of Collaborative Effort to Build Community Preparedness

- ❑ **Create a strategic plan and increase community preparedness capability**
- ❑ **Focus on community-based practitioners who care for children**
  - Identify needs for preparedness planning
  - Explore how they could contribute in disaster response
- ❑ **Use a systems-based approach**
- ❑ **Include public health practitioners and agencies**
  - Identify understanding of pediatric needs in emergencies
  - Explore ways to integrate community-based practitioners

# Pediatric Care Providers and Public Health Stakeholders

## □ Interviewed 36 thought leaders and subject matter experts from Pennsylvania area

- Representatives from pediatric healthcare
  - Community practices, hospitals, emergency management agencies, emergency medical services, health insurance companies, medical professional societies and health information technology experts
- Representatives from public health
  - Public health departments at local and state levels

# Identifying the Needs of Stakeholders

## Pediatric and Public Health

### ❑ **Two planning meetings with stakeholders**

- Pediatric care, healthcare system and public health

### ❑ **Fall 2012**

- Presented results of interviews
- Sought recommendations to improve integration of pediatric preparedness efforts

### ❑ **Spring 2013**

- Presented strategic plan for stakeholder review and input

# Findings: Pediatrician Perspectives

- ❑ **Had little understanding of the roles of public health agencies during crises**
- ❑ **Desired clearly defined role in community-wide response and recovery efforts**
- ❑ **Could provide expertise in child health**
  - During 2009 H1N1, pediatric expertise was not engaged in useful ways
  - Window to public perceptions and fears
- ❑ **Committed to providing optimal care, but have limited time and interest in preparedness efforts beyond their practice**





# During Public Health Emergencies, Pediatricians Serve as Trusted Experts

## ❑ Communication with patients is critical

- “Patients want to know what I think they should do, not what the government thinks.”

## ❑ “In the heart of the community”

- Not just children but entire families

## ❑ Pediatricians need information

- Real-time situational awareness
- Pediatric-specific information
- Direct communication from public health agencies
- Before released to the media



# Public Health Perspectives

- ❑ **Limited knowledge of pediatric practices**
  - Potential for credible communication
  - Potential to address differing needs of children
- ❑ **Limited understanding of difficulties faced by pediatric community-based practices to rapidly expand services during emergencies**
- ❑ **Limited insight into challenges that children with special healthcare needs might face**

# Public Health Perspectives

## ❑ Limited planning for care in ambulatory settings

- Medical care that could be provided outside of hospitals
- Points of Dispensing (PODs) beyond public health facilities

## ❑ Limited vision for how community-based providers could function during public health emergencies

- Expectations based on
  - Medical Reserve Corps volunteers
  - Vaccination and disease reporting



# Clearly Define Pediatric Roles During Public Health Emergencies

- ❑ **Pediatricians can provide care in community offices to offset burden on hospitals**
- ❑ **Pediatricians have a major role in all aspects of medical care**
  - Long-term monitoring for outcomes and disaster-related health consequences
  - Managing behavioral health and psychological support
  - Providing health information



# Pediatric Roles in Large-Scale Vaccination or Dispensing of Medications

- ❑ **Medical countermeasures will be distributed by public health-run PODs**
- ❑ **Pediatricians can provide recommendations to the parents about what to take and how to take it**
  - Adjusting doses for children
  - Educating parents on home formulation of liquid suspensions
- ❑ **Pediatricians will care for their patients**
  - Adverse events or drug interactions
  - Monitoring outcomes
  - Vaccines or prescriptions in less urgent scenarios





# Recommendations: Pediatric Practices Need to Plan for Preparedness Roles

- ❑ **Continuity of operations during disaster**
- ❑ **Vaccine storage during power outage**
  - Risk losing thousands of dollars in vaccine stocks
- ❑ **Patient surge**
  - Increased demand for sick patient visits
  - Increased need for staff, schedule flexibility
- ❑ **Communication channels**
  - Facilitate exchange of information
    - Voice or text messaging
    - Websites and social media
  - Capacity varies across practices



# Recommendations: Pediatric Practices Need to Engage with Preparedness Partners

- ❑ **Participate in coalitions and task forces devoted to emergency preparedness, response and recovery**
  - Local health system planning groups
  - Regional healthcare coalitions
- ❑ **Represent the needs of children and community perspectives during disasters**
  - Ad-hoc pediatric or medical advisory committees
  - “Rapid Response” teams to serve as pediatric experts

# Recommendations: Pediatric Practices and Public Health Agencies Need to Improve Communication

## ☐ **Communication is necessary for coordination**

- Need real-time situational awareness

## ☐ **Expand state and local health alert networks**

## ☐ **Use conference calls and webinars**

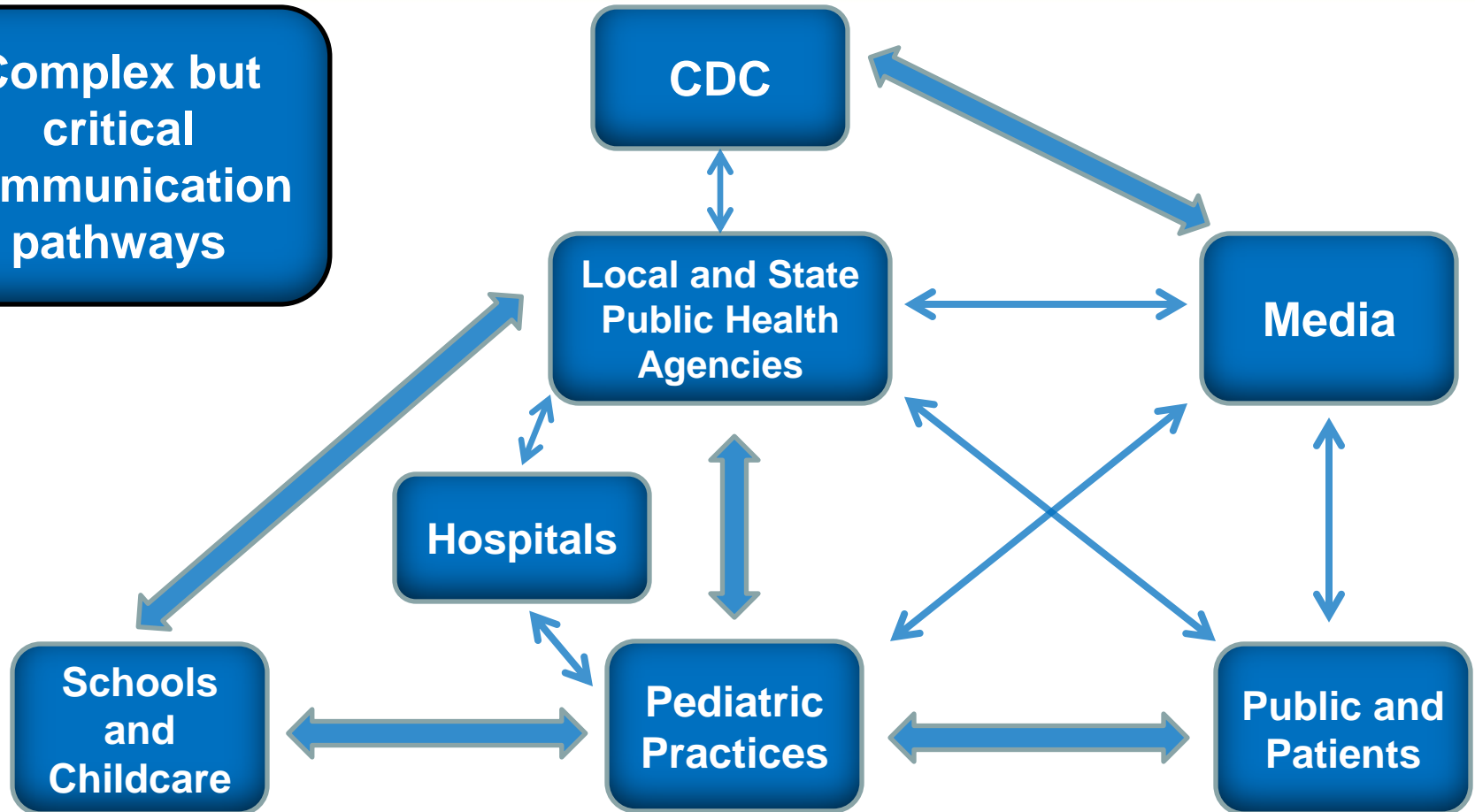
- Just-in-time educational programs promote two-way information exchange
- Professional societies and central offices of health systems should serve as communication intermediaries

## ☐ **Ensure emergency operation centers and health departments have pediatric experts available**



# Communication Among Public Health Agencies, Pediatric Practices and Patients

Complex but  
critical  
communication  
pathways



# Children with Special Healthcare Needs

- ❑ **Healthcare providers should promote preparedness planning**
- ❑ **Patient Centered Medical Home Model**
  - Use electronic health records to create registries or panels to identify special healthcare needs
  - Focus for planning and communication
  - Collaborate with social service agencies, medical equipment providers and schools and childcare programs
  - Provide care summaries and coordinate care





# Challenges

## ❑ **Community-based practices have limited resources**

- Priority is patient care
- Reimbursement only recently became available for care coordination
- Physicians need to encourage emergency preparedness planning



## ❑ **Different perspectives of public health and personal health need to be better understood**

- Work together more effectively at all times, not just during emergencies

## ❑ **Metrics needed to evaluate efforts after an incident**

# Next Steps in Pennsylvania

## □ Pennsylvania Department of Health

- Creation of Interagency Working Group for Child Health in Disasters
  - Coordinates all state agencies that work with children
  - Includes AAP, state hospitals and EMS associations
- Representation on Statewide Advisory Committee on Preparedness
- Trainings and exercises

## □ Regional healthcare coalitions

- Integration of community pediatricians



# Conclusions

- ❑ **Children are considered to be the “bellwethers” of community’s recovery after disaster**
- ❑ **Healthcare professionals who care for children in ambulatory settings have unique role to play in child health after disasters**
  - Community preparedness and resilience



# Acknowledgements

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## ❑ Many pediatricians, government agency partners and other stakeholders in Pennsylvania

# Strengthening Resilience in Pediatric and At-Risk Populations



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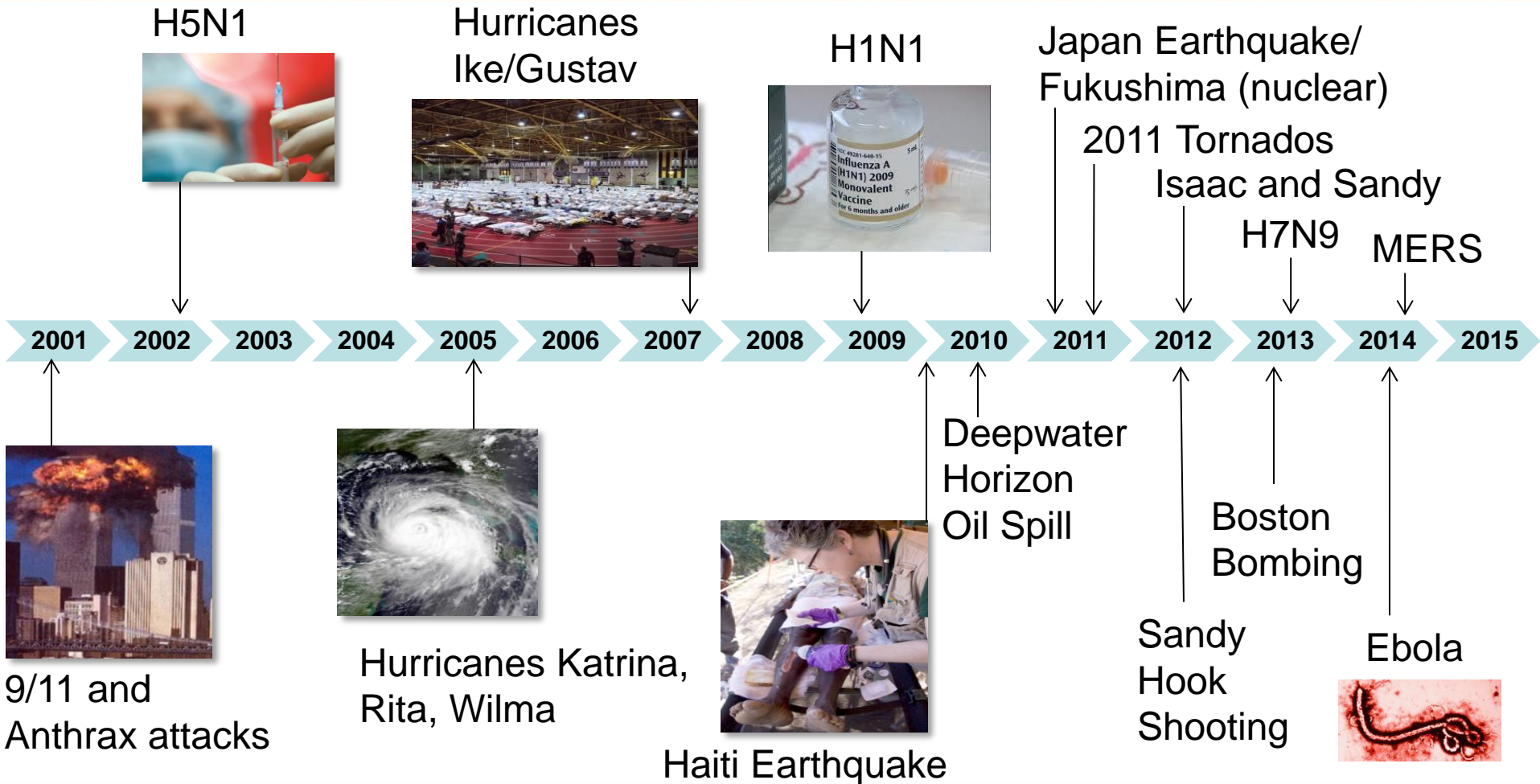


# ASPR Brings Together Policy, Science, and Emergency Operations





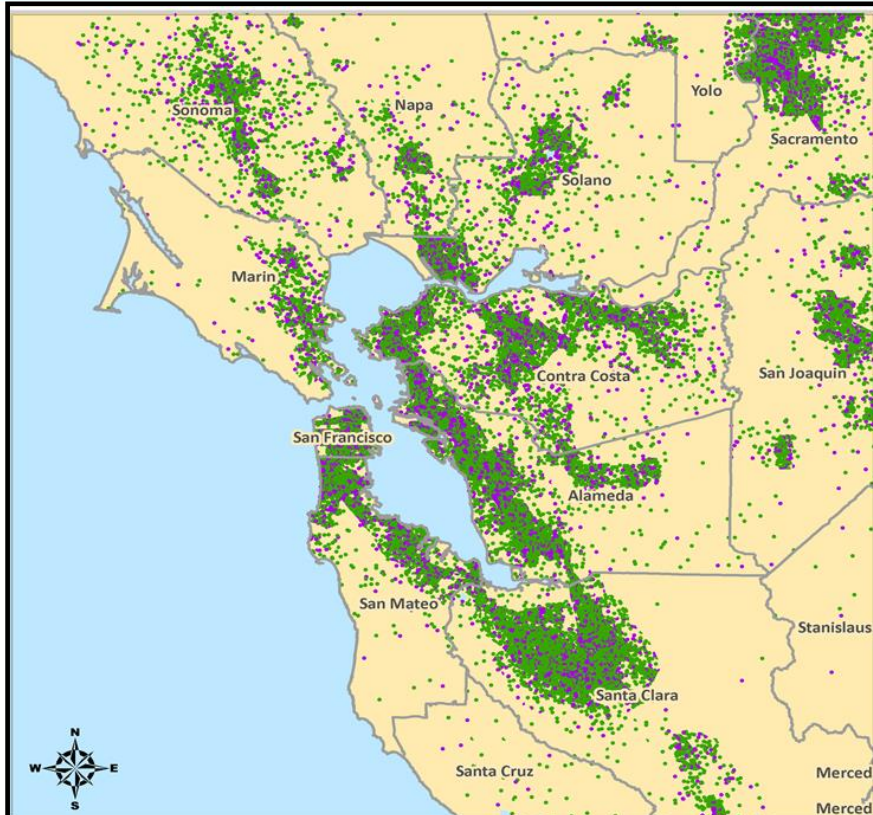
# Each Disaster Underscores the Need to Strengthen Resilience



# Key Accomplishments Related to Children

- Made behavioral health and social services formal components of response
- Compiled and annually coordinate HHS-wide activities related to Children and Disasters
- Stood up federal advisory committee on Children and Disasters
- Focused deliberately on children's countermeasure needs, from testing to stockpiling
- Ensured all response teams were pediatric capable

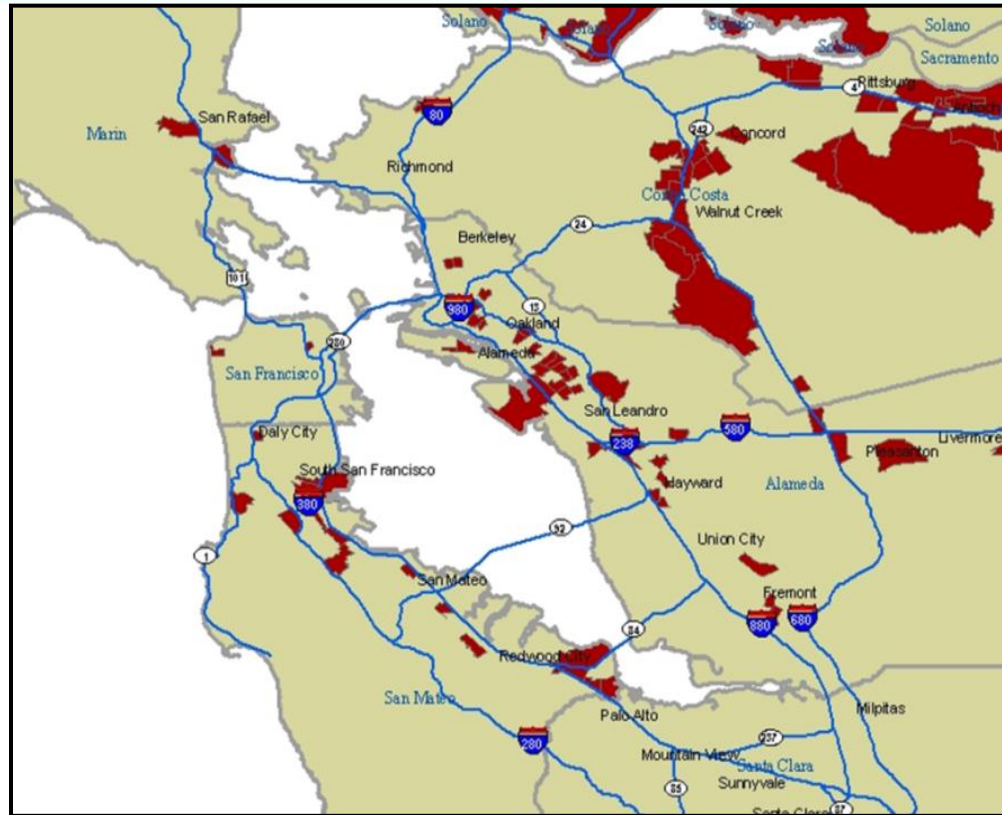
# National Health Plan Disparities Collaborative paved the way for identifying populations at risk in disasters



**LDL Testing in Diabetic Members, 1 dot = 5**

**● Negative LDL Test**

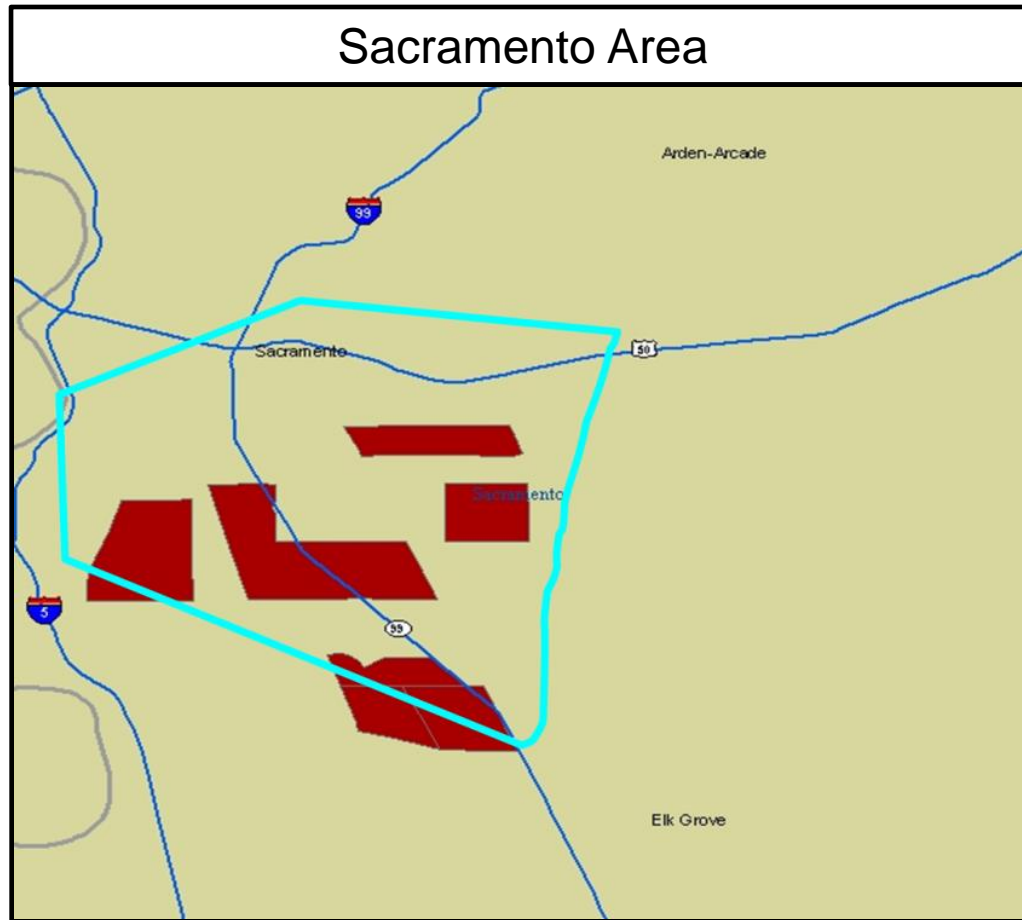
**● Positive LDL Test**




**■ Area with high numbers of at risk populations in Bay Area**



# National Health Plan Disparities Collaborative data used to identify populations at risk in disasters in Sacramento



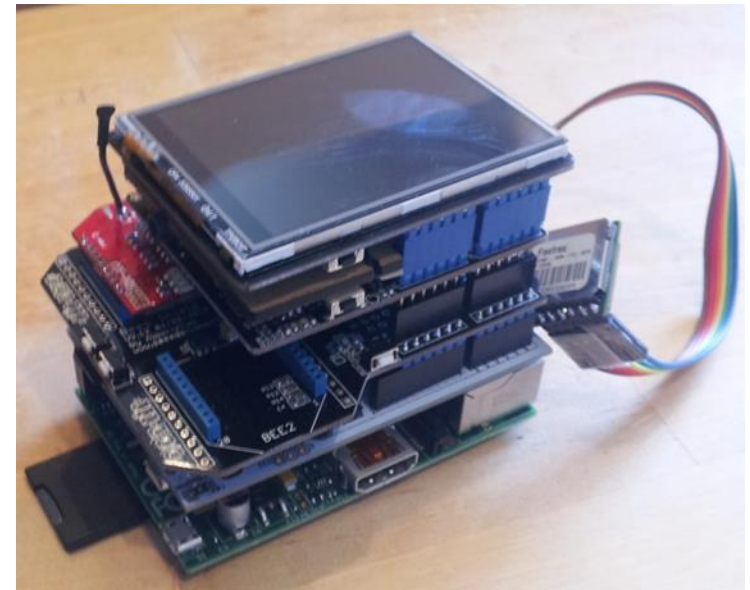
 Area with high numbers of at risk populations in Sacramento

# At-risk individuals are often invisible until disaster strikes

They should be 'seen' and 'heard'



**New Orleans**



**Prototype battery signaling  
device**



# Are claims data useful throughout the disaster cycle?

- Can administrative data be used to support and implement protective measures *before* an emergency?
- Can claims data be useful *during* an emergency?
- Can access and utilization data form the basis for new outcome measures *after* an emergency?

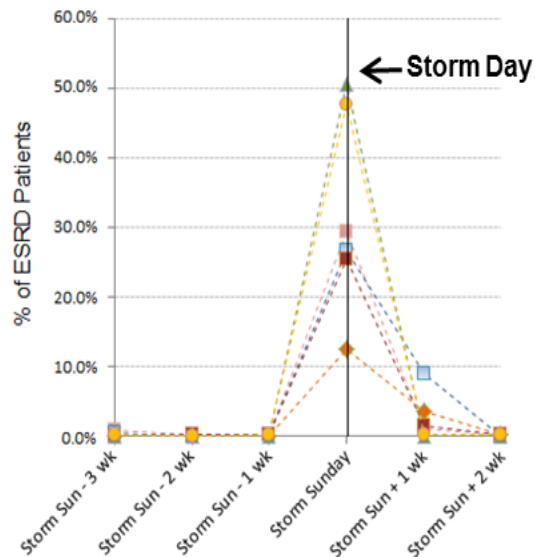




# Claims data used to evaluate early dialysis during Hurricane Sandy

**Early dialysis improved outcomes in hospitalizations, ED visits, and 30-day mortality following Hurricane Sandy**

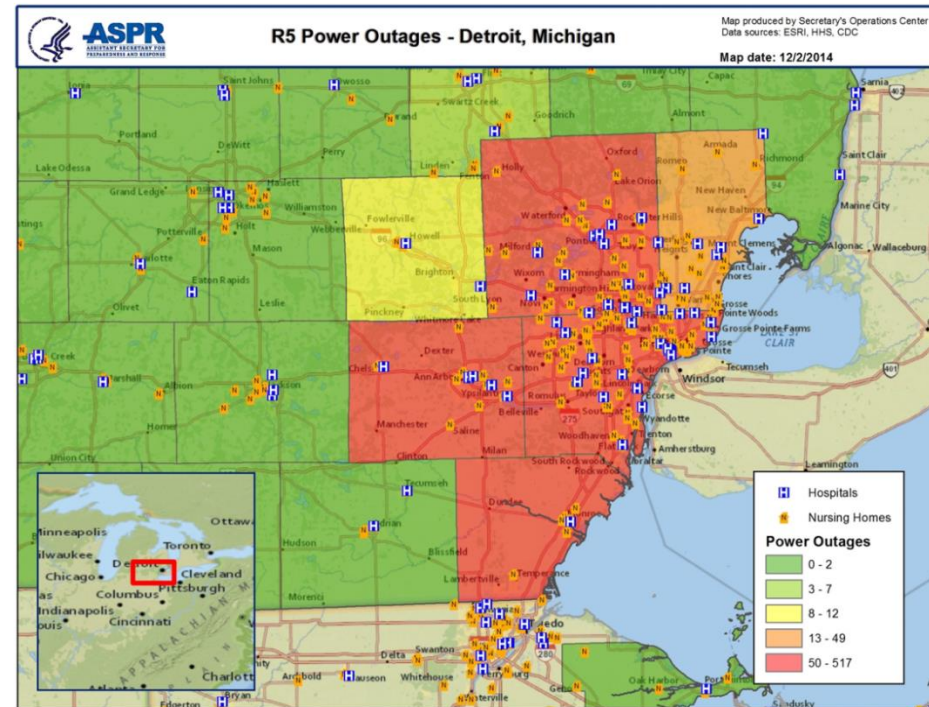
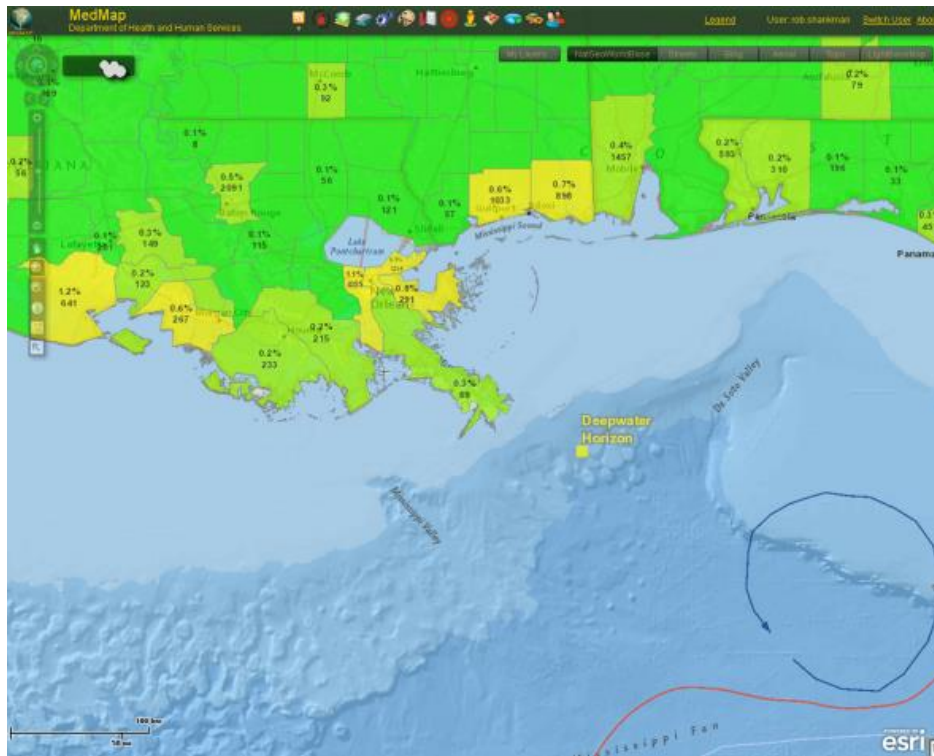
Early Dialysis on Sunday



Early dialysis' association with hospitalizations, ED visits, and 30-day mortality

	Hospitalizations	ED Visits	30-day Mortality
Early Dialysis	0.79*	0.80*	0.72*
p < .05	( 0.66 - 0.94 )	( 0.67 - 0.96 )	( 0.52 - 0.997 )

# ASPR MedMap: Now a tool for routine response



# Looking forward together

- Using claims data to focus on kids with special needs
- Tapping into the strengths of children throughout the disaster cycle
- Defining developmentally-appropriate response and recovery activities
- Innovation, particularly in the technology space



# Find ASPR Online



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