


#NHCPC24

**NATIONAL HEALTHCARE COALITION
PREPAREDNESS CONFERENCE**

*Visions of Progress: Sustainable Strategies for
Emergency Preparedness & Resilience*

Presented By:



MESH

SERFing the Quake Wave: Saving Kids When the Ground Gives Way

Lessons from A Multi-State SERF

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Disclosures

- SERF National Oversight and Planning Committee Member
- PPN and Region V for Kids Subject Matter Consultant
- This presentation does not represent official views of the state, federal or grant SERF participants.

Learning Objectives



Describe the current practices and lessons learned associated with hospital evacuations involving regional pediatric hospitals across multi-state urban and rural sectors.



Discuss three major pain points associated with the mass evacuation of specialty hospitals and their alternatives in catastrophic events.



Discuss how facilitated Significant Event Readiness Forums can advance community planning for pediatric disaster responses.



Foster information sharing



Facilitate relationship development



Targeted group of stakeholders who do not always plan together



Explore Opportunities



Over 351 pediatric, EMS, air-medical state, regional, and national disaster response partners.



Federal, Multi-State, Regional and Local Healthcare Coalition



7.7 Magnitude Earthquake Riverside Southern California

Scenario PROJECTIONS

- USGS projections:
 - 47,500 children would be displaced
 - 10,070 children would be injured
- Los Angeles County projected to need:
 - 959 pediatric Med/Surg beds
 - 419 PICU Beds



San Andreas Fault -----
Elsinore Fault -----



Scenario Knowns (First 24 Hours)



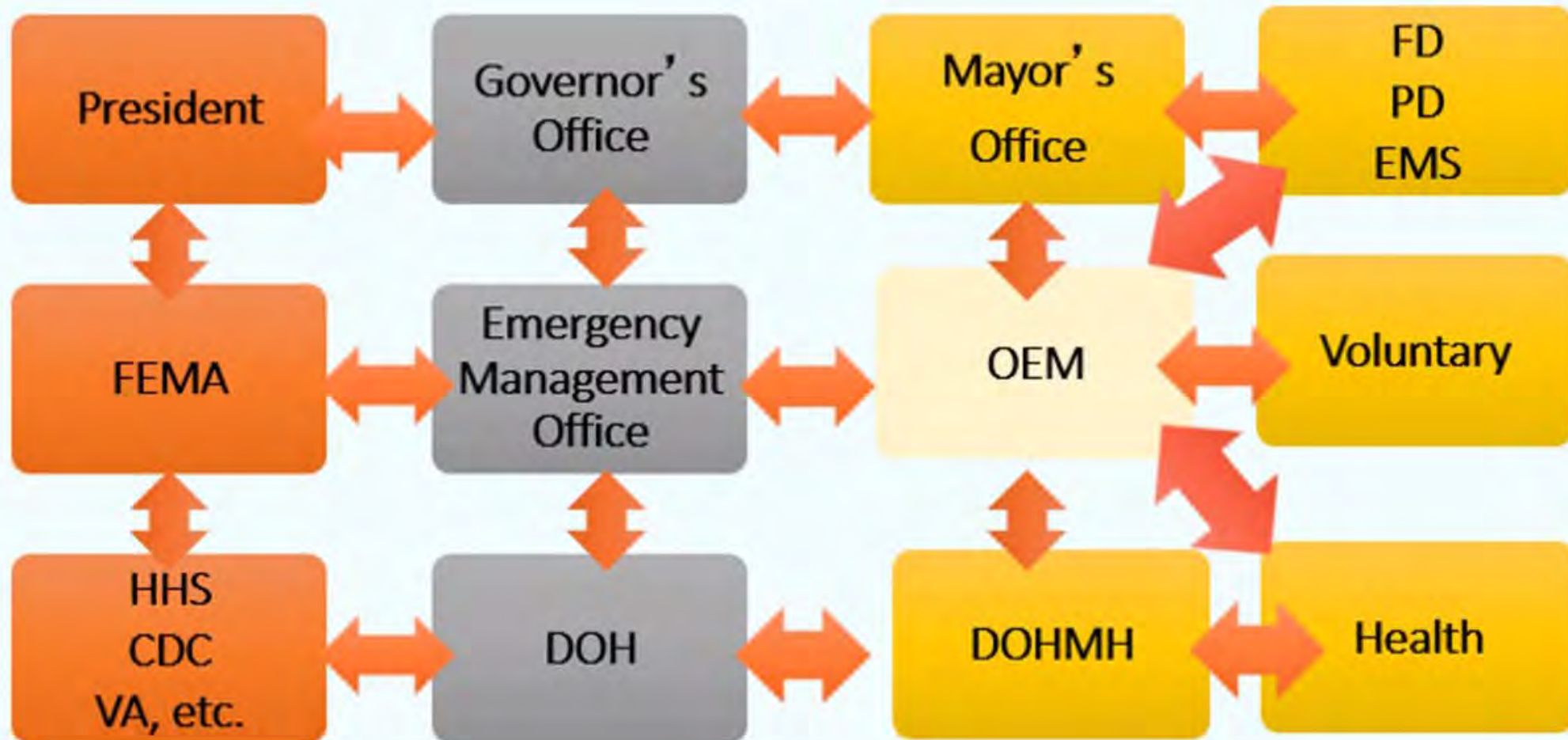
Scenario Progression

CHOC: Children's Health of Orange County
334 beds 55 PICU 91 NICU

Loma Linda Children's Hospital
364 beds 59 PICU 84 NICU

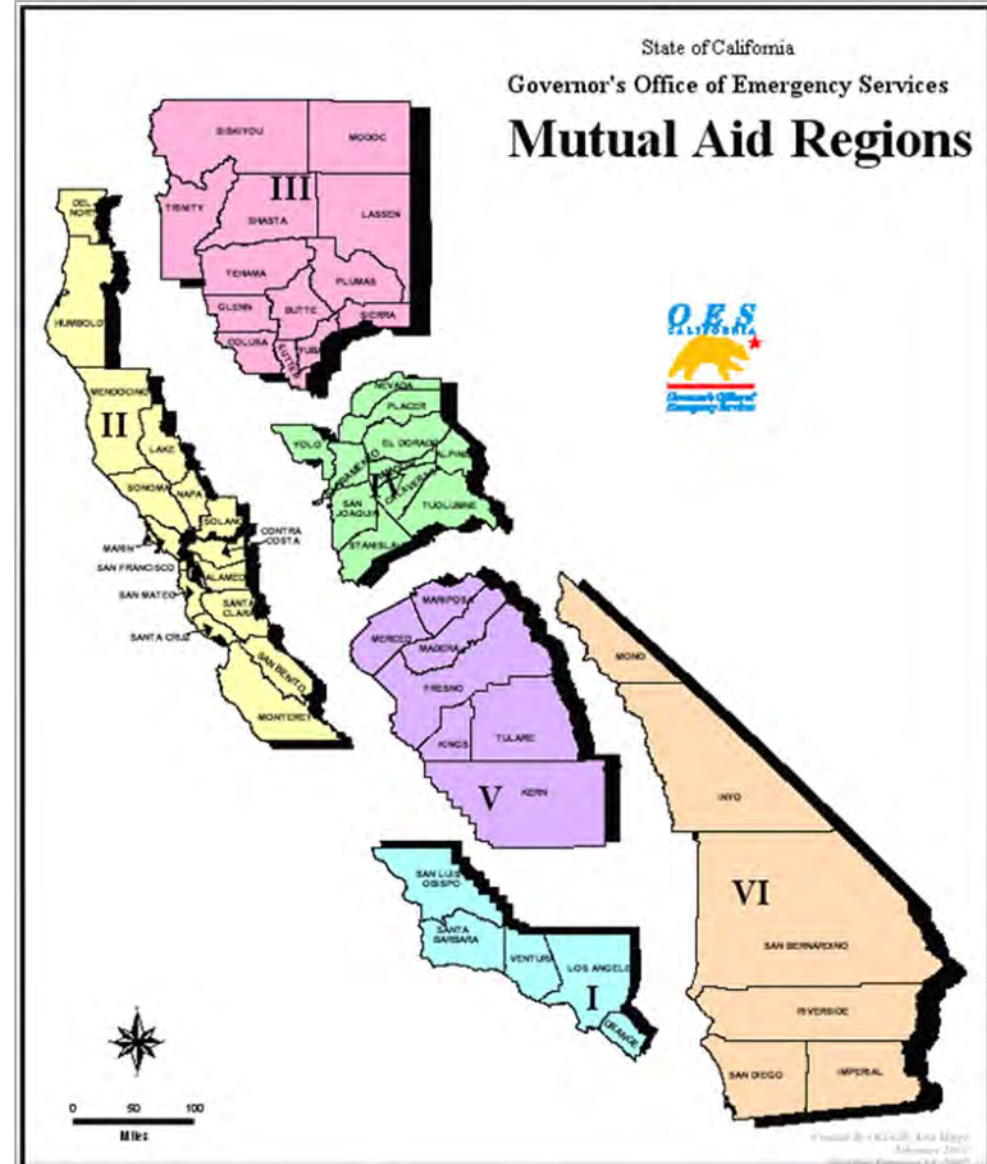


Federal, State, and Local Coordination in Disasters

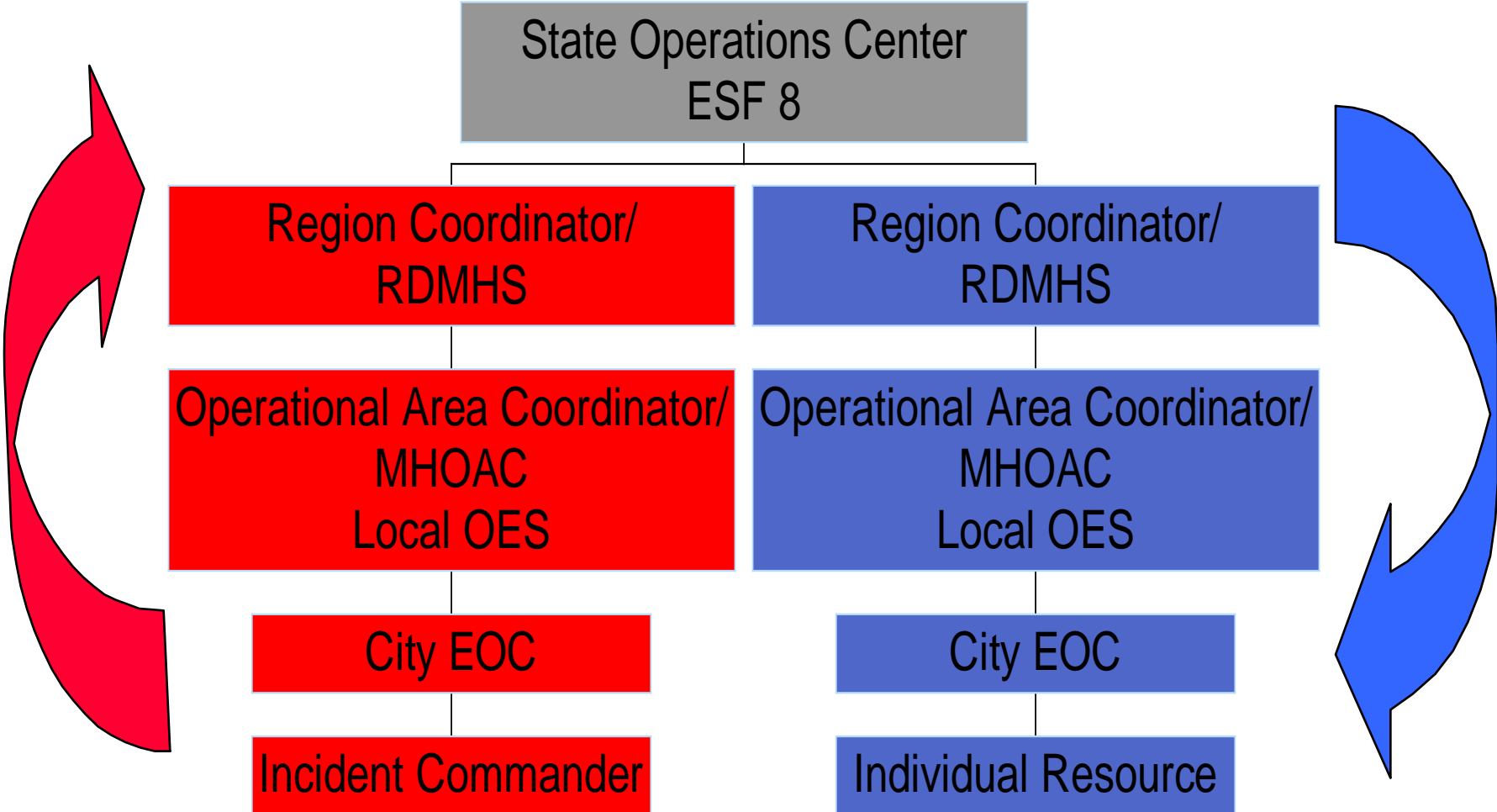


California

58 Counties
6 Mutual Aid Regions



How the Medical Health Mutual Aid System Works



Ambulance Strike Teams (ASTs)

- 37 DMSUs strategically positioned throughout the state.
- Includes:
 - (5) Ambulances of like type
 - (1) Strike Team Leader
 - (1) Leader Vehicle that provides food, water, medical supplies, and equipment for up to 72 hours





California Ambulance Industry Private Ambulance Providers Serve Both EMS & Hospitals

- 715 public & private ambulance services
- 170 private sector ambulance services
- 3,600 licensed ambulances
- 74% ambulances private operators
- 60,000 EMTs & 20,000 paramedics
- 20,000 people are employed by private ambulance services
- 220 out of the 337 emergency ambulance services areas (zones) are served by private contractors



State Operations Center

California State EMS Authority Ground and Medical Assets





Mobile Medical
Shelter Modules

Mobile Medical Shelter Modules



Evacuation By Air

- Med Evac Helicopter
- Range 250 Miles – will vary by aircraft type
- Patient Capacity = one

- Blackhawk Helicopter
- Range = 1200 Nautical Miles/1381 Miles
- Up to four patients/could be limited
- Military must approve use

- Fixed Wing
- Range is better
- More Patient Space

Air Transportation Routes

- Palm Springs International
- San Diego to Yuma 173 miles
- Military Bases may be used for refueling
- Possible triage and movement further east?





Evacuation By Sea

- Where and How?
- Tsunami Risk

FEMA/ASPR Expansion Plans Patients In Tents & Military Bases



Disaster Healthcare Volunteers System



- 10,391 Physicians and PA's
- 49,747 Nursing Services
- 9,744 EMS
- 2973 pharmacists
- 6,897 Hospital Ancillary
- 3130 Animal Services
- 6,815 Social Services
- 7,583 Management and Support Services

Includes: DHV/MRC/CAL-MAT/CA Health Corps



Kaiser Permanente hospital in Granada Hills



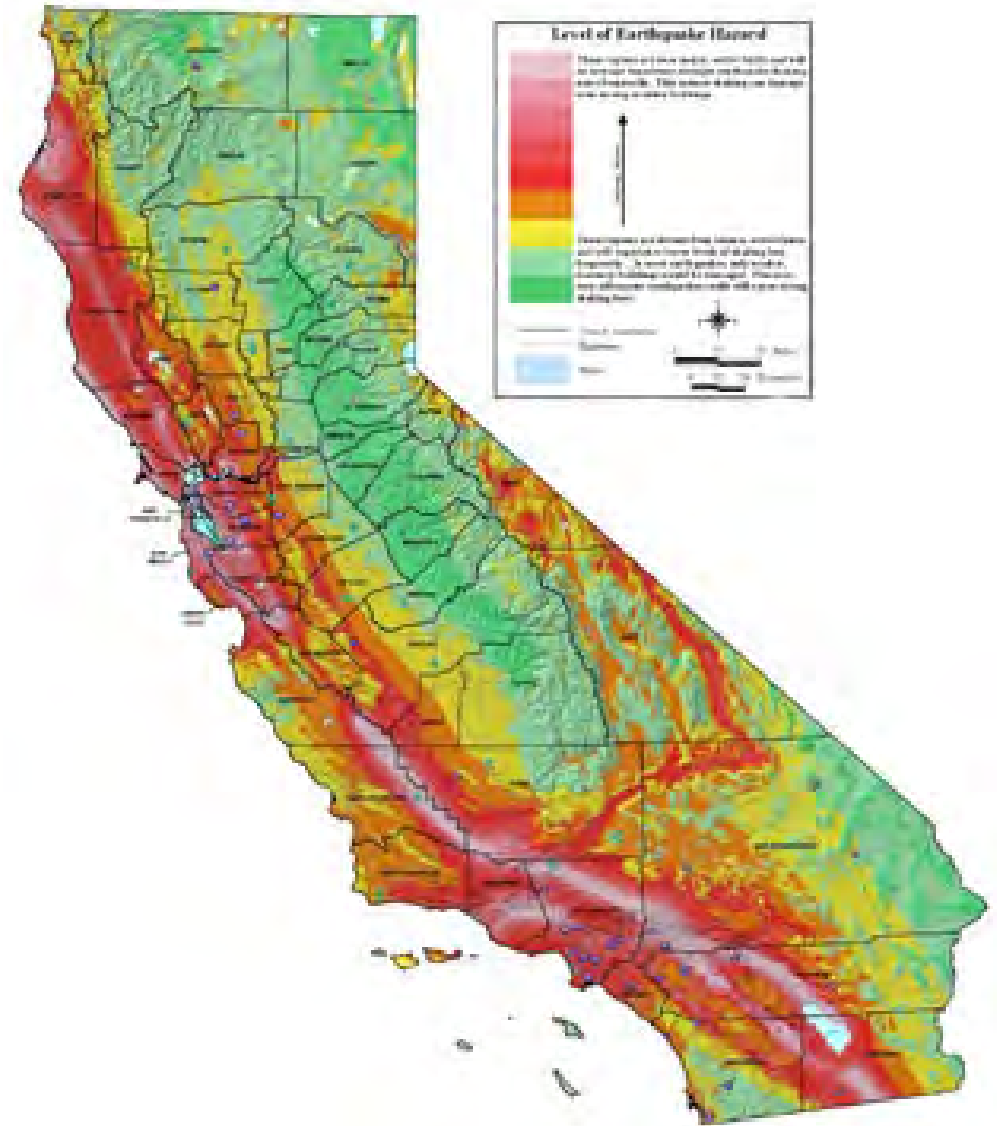
Kaiser Permanente hospital in Granada Hills



- Sylmar 1971
- Feb 9th 6 am
- San Fernando Valley
- M 6.6 duration 12 seconds
- 65 deaths, 2000 injured

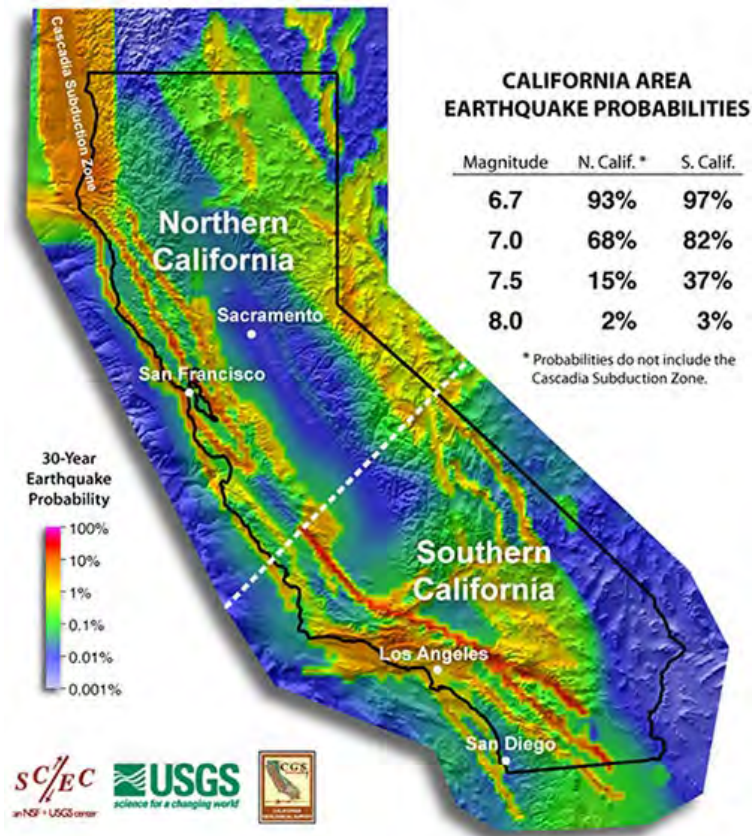
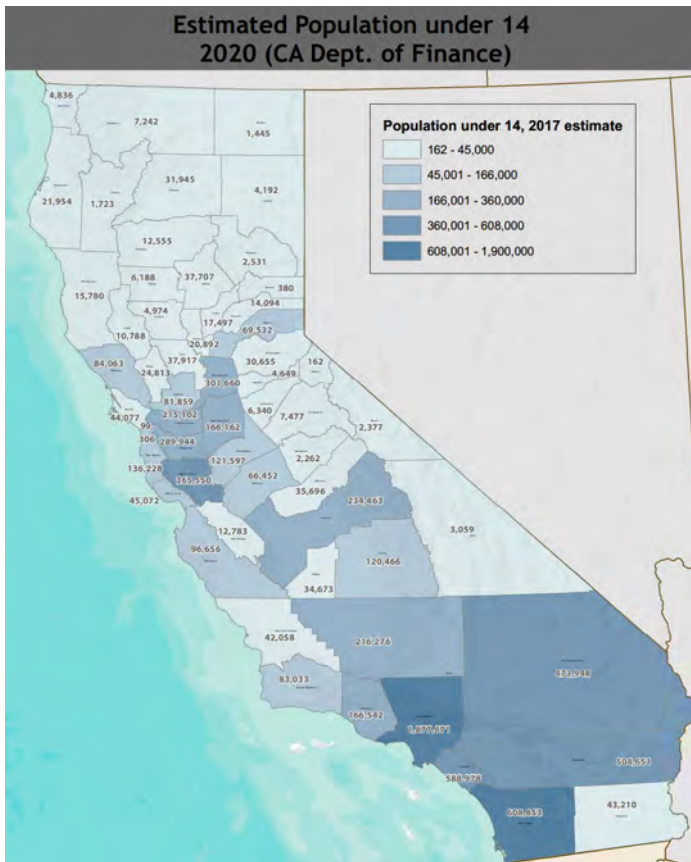
- Northridge 1994
- San Fernando SoCal
- January 17th 4 am
- M 6.7 duration 8 seconds
- 57 deaths, 9000 injured

- Loma Prieta 1989
- Santa Cruz, M 6.9 5pm
- Duration 15 seconds
- 63 deaths, 3,757 injured
- 12,053 displaced



San Andreas Fault Locked and Loaded





California's Pediatric Centers and Earthquake Risk



5 Essential Functions of Patient Movement

- Patient Evacuation
- Regulation
(Coordination of Transport Resources and Destinations)
- En-Route Medical Care
- Patient Tracking
- Repatriation (aka Return or Re-Entry)

Mission Task

Evacuation

CHOC: Children's Health of Orange County
334 beds 55 PICU 91 NICU

Loma Linda Children's Hospital
364 beds 59 PICU 84 NICU





Evacuation

Moving pediatric patients out of state is complicated, and staff and equipment are resource-intensive

SERF Children's Hospital Bed Capacity

47 Facilities 3,283 beds

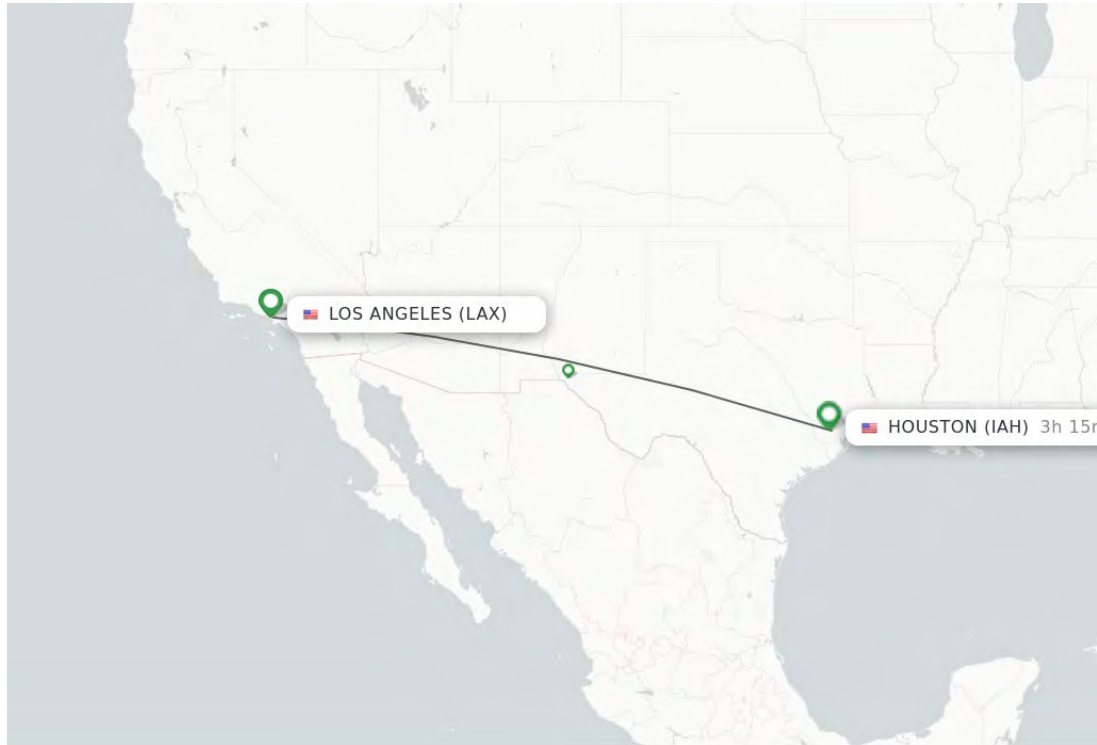
- Cardon Children's Medical Center, Mesa AZ, 162 Beds
- Phoenix Children's Hospital, Phoenix, 457 Beds, Level 1
- Children's Center at Sutter Medical, Sacramento, 127 Beds
- Children's Hospital Colorado, Aurora, 434 Beds, Level 1
- Children's Hospital, Colorado Springs, 118 Beds, Level 1
- St. Lukes Children's, Boise, 113 Beds
- The Children's Hospital of Oklahoma, OK City, 246 Beds, Level 1
- Doernbecher Children's Hospital, Portland, 145 Beds, Level 1
- Randall Children's Hospital at Legacy Emanuel, Portland, 81 Beds, Level 1
- Texas Children's Hospital, Houston, 724 Beds, Level 1
- Children's Memorial Hospital, Houston, 310 Beds, Level 1
- Children's Medical Center, Dallas, 289, Beds, Level 1
- 18 Total in Texas
- Children's Hospital of Nevada, 77 Beds, Level 2
- 2 Additional in Nevada
- Eight Children's Hospitals in Illinois
- Seven Children's Hospitals in Missouri, two Level 1 facilities

SERF Children's Hospital Bed Capacity

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- ...ada
- Children's Hospitals in Illinois
- Children's Hospitals in Missouri, two Level 1
- Facilities

Occupancy
Rate 78-94%



Distance Presents Challenges

Los Angeles to Houston 1371 Miles 1191 Nautical Miles

The Pediatric Healthcare System Does Not Travel Well

- Planned Moves
- Noticed Events
- No Notice Events



Scenario

Patient Movement Challenge

Who To Move?

How Many?

How To Do It?

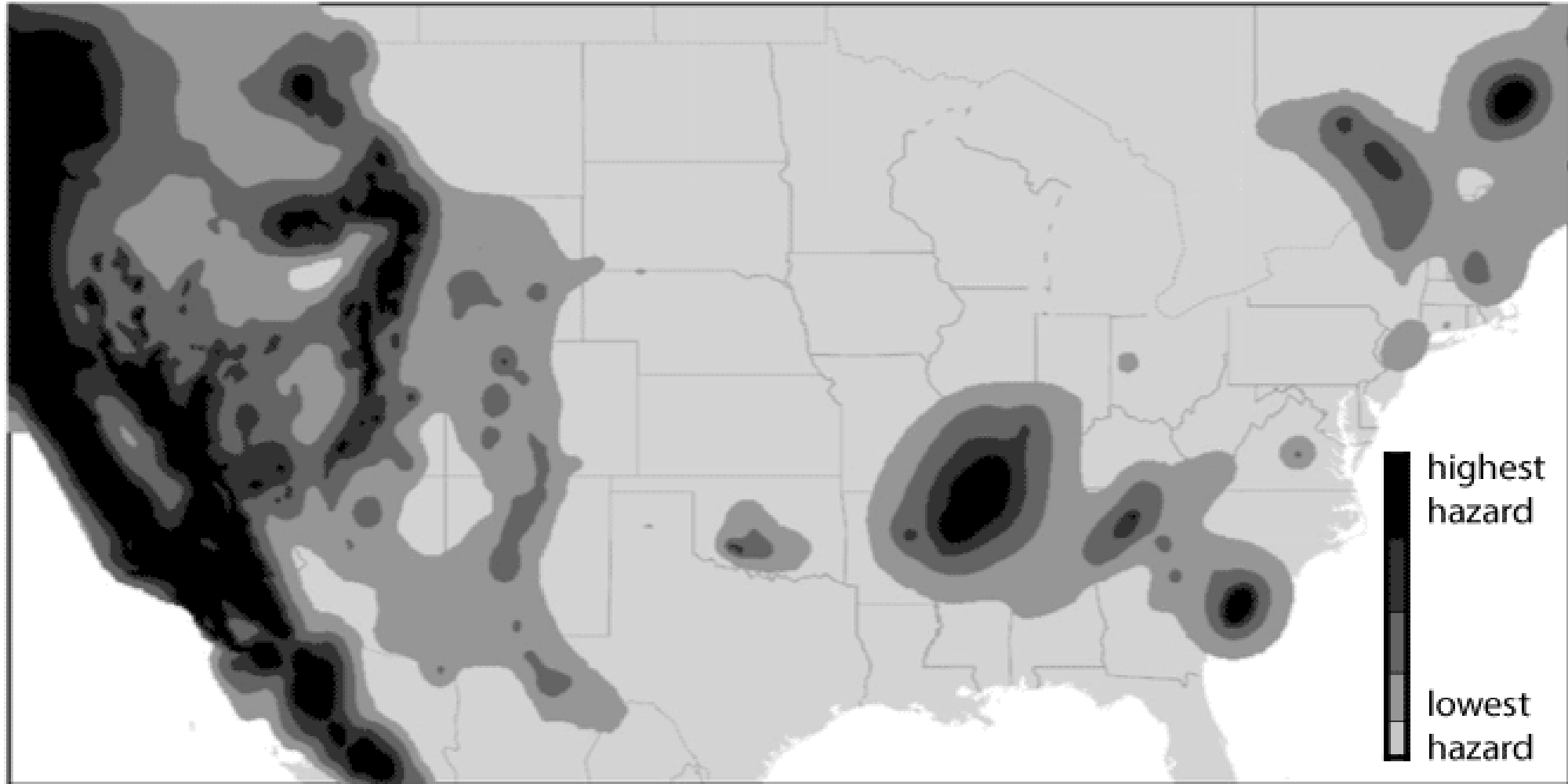
Where to Go?



Situations for Transporting Children in Emergency Ground Ambulance (EGA)

Scenario	Description	Option(s)
1	For a child who is uninjured/not ill	Use vehicle other than EGA
2	For ill and /or injured child whose condition does not require continuous and/or intensive medical monitoring and/or interventions	Use BLS transport
3	For child whose condition requires continuous and/or intensive medical monitoring and/or interventions	Use ALS or CCT transport or BLS with Hospital RN
4	For a child or children who require transport as part of a multiple patient transport (newborn with mother, multiple children, family)	BLS or ALS transport per patient condition

Transportation Infrastructure and Earthquake Evacuation Routes and Resources



DoD Contraindications Air Medical Evacuation

Pregnancy > 34 weeks	Seizure within last 2 weeks
Hemorrhaging (Hgb < 8.5)	New onset cardiac dysrhythmia
Post-op < 72 hours	Unbivalved orthopedic cast
Acute Coronary Syndrome	Communicable disease
< 7 Days: Open Heart Surgery	Respiratory isolation inc. possible TB
< 7 Days: Craniotomy	Psychologically unstable
< 7 Days: Spinal Surgery	Decompression sickness
Pneumocephalus	Agitation or other distracting behavior
Neonates/young pediatric patients	

ASPR's

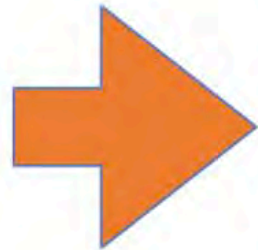
Vision of

Pediatric

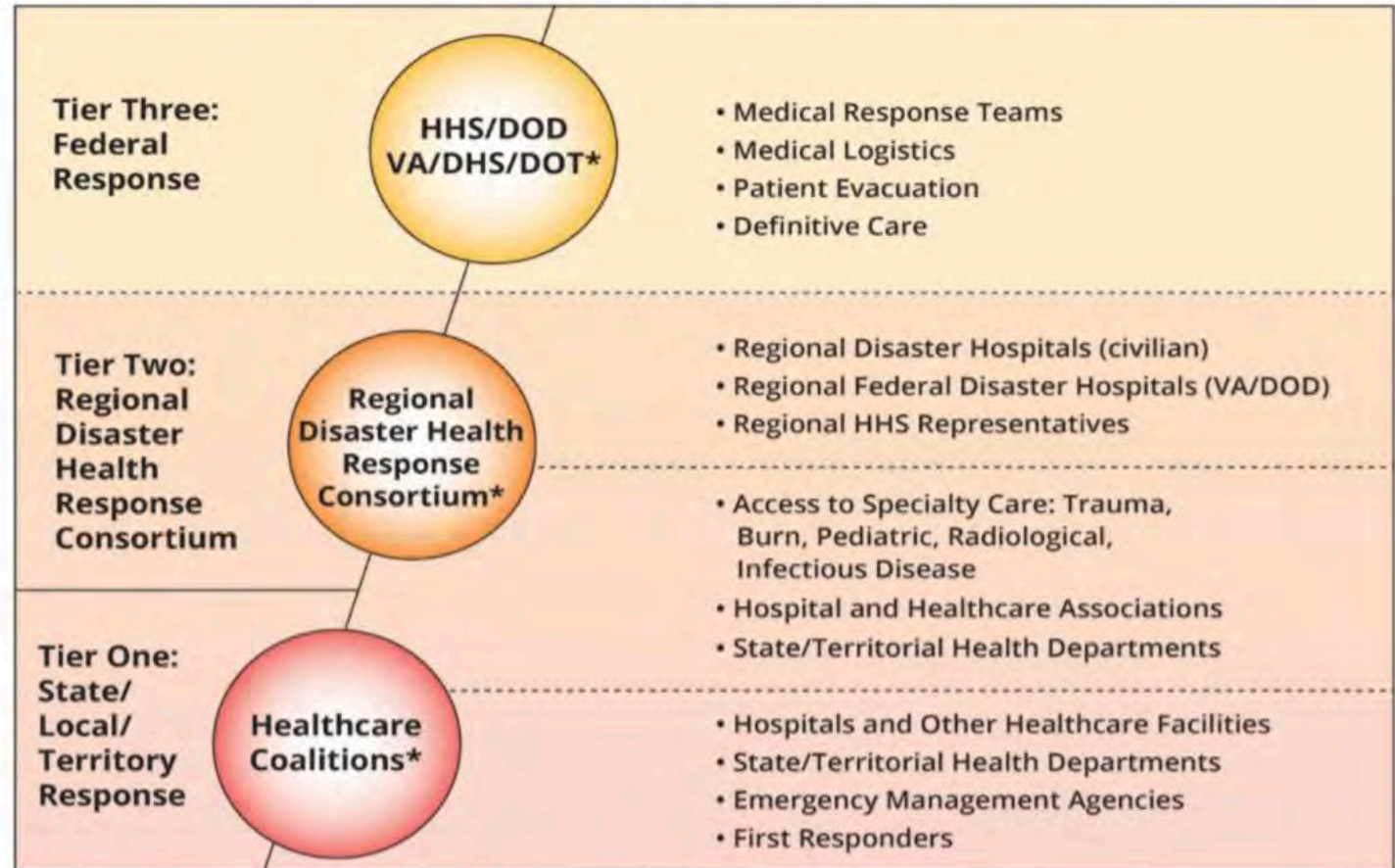
Disaster

Centers of

Excellence



21st Century National Disaster Medical System Framework A Tiered Response Structure



*Disaster response coordinating entity at the local/state, regional, and federal levels.

11-21-19



ASPR Funded Pediatric Disaster Centers of Excellence Improve Pediatric Disaster Regional Capability



Eastern Great Lake Pediatric Consortium for Disaster Response

- (6 state collaborative)

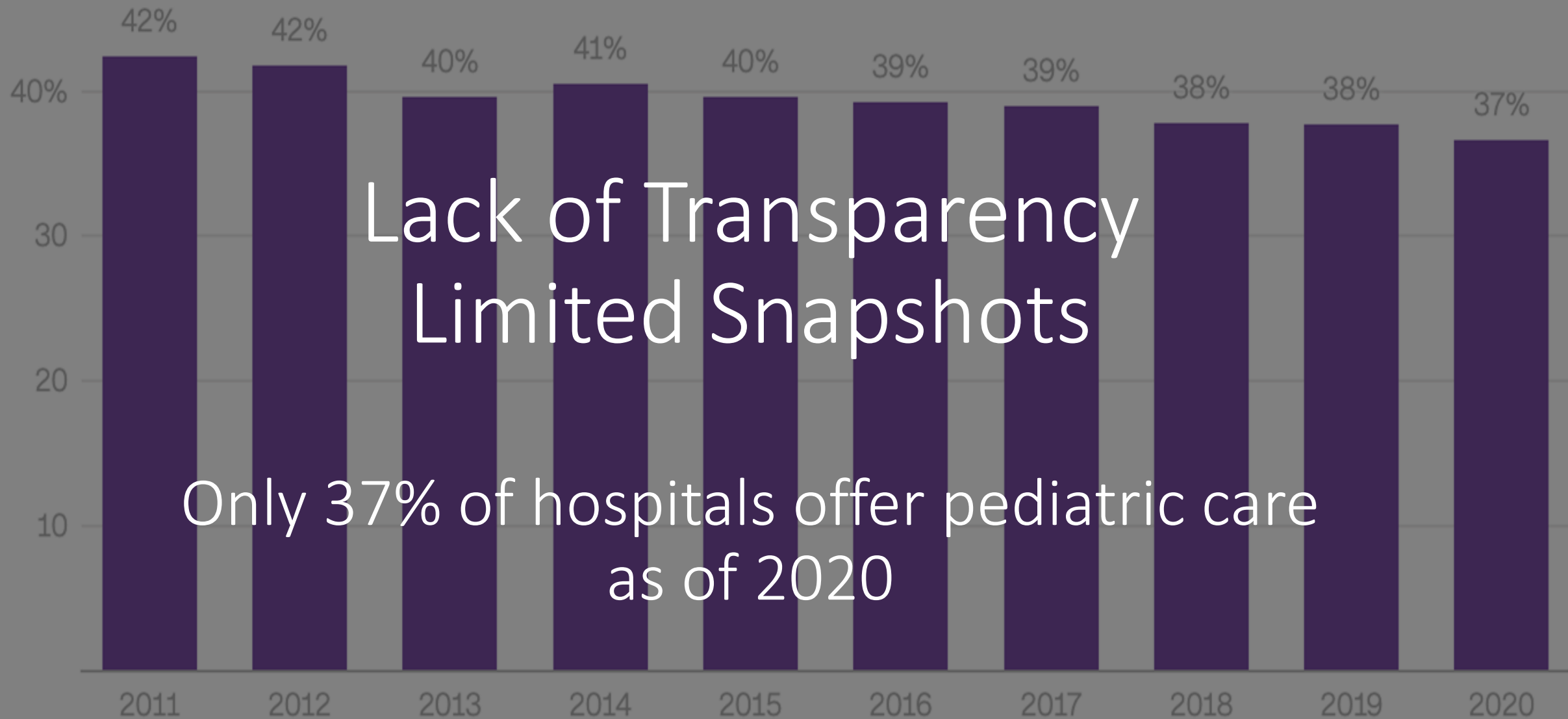
Western Regional Alliance for Pediatric Emergency Management (WRAP-EM)

- (5 state collaborative)

Gulf Coast Pediatric Network

- (7 state collaborative)





Lack of Transparency Limited Snapshots

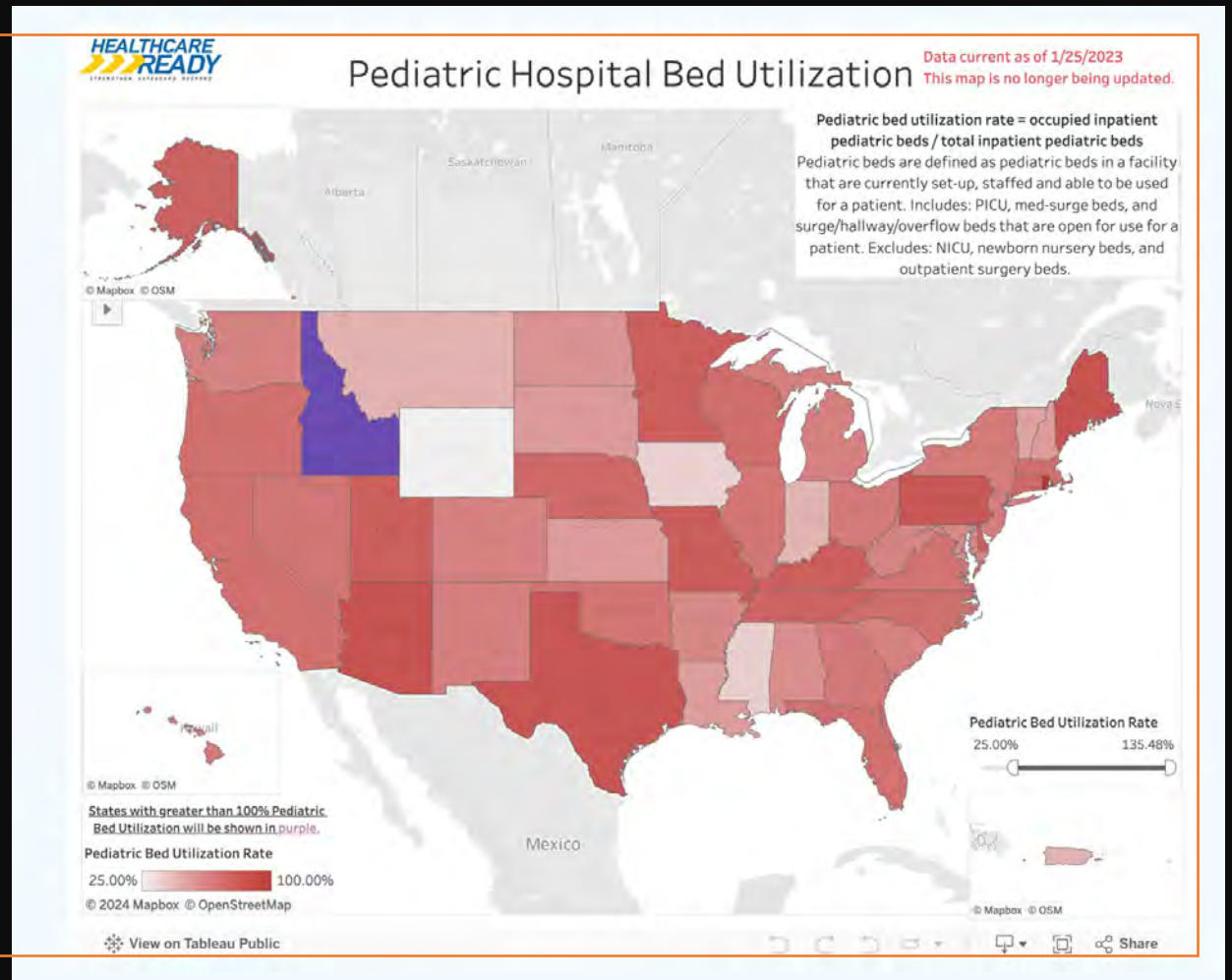
Only 37% of hospitals offer pediatric care
as of 2020

Source: American Hospital Association

Graphic: Christopher Hickey, CNN



HealthCare Ready Pediatric Surge Dashboard



A map of the United States with numerous green airplane icons scattered across the landmass, representing air medical services. The map is dark-themed with white text for city names and geographical features. The text is centered over the map.

Emergency Transport Healthcare
Operations and Safety
(ETHOS) is a real-time* geo-database

AASM: Association of Air Medical Services www.airmed.org

Specialty Transport Vehicles No Plug and Play Solutions



A Set-Up For
Sudden Shifts
from Normal to
Austere Care



A photograph of a hospital intensive care unit (ICU). In the center, a patient is lying on a gurney, surrounded by various medical equipment, including monitors, IV stands, and a large piece of equipment with a screen. The room is brightly lit, and the background shows more medical equipment and a window. The text "Immediate Need Decision-Making" is overlaid on the left side of the image.

Immediate Need Decision-Making

Crisis and Contingency Care
Who Stays and Who Goes?

Crisis Leadership Relies On Information Sharing

The party already started – you are late – you need to catch up

Not every incident has a playbook – sometimes you just need to think – “sensemaking” in chaos

Staffing Strategies

Conventional



Staff redistribution, less differentiation

Contingency



Staff augmentation from outside, de-differentiation

Crisis



Staff above usual scope of practice

Pediatric Care Narrow Margins
Incredibly Fragile



Very Low Birth Weight Premature Infants And Evacuation



Back To Basics
Infant/Mother
Transport System
Low Tech and No
Tech Solutions

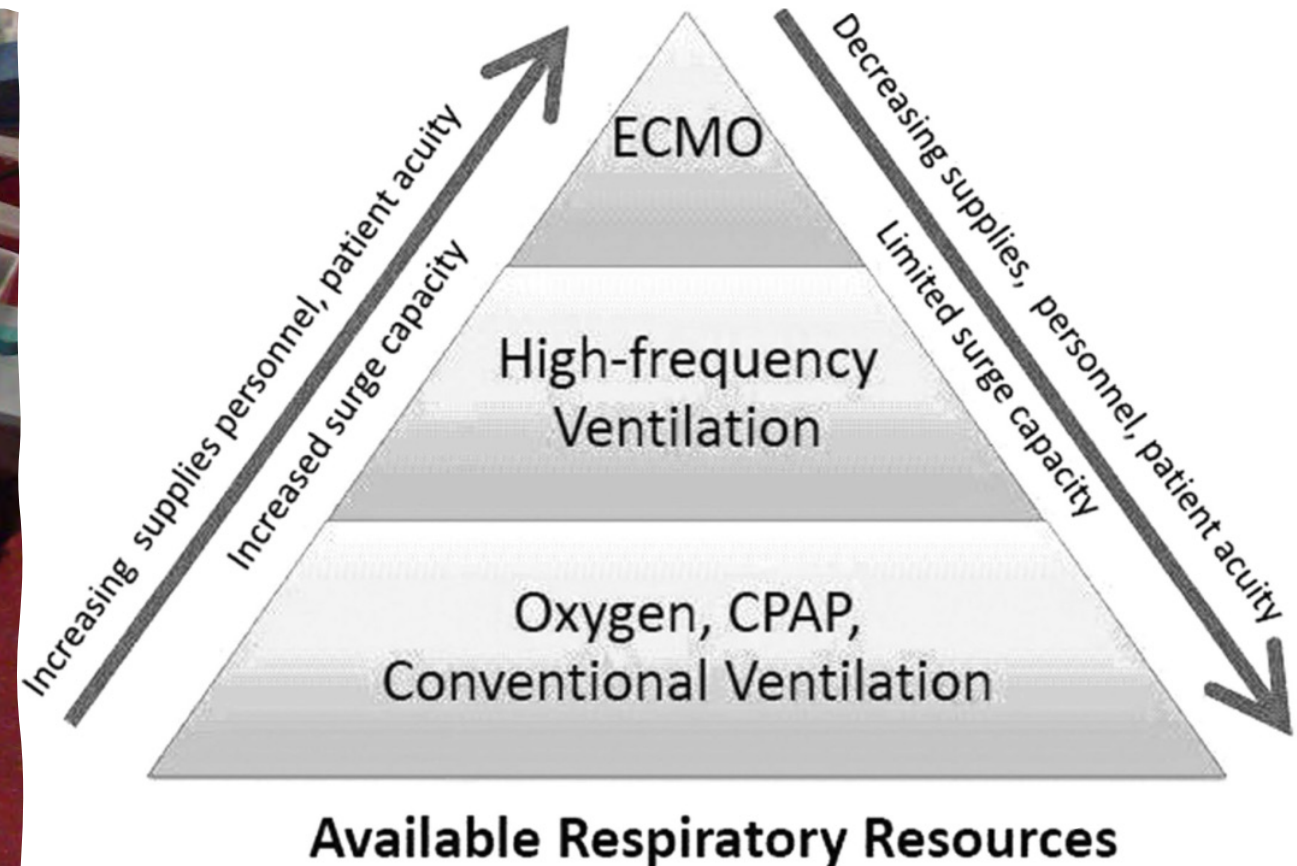


Austere Feeding
A spoon, A
syringe, A med
cup at a time...



ECMO & Jet Ventilation Infants

Limited Options Other Than Shelter in Place





KATRINA 2005: LARGE-SCALE PEDIATRIC EVACUATION



Widespread chaos, desperation & inefficiency”



RECOMMENDATION: ESTABLISH A DATABASE OF PEDIATRIC CAPABILITIES

Source: Dr. Romansky Unique Vulnerabilities Pediatric Resiliency Presentation May 2016

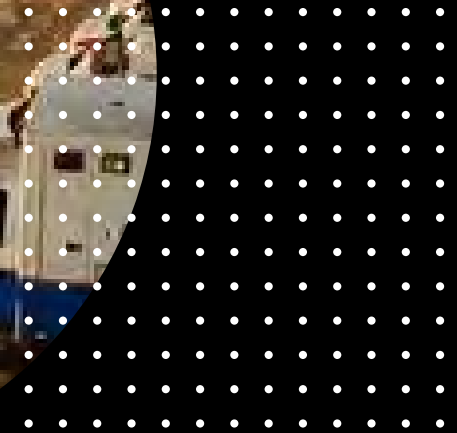
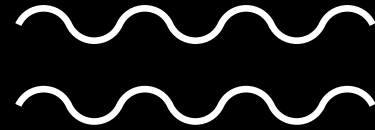
*No Notice
Immediate Need*

The ONLY Cavalry is
the Local Response
Community YOU
Exercise With

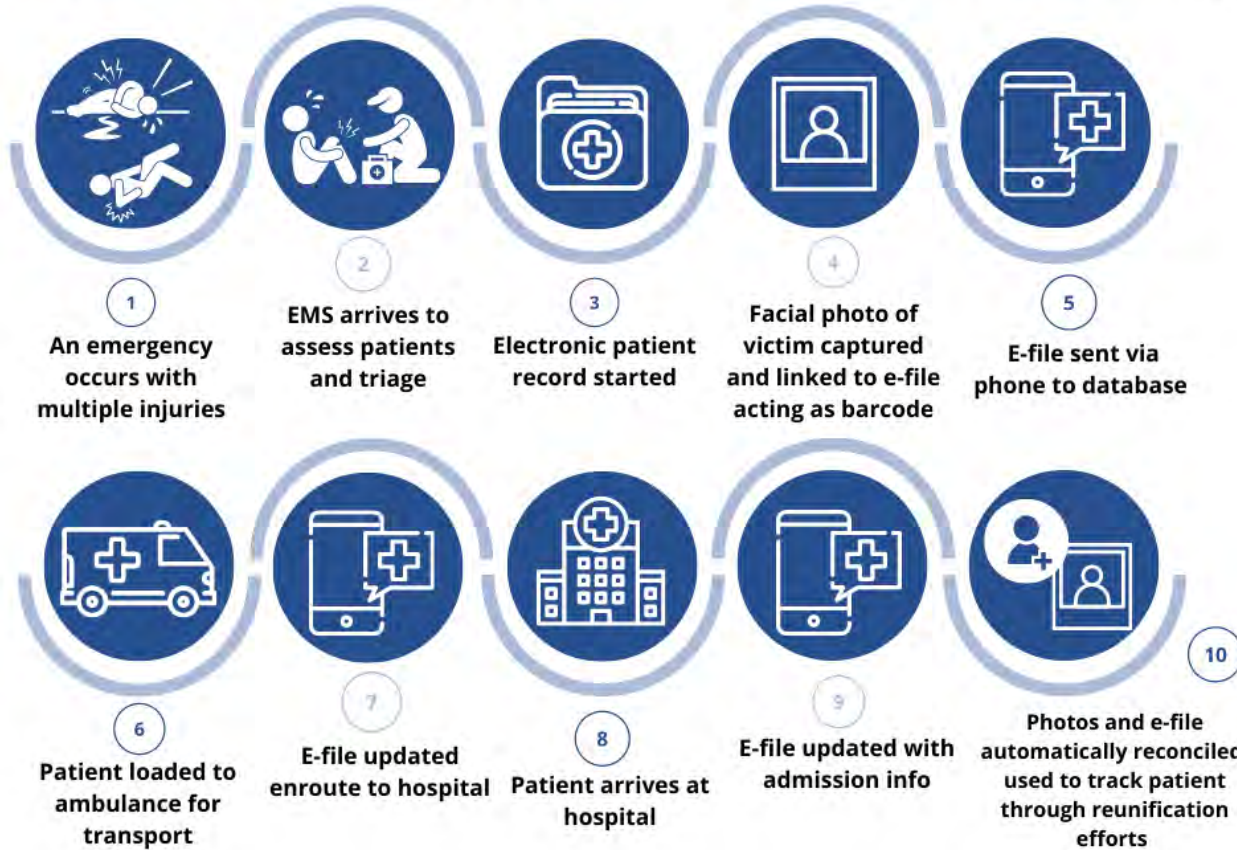


Ambulance Mutual Aid
May Take Over 24 to 72
hours to Get to You If
the Roads are Clear

*“BE PREPARED TO USE
NON-TRADITIONAL
TRANSPORT”*



A New Solution to Patient Tracking



Technology
Solutions
Easily
Disrupted

Source: <https://www.jems.com/major-incidents/mass-casualty-incidents/patient-tracking-and-victim-reunification/>



California Tracking Solution

“The Sharpie”

- Patient Movement Plan
- Simple Low Tech
- Firescope County #
- M/F/Unknown
- Last 4 digits of Triage Tag

XAL-M-1234

XLA-F-4321

XSA-U-



A best practice is carrying a permanent marker in your MCI kit and writing the CUPTS number on the patients arm or leg!



Where Do We Focus?



Return to Preparedness Principles Neighbor To Neighbor



Industry	Recommendations till Re-supply	Real World
Hospitals	96 hours Joint Commission	Weeks
EMS	72-96 hours (Ambulance Strike Team) FEMA	Months
Families	3 days (ideal 2 weeks) FEMA	Years

Shelter In Place Mobilize Staff, Space, Stuff and Systems



Fully Embrace Mitigation



Hardened Infrastructure
Enforced Building Codes

Lives Saved
Harm Prevention
Cost Savings

SERF Lessons Learned First 24 Hours



SPACE



STAFF



STUFF



Thank You
Questions

