

Access the entire webinar series here:

<https://files.asprtracie.hhs.gov/documents/aspr-tracie-healthcare-system-preparedness-considerations-speaker-series-summary.pdf>

Access speaker bios here: <https://files.asprtracie.hhs.gov/documents/healthcare-preparedness-speaker-series-pediatric-surge-annex-and-disaster-planning-speaker-bios.pdf>

Access the recording here: <https://attendee.gotowebinar.com/recording/5448177295354611467>



TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS
INFORMATION GATEWAY

Healthcare System Preparedness Considerations Speaker Series

April 2022



Unclassified//For Public Use



ASPR TRACIE HEALTHCARE PEDIATRIC SURGE ANNEX: LEVERAGING TEMPLATES FOR OPERATIONAL IMPACT

Transforming Strategies to Strengthen Plans across State Boundaries & Regional Coalitions



TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS
INFORMATION GATEWAY



**Cynthia Frankel, RN, MN, Pediatric Surge Lead,
HPP LEMSA Liaison, EMS for Children, & EMS Coordinator,
Alameda County Emergency Medical Services, California**



Disclosures

The projects described were supported by Award Number 6 U3REP190616-01-02 from the Office of the Assistant Secretary for Preparedness and Response (ASPR). The contents are solely the responsibility of the authors and do not necessarily represent the official views of ASPR or the Department of Health and Human Services.

Western Regional Alliance Pediatric Emergency Management (WRAP-EM) Surge Group

Funded through the ASPR Pediatric Center of Excellence

Includes WA, OR, CA, NV, AZ, UT, & NY

PRESENTERS

1. **Cynthia Frankel, RN, MN** – Surge Group Lead, WRAP-EM,
Alameda County EMS, California
2. **Mary Massey, BSN, MA, PHN** – VP Emergency Management,
California Hospital Association
3. **Michael Frogel, MD, FAAP** - Chairman National Pediatric Disaster Coalition;
Senior Advisor WRAP-EM

REGIONAL & LOCAL PEDIATRIC SURGE CAPABILITY

TRANSLATING EFFECTIVE COALITION PLANS / ANNEX INTO OPERATIONAL ACTION



<https://www.canva.com/>

- **GOAL**: To strengthen & increase regional children's medical surge capability & capacity with pediatric surge plans/healthcare coalition annexes
- **MISSION**: To inspire & leverage surge pediatric emergency preparedness plans & response capability with collective multi-jurisdiction implementation — that results in response that matches resources to needs for best outcomes

Unclassified//For Public Use



<https://www.canva.com/>

ASPR HEALTHCARE PEDIATRIC SURGE ANNEX: LEVERAGING TEMPLATES FOR OPERATIONAL IMPACT

GOALS

DRIVING READINESS & ACTION IN DYNAMIC TIMES

- Share how ASPR healthcare pediatric surge **ANNEX TEMPLATE** was **adapted & evolved** with novel components & resources
- Identify how **reframed & inclusive** pediatric surge annex enabled optimal health system pediatric surge response in exercises & “real events”
- Provide ‘**best practice**’ **strategies & benchmarks** to strengthen coalition annex towards disaster-resilient & sustainable health care systems
- Propose regional **transformative regional pediatric surge model** recommendations

DISASTERS

TREAT VICTIMS OF ALL AGES

- Pediatric population a challenge — physiologically vulnerable
 - **NOT SMALL ADULTS – 25% of Population**
- Developmental differences — lack motor skills to escape
- **Lack cognitive decision-making skills**
- Vulnerable to aerosolized biological/chemical agents
- **Children may be soft targets**
- Pediatric psychological triage difficult
- **Children will be disproportionately affected**
- Benign Neglect – Previous National Commission on Children & Disasters Report



<https://www.canva.com/>

The Perfect Storm in Pediatric Emergency Care

EMS & Hospital Challenges

- Children NOT on hospital's RADAR screen on day-to-day & surge events
- Pediatric Center Care “hyper-regionalized”
 - Staffing challenges
- Increased transfers to pediatric regional centers
- Community Hospital Reduced inpatient pediatric capability but expanded NICU
- Limited Transportation Resources
- Tertiary pediatric resource concentration urban hubs



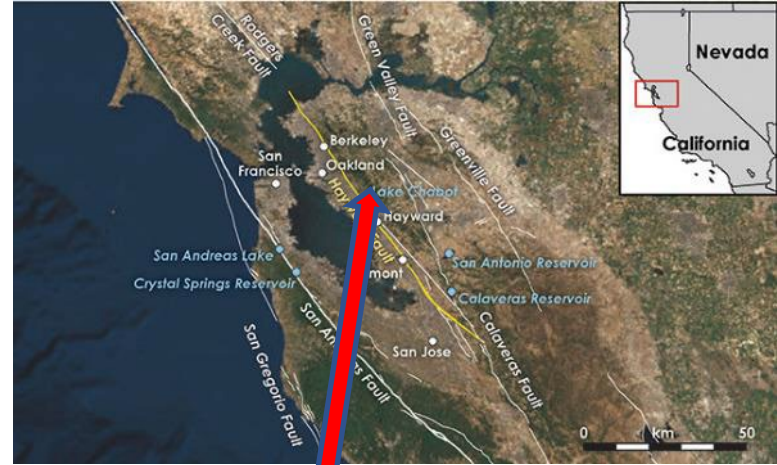
Adapted & Courtesy - Gausche-Hill M. [Emergency and Definitive Care for Children in the United States: The Perfect Storm](#). *Pediatrics*. 2020 Jan;145(1). PMID: 31882441

“PEDIATRIC NEAR MISS”

SURGE CAPACITY & CAPABILITY CHALLENGES

LESSONS LEARNED

- **H1N1 (2009) ***
- Civil Unrest (2009-10)
- Hurricane Sandy (2012)
- Asiana accident (2013)
- Northern California firestorms (2017 - 2021)
- **COVID-19 Pandemic** – Hospital Surge
- **Ukraine Mariupol Children’s Hospital Bombing**



UCSF Benioff Children's Hospital, Oakland

POTENTIAL RISK – Earthquake & Pandemic 300% increase in need for PICU beds

- Hospital surge impact — Limited PICUs - **(33 PICU BEDS CA ALAMEDA COUNTY)**

SCENARIOS – Not Catastrophic Enough - What if Pediatrics?

- **SIMULTANEOUS COMPLEX EVENTS** resulted in adult & pediatric patient surge in ICU / PICU
- Pediatric MCI in schools or mass gathering event at multiple sites simultaneously
- Pediatric hospital evacuation, virulent novel strain, & / or MCI impacting pediatric critical care

- 1000 pediatric hospitalizations per day

- Every regional pediatric specialty center becomes mega PICU

- Every hospital needs to create pediatric critical care beds

Pediatric Surge Annex Tabletop Exercise



Coalition Name

Date



<https://www.canva.com/>

WELL-PREPARED HEALTH CARE SYSTEM & PEDIATRIC SURGE ANNEX

Plans & Prepares for healthcare consequences of pediatric disasters

Responds quickly & with agility to support local needs & pediatric resource matching throughout region

Functions under adverse circumstances

- **An immediate & prolonged surge of pediatric patients in need of acute critical care & transportation in all-hazard catastrophic event – causes:**
 - Disruption incident management chains of command
 - A contaminated or contagious environment
 - Loss of infrastructure — Poor situational awareness



Requires connected robust state & regional coalitions prepared collectively across regions with CONOPS

REGIONAL & LOCAL PEDIATRIC SURGE CAPABILITY

Envisioned – Across States

High reliability, highly collaborative, cross-sector – Living Plan Daily

- **Rapidly expand capacity:**

To provide guidance on how to rapidly expand capacity of health care system — multiple levels

- **Align, scale, coordinate, & integrate:**

To ensure integrated regional children's medical emergency management response system — consistent with ICS, NDMS, NIMS, EMSC benchmarks, ASPR Hospital Preparedness (HPP) capabilities, & existing surge plans

- **Customize to divergent regions** & operational sections of other plans

- **High-level synthesis of many existing plans & surveillance** – not siloed

ASPR HEALTHCARE COALITION PEDIATRIC SURGE ANNEX

Deliverable Requirements – Provides Direction For Coalition

RISKS, MAPPING PEDIATRIC ASSETS, & CONOPS

Hospitals, Other HCFs, & EMS - Components

- **Hospital capacity for pediatrics (i.e., PICU, NICU) - Surveillance**
- Hospitals to facility TIER based on current capacity
- **Pediatric Readiness to tiering & expansion**
- Supply vendors for pediatric-specific equipment
- **Transport (EMS & specialized transfer capabilities)**
- **Coordination with dedicated children's hospital**
- Surge inpatient/referral & transport resources
- **Prioritization method for specialty transfers**
- Process for accessing pediatric experts in prioritization
- **Prepared to care-in-place at non-pediatric centers**



HAvBED			
View by: <input checked="" type="radio"/> Categories <input type="radio"/> Facilities			
Bed Types	Current	24 Hour	72 Hour
Med/S	94	9	16
Tele	59	9	11
ICU	39	5	7
PICU	17	0	0
NICU	33	2	4
PEDS	100	1	1
OB/GYN	40	11	13
Trauma	4	4	5
Burn	0	0	0
Isolation	5	5	6
Psych	0	0	0

LOCAL & REGIONAL PEDIATRIC SURGE ANNEX COALITION RECOMMENDATION

SECTION 2 – CONCEPT OF OPERATIONS - RESPONSE

2.1 Command and Mutual Aid Organizations (include Situation Awareness; Comms, Direction)

2.2 Situation Report, Activation and Notifications

2.2.1 Activation / Levels of Activation (include WRAP-EM Based Capabilities)

- SME Integration

2.2.2 Notifications

Regional EMS Activation and Notifications Pathway– Operational Response

2.3 Roles & Responsibilities – Region Jurisdiction Coalition (Situation Awareness)


2.4 LOGISTICS

2.4.1 Surge Definitions 4Ss / 3Cs

- Space
- Staff (PECCs; SMEs; Pediatric Clinicians)
- Supplies (Caches)

2.4.2 Pediatric Critical Care Expansion Plan




Pediatric Critical Care Expansion Options – Operational Response Tool




ALAMEDA COUNTY
DISASTER PREPAREDNESS HEALTH COALITION

ALAMEDA COUNTY
DISASTER PREPAREDNESS HEALTH
COALITION (DPHC)
- HCC RESPONSE PLAN -

PEDIATRIC MEDICAL SURGE ANNEX
NOT FOR DISTRIBUTION - WORKING DRAFT - DECEMBER 29, 2020



2.5 SPECIAL CONSIDERATIONS – EVENT SPECIFIC

2.5.1 Behavioral Health

2.5.2 Decontamination

2.5.3 Evacuation

2.5.4 Specialty Pathogens / Infection Control / COVID-19

2.5.5 Security

2.5.6 Special Needs

2.5.7 Burns

2.6 OPERATIONS – MEDICAL CARE & PATIENT MOVEMENT

2.6.1 Triage

2.6.2 Treatment / Medical Care

2.7 TRANSPORTATION (includes TRAIN) - **Patient Tracking**

SECONDARY TRANSFER ACTIONS – USING PIRT AND EEIs

2.8 TRACKING

2.9 REUNIFICATION

EMS PEDIATRIC PRIORITY ACTIONS - OPERATIONAL RESPONSE TOOLS

PEDIATRIC EMS ACTIVATION CHECKLIST

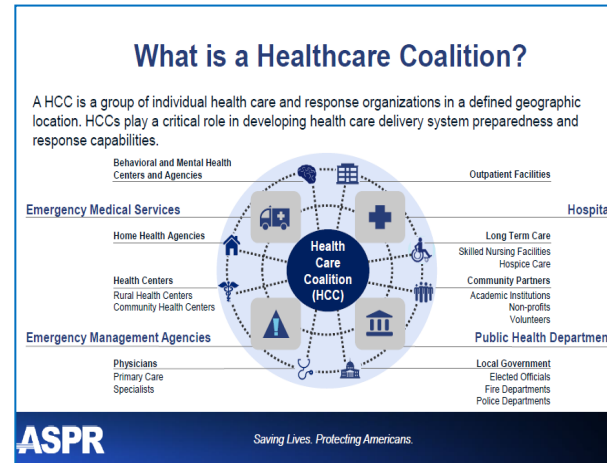
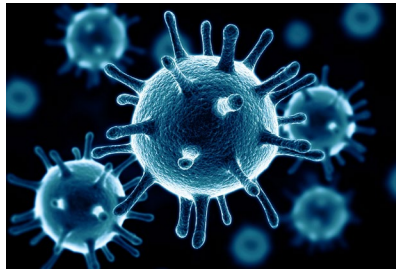
Patient Evacuation Transfer Form

Unclassified//For Public Use



COVID-19 EXPANDED PLANNING PARTNERS: WRAP-EM & SMEs

- **Pediatric Surge Annex Evolved to Meet Changing Needs & Customized in States**
 - Collective Planning Steps – CONOPs Focus — Training — Exercises
 - **“Real Time” Pediatric Surge Solutions During COVID & Beyond**
 - Considered Conversion of Pediatric Surge Assets to Augment Adult Surge Needs
 - **New Response Partners:** Specialty Pharmacies, Federal Pharmacy Partners for Vaccines and Therapeutics
 - Mobile Services
 - Virtual EOC Activations
 - Transfer Centers



CALIFORNIA PEDIATRIC SURGE PLANNING

Perinatal, Neonatal, and Pediatric
Surge Annex
to the
California Patient Movement Plan

September 2021



GOAL: California Pediatric Surge Concept of Operations (CONOPS) & Function-specific Annex to Support Response

— BUILT ON CAPACITY MODEL —

- **Establish Catchment Areas Around Regional Hospital**
- Identify Regional Health System Hubs to Authorize Patient Movement
- **Integrate Transfer Centers with Tiered Hospitals Around Levels of Care**
- Expectations Beyond National Pediatric Readiness Project (NPRP)
- **Plan = Response CONOPS with Response Partners – (i.e., Telehealth)**
- Patient Movement Decision Coordination for Transfers with Pediatric Tiers & SMEs; Integrate TRAIN
- **Promote Connectivity Across States & Coalitions – EOCs**
- Ensure “Day-to-day” & Surge Pediatric Assets – **Living Plan Daily**



<https://www.canva.com/>

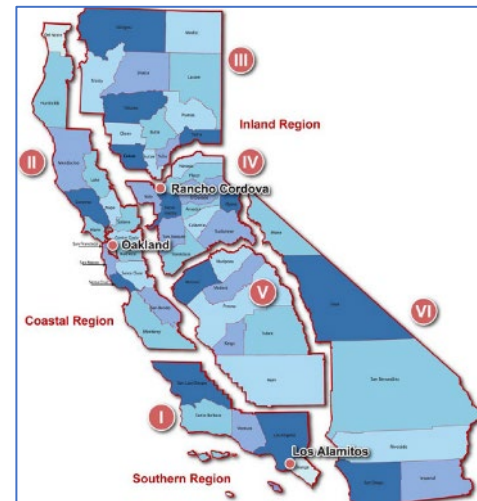
Unclassified//For Public Use



CALIFORNIA PEDIATRIC SURGE ANNEX GOALS

Right Patient, Right EMS Resource, Right Destination

- Leverage & integrate CA state & regional pediatric medical surge plans with coalitions, patient movement plans; coordinate ESF8
- Ensure best utilization of region's pediatric resources;
- Maximize every asset at all levels of capabilities for all hospitals
- Recognize coordinated & integrated response requires state ICS
- Strive to equitably maximize # of children receiving appropriate level of care — (at pediatric & adult hospitals)



Adapted from Richard Johnson, MD, Health Officer, Previous Alpine & Nevada County, CA

CALIFORNIA - ALAMEDA COUNTY EMERGENCY OPERATIONS CENTER (EOC) ACTIVATION & ON-GOING RESPONSE

EOC Children's SMEs
Effective Decisions

Coordinate with EMS
Procurement Center for
Pediatrics

Coordinate with critical care
pediatric consultant (to Regional
Healthcare Hubs, Hospital
HICS, **Transfer Centers**, &
Jurisdiction ICS) to engage in
decision-making



PEDIATRIC SURGE EXPANSION MODELS

PANDEMIC – 3Cs OPTIONS

Contingency

- Institutional level loading: direct patient transports to like institutions with remaining capacity consistent with EMTALA requirements
- Upstaffing with licensed outside support (travelers, per diem); expansion of scope of practice
- Compare current staffing contingencies at hospitals within area to ensure consistent level of care provided as possible
- Activate telemedicine & outpatient resources to support acute care needs

	Conventional	★ Contingency	Crisis
Space	Usual patient care spaces maximized	Patient care areas re-purposed (PACU, monitored units for ICU-level care)	Non-traditional areas used for critical care or facility damage does not permit usual critical care
Staff	Additional staff called in as needed	Staff extension (supervision of larger number of patients, changes in responsibilities, documentation, etc')	Insufficient ICU trained staff available/unable to care for volume of patients, care team model required & expanded scope
Supplies	Cached/on-hand supplies	Conservation, adaptation and substitution of supplies with selected re-use of supplies when safe	Critical supplies lacking, possible allocation/reallocation or lifesaving resources
Standard of care	Usual care	★ Minimal impact on usual patient care practices	Not consistent with usual standards of care (Mass Critical Care)
ICU expansion goal	X 1.2 usual capacity (20%)	★ X 2 usual capacity (100%)	X 3 usual capacity (200%)

increasing

Unclassified//For Public Use

Normal

Operating Conditions

ASPR
ADVANCED SURVIVAL PROGRAM
HEALTHCARE EMERGENCY PREPAREDNESS
INFORMATION CENTER

TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS
INFORMATION CENTER

Extreme

CALIFORNIA ALAMEDA COUNTY MEDICAL SURGE PROPOSED EMS INTERVENTIONS CRITICAL CARE EXPANSION MODELS — OPTIONS

1. Hospitals increase pediatric beds by 5% above total licensed beds
2. Hospitals with ICU & PICU double numbers of staffed beds
3. Hospitals take 5 additional patients in their ICU & PICU
4. Hospitals increase bed capacity by 10%–20% above licensed beds



<https://www.canva.com/>

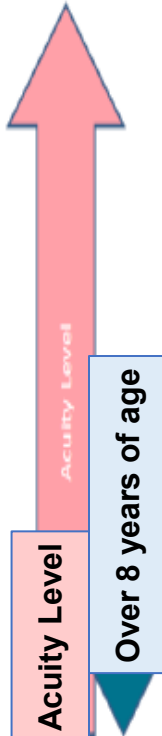
Consider criteria for pediatrics that define children at greatest need for pediatric specialty care (i.e., complex congenital conditions, children with special needs, neonates) with Pediatric advisors

ALAMEDA COUNTY MEDICAL SURGE PLAN

CRITICAL CARE EXPANSION MODELS — OPTIONS

EMS Intervention

Pediatric Surge
Bed Preservation
Model

	HOSPITAL CAPABILITY (BASED ON LICENSED BEDS)	DESCRIPTION
	CRITICAL CARE FOR PEDIATRICS	
	- PICU (UCSF Benioff Children's Hospital; Kaiser Permanente Oakland)	PEDIATRIC PICU
	- NICU	NICU
	- ICU	ICU
	- TRAUMA CENTERS	ADULT & PEDIATRIC TRAUMA CENTERS
	GENERAL MEDICAL/SURG CARE FOR PEDIATRICS	
	- GENERAL PEDIATRIC BEDS	PEDIATRIC ACUTE BEDS
	- GENERAL MED/SURG BEDS; NO LICENSED PEDIATRIC BEDS	
	NO INPATIENT IN-PATIENT PEDIATRIC BEDS	
	- NO PEDIATRIC CRITICAL CARE; NO PEDIATRIC BEDS - - -	
	- EMERGENCY ROOM ONLY	

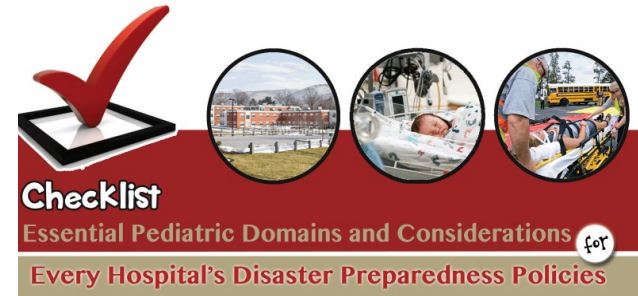
NATIONAL PEDIATRIC READINESS PROJECT

Promote National Quality Improvement (QI) Efforts - Hospitals

- **Disaster plan includes:**
 - **Pediatric surge capacity for injured & non-injured children;** considerations (e.g., patient tracking; reunification, & peds decontamination):
 - **Availability of medications, vaccines, equipment, supplies, & trained providers for children**
 - **Access to behavioral health resources for children**
 - Minimization of parent-child separation & methods for reuniting separated children with families
 - **All disaster drills include pediatric patients**

Alameda County CA recommends Hospital Pediatric Readiness **On-Site** Hospital Visits with Pediatric Specialty Centers & EMS – Focus Pediatric Surge & Simulations

<https://emscimprovement.center/domains/pediatric-readiness-project/readiness-toolkit/>





<https://www.canva.com/>

REGIONAL PEDIATRIC SURGE

– MOMENTUM INTO THE FUTURE

TRANSLATING EFFECTIVE PLANS

INTO OPERATIONAL REGIONAL ACTION

- **Implement annex components “day to day” with response partners**
- **Coordinate & integrate collective coalitions; test CONOPS across jurisdictions**
- **Join WRAP-EM & other Regional Alliances; Connect across states & coalitions**
- **Expectations beyond NPRP for pediatric surge readiness – Use site visits**
- **Use Operational “Just in Time” Tools (i.e., Activation, Expansion, Telehealth & Burn)**
- **Ensure plans realistic to address simultaneous complex catastrophic events**
- **COVID changing landscape & new baseline — Expand partners**
- **Campaign to inspire & strengthen regional surge pediatric emergency response**

Unclassified//For Public Use



DRIVING PEDIATRIC READINESS ACTION



CYNTHIA FRANKEL, RN, MN

- Surge Group Lead, WRAP-EM
- EMS for Children, ReddiNet, HPP LEMSA Liaison & EMS Coordinator
- Alameda County Emergency Medical Services, California
- (510) 295-9601; Cynthia.Frankel@acgov.org
- <http://ems.acgov.org/ClinicalProcedures/EMS-C.page?>

WRAP-EM <https://wrap-em.org/>

NATIONAL PEDIATRIC READINESS PROJECT (NPRP)

- <https://emscimprovement.center/projects/pediatricreadiness/>
– [Readiness Toolkit • EIC \(emscimprovement.center\)](#)

NATIONAL PEDIATRIC DISASTER COALITION

- <http://www.npdcoalition.org/resources/>

NATIONAL ADVISORY COMMITTEE ON CHILDREN & DISASTERS

- <https://www.phe.gov/Preparedness/legal/boards/naccd/Pages/default.aspx>



<https://www.canva.com/>

PEDIATRIC SURGE ANNEX



TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS
INFORMATION GATEWAY



Mary Massey, MA, BSN, PHN
Vice President Emergency Management
California Hospital Association



Unclassified//For Public Use



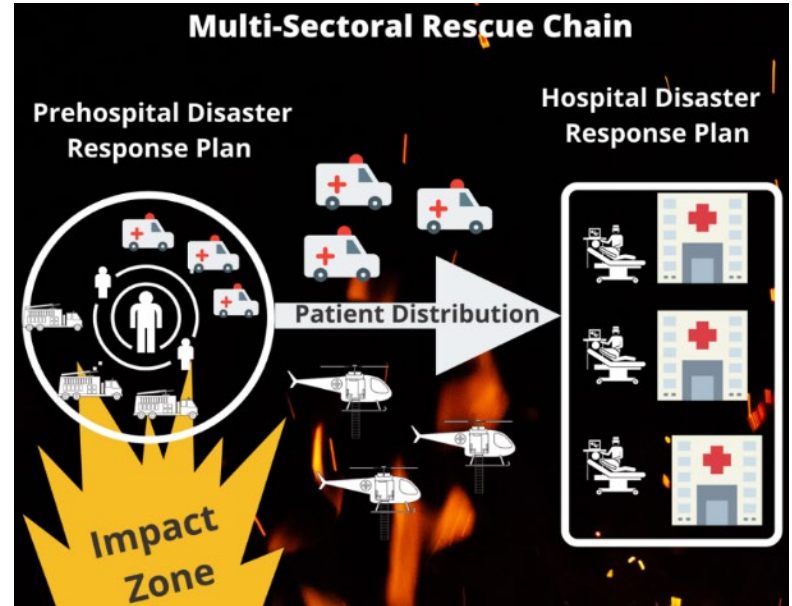
COVID-19 Adult Patient Movement Challenge

What if Pediatrics?

Which hospitals are available to take transfers from out of region?

PROBLEM:

- Limited non-impacted counties
 - ICU overwhelmed; not able to take secondary transfers
- Transfer Centers EEIs & Definitions
 - **Lack of Pediatric Standardization**
 - Pediatric Bed Data Reliability Issue
- *CA requires hospitals to accept transfer patients from areas with low ICU capacity as of 8/18/2021 –*
 - *Health Officer Surge Order Load Leveling*



Courtesy – Pat Frost, RN

HOW IS THIS DIFFERENT: Pediatric Surge Annex

Benefits CA State & Across Borders

Everyone has plans, but the annex & exercise template helps find gaps. Framework is adaptable for state and multiple jurisdiction plans across local, state, and regional borders

Annex components Operationalize, Inform SMEs, & Support System Entities

- Regional Medical Operations Coordination Cells (MOCCs)
- State/Regional Health Care Emergency Operations Plans and Pediatric Surge Plans
- State and Local Coalitions
- Other Government Non-government Health Partners

What Do Users Want in Surge Annex?

**EASY TO UNDERSTAND
AND USE** (this is an
emergency – no time
for in depth study)

How to increase surge
capacity in an
operationalized format

How to surge with
pediatric needs versus
adults

What do I have to do
different from daily
operations

What equipment,
supplies, personnel,
transportation
resources are needed

Clear and simply stated
format for all levels of
users – understood by
both sides

Written to coordinate
with Incident Command
System, but adjustable
to work with different
platforms and
capabilities

Give Us an Example

- Head on train crash in rural area with 158 pediatric patients and nearest pediatric facility is across state lines
 - Expectations of coordination/command centers, surging facilities
 - Do you know how to coordinate with partners?

This is where using the Pediatric Surge Annex can help with planning and response

SUMMARY

- **ASPR healthcare coalition annex can be adapted & modified** to strengthen pediatric surge capability with “best practice” resources, access to SMEs, & with operational **CONOPs**
- Evidence-based **essential elements & “best practices” strengthen healthcare coalition pediatric surge annex**
- Benefits of a regional approach in **leveraging partners collectively in development process** across coalitions to ensure a “living” plan & readiness before a catastrophic event
- Test & evolve the **ASPR Pediatric Surge exercise template** in “real time” & in exercises for catastrophic events

PEDIATRIC DISASTER SURGE PLANNING



TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS
INFORMATION GATEWAY



Michael Frogel, MD, FAAP

Senior Advisor ASPR WRAP-EM Pediatric Center of Excellence

Chairman National Pediatric Disaster Coalition

Co-Principal Investigator NYC Pediatric Disaster Coalition



Unclassified//For Public Use



Disclosures

- No Disclosures



Unclassified//For Public Use



Unclassified//For Public Use



Summary Pediatric Surge Planning Considerations

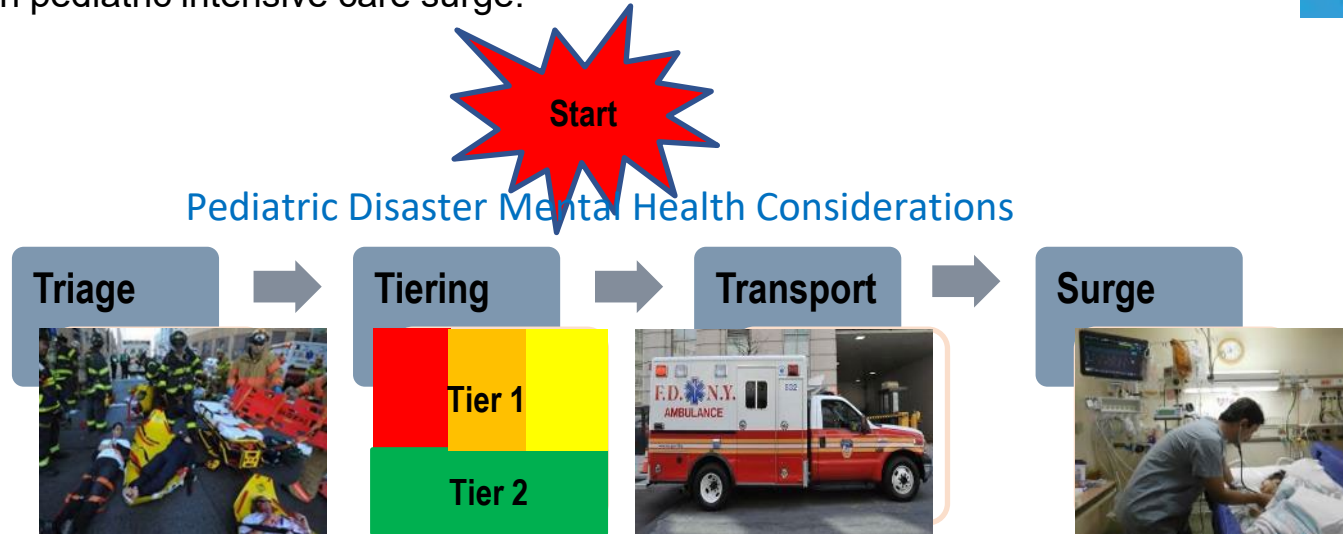
- Pre-event planning is necessary for surge, evacuation, shelter in place and supply chain for Hospitals/ED/NICU/PICU/OB/Newborn/General, Long Term Care facilities and community-based providers (OPD, Urgent Care etc.), schools, daycare
- Surge capability includes communications space, staff, equipment and supplies not just beds
- Plan from initial site incident through primary, secondary transport, surge and or evacuation
- For transport: tier facilities and utilize a pediatric care response team to prioritize patients
- Electronic shared situational awareness, web-based bed matching capabilities
- Utilize pediatric EEIs from transferring (evacuating) to receiving surge facility
- Match patient transport needs to available resources (e.g., TRAIN)

Summary Continued

- Consider supply chain including, pharmaceuticals/therapeutics, equipment (evacuation/vents)
- Provide SME experts for trauma/burns, poison control, infectious disease, chemical, radiation, explosives, patient prioritization (PIRT), etc.
- ESF8 real time participation (include above SME representation)
- ESF6, ESF7, interaction, non-medical impacts, food, shelter, clothing
- Mental health response hospital/community providers/school: Screen/Refer (e.g., Psystart), Treatment
- Utilize adult resources
- Education
- Training (e.g., Pediatric NICU evacuation)
- Health care disparities
- Exercises/ real world events/lessons learned-restart planning cycle

Pediatric Disaster Plan

The Pediatric Disaster Coalition and their collaborative planning team created a comprehensive Pediatric Disaster Plan from the onset of the event and first response through pediatric intensive care surge.



Planning and Transport Considerations

- Plan from initial site incident through primary, secondary transport, surge, and/or evacuation
- Establish triggers for response
- For transport: tier facilities and utilize a Pediatric Care Response Team to prioritize patients
- Electronic shared situational awareness, web-based bed matching capabilities
- Ongoing daily report of PICU bed availability and surge capability
- Utilize Pediatric EEIs from transferring (evacuating) to receiving (surge facility)
- Match patient transport needs to available resources (e.g., TRAIN)

Pediatric Intensivist Response Team (PIRT)

- Dr. Bruce Greenwald: PIRT Coordinating Physician

What is the Pediatric Intensivist Response Team (PIRT)?

- Provides prioritization triage consultation service to EMS for inter-facility transfer of patients and SME during disasters
- Volunteer Pediatric Intensivists
 - Serve under Medical Reserve Corp umbrella
 - All currently practice in PICUs

PIRT's Role in the Pediatric Disaster Plan

1. Upon activation of the Pediatric Disaster Plan, sending hospital will contact EMS to request a transfer
2. EMS will collect basic data and details of patient's injuries or illness
3. EMS will relay the request and information to PIRT Physician on call
4. PIRT Physician will triage/prioritize the patients based on acuity and need for specialized services, and relay this information to EMS
5. FDNY EMS will use this information as well as the list of available beds in Tiered Pediatric Disaster Admitting Destinations to determine inter-facility transfer destinations

Secondary Transport Details






6. EMS will assign Pediatric Disaster Ambulance Destination
7. Sending physician will then speak with receiving PDAD physician
8. EMS will utilize available resources to match patient needs to transport resources (e.g., TRAIN)
9. EMS may also use specialized pediatric transport services if available
10. EMS will be notified upon completion of transfer

Patient Information Shared Between FDNY & PIRT

- a. Patient identifier
- b. Patient age or size (infant, toddler, child, adolescent)
- c. Nature of injury/injuries
- d. Respiratory Support
- e. Medications
 - Chronic
 - Currently administered

- f. Vital signs
 - Blood Pressure ____/____
 - Heart Rate _____
 - Respiratory Rate _____
 - O2 Saturation (if available) _____
 - Glasgow Coma Scale _____
 - Pupils: ☐ fixed and dilated ☐ unequal ☐ equal and reactive
- g. Co-morbidities

Patient Information Shared between EMS & PIRT

- PIRT assigns priority and EMS assigns transport vehicle/destination
 -  RED – Immediate Transfer
 -  ORANGE – Urgent Transfer
 -  YELLOW – Delayed Transfer
 -  GREEN - Do not transfer; treat at current hospital unless there is a change in status
 -  BLACK – Expectant/Expired (PIRT physician may speak to sending hospital physician in these types of cases if necessary)
 - DEFFERED until deactivation

PIRT SME Activities

- Advisory Board to the Pediatric Disaster Coalition
- PDC, PIRT and Pediatric Critical Care Society provide SME to
 - DOHMH
 - ESF8

Pediatric Essential Elements for the Transport of Pediatric Patients Model Draft:

Utilization Guidance for the Collection and Reporting of the Pediatric Essential Elements of Information for Secondary Transport:

- EEs should be utilized based on your local Pediatric Disaster Plan for secondary transport of patients
- Transferring facility collects the **patient** related EEI data and transmits it to the transfer center and the receiving facility. The receiving facility provides the **facility related EEI** data to the transfer center and sending facility.
- If patient needs are potentially met. The sending physician will speak to the receiving physician, confirm the information and notify the transfer center to proceed.
- Transfer will take place if the patient care needs are matched by the facility available capabilities.
- The transfer center will decide on the type of transport need based on the transmitted EEs (e.g., TRAIN) and transfer the patient to the appropriate level of care at a facility designated in the EEs (e.g., Trauma, Burn Tiered facilities in your plan, neonatal Level 1-4 etc.).

Pediatric Essential Elements for the Transport of Pediatric Patients Model Draft Con't.

- If there are limited transport capabilities due to magnitude of the disaster the transfer center will contact the **Pediatric Intensivist Response Team (PIRT)** physician on call to prioritize the patients based on their EEIs (clinical severity, treatment, subspecialty and equipment needs).
- The transfer center will decide on the site and type of transport need based on the PIRT recommendations and EEIs.
- The collection of information should be done electronically preferably by email web-based platform or text that is accessible to both facilities and the transfer center.
- For citywide large scale events overall facility surge capacity based on the EEI current facility information would allow for best overall outcomes.
- In the event of a power or computer system failure a paper back up system should be utilized. If possible, the patient's complete medical record should accompany them to the receiving facility.

EEI Spreadsheet (Sending/Receiving Hospitals) Example

Sending hospital/contact number/requesting physician

Receiving Hospital contact number/receiving physician

- Type of Facility and/or Unit
- Trauma Center, (General Level 1, Level 2, Pediatric Level 1, 2
- Burn Center
- Pediatric Ambulance Destination (Tier 1, Tier 2
- Neonatal Unit Level 1-4 (Refer to Neonatal reference for description)
- *Newborn*
- *PICU*
- *PICU Vent*
- *Peds Med/Surgery/Telemetry*
- *Physical Rehab Peds*
- *Psychiatry Peds*

Surge Beds include capability to care for patient type including space staff equipment

Subspecialty Availability

Pediatric orthopedics ,Pediatric vascular surgery, Pediatric trauma surgery, Pediatric general surgery

Burns, Pediatric ophthalmology, Pediatric mental health psychiatry, Pediatric cardiothoracic Surgery

Pediatric neurology, Pediatric neurosurgery, Pediatric ENT, Re-Implant (Please advise If body part available, Properly maintained)

- Other (specify)
- **Specialized Equipment Availability**
- ECMO, Neonatal Ventilator, Inhaled Nitrous Oxygen (iNO), High Frequency Oscillating Ventilator, Berlin Heart (Ventricular Assist Device)
- Continuous Veno-Venous Hemofiltration, Incubator
- Other (please specify)

EEI Spreadsheet (Patient Information Example)

Parental consent for treatment
Accompanying Family Member
Primary diagnosis
Co-morbidities
Chronic Conditions
Current Medications
VS, Glasgow coma scale, 02
Saturation, ETCO2, Pupils

Burn: thermal, chemical, electrical, Depth, location If chest or extremity, circumferential? (potential for compartment syndrome/need for escharotomy)

Critical Imaging Findings

Critical Lab Findings

Treatment /Current Interventions

Type of Care by Unit Need

Subspecialty Need

Special Equipment Need (ECMO, Vent etc.)

Specialized Transport Need (TALS, TRAIN)

Supply Chain Considerations

- Pharmaceuticals /Therapeutics
 - Immediate vs. delayed availability based on HVA
 - Countermeasures vs. IVIG for MISC
- Equipment
 - Evacuation: Vertical/Horizontal, NICU, PICU, OB/Newborn
 - Respiratory: Oxygen, BiPAP, CPAP, Ventilators
 - Blood Supply
- Non-Medical
 - Food
 - Clothing
 - Shelter

SME Considerations

- General Pediatric SME
- Trauma
- Burns
- CBRN Explosions, Utilize Poison Control,
- Develop Just in Time Training
- Transport Patient Prioritization by Pediatric Intensive Care Response Team
- Specialized Mobile Response Teams

Pediatric Disaster Mental Health Considerations

- Mental Health Response Hospital/Community Providers/School
- Immediate vs. Long Term Response
- Psychological First Aid
- Screen (scene, shelters and transfer facilities, primary care providers, schools)
- Refer (e.g., Psystart)
- Treatment: Short vs. Long Term

Education and Training

- Education
 - PALS, APLS, Pediatric
- Training Examples
 - Expand PICU capabilities force multiplication
 - PFCCS Course, Crosstrain staff
 - Pediatric NICU Evacuation

Health Care Disparities Considerations

- Pediatrics: 25% of population and most vulnerable with special needs during disasters
- Poverty
- Lack of access or functional capability
- Long Term Care facilities
- Racial, ethnic
- Language barriers
- Lack of healthcare information
- Relationships

Exercise Considerations

- Exercises (integrate pediatrics into all exercises)
 - Tabletop
 - Functional (targeted)
 - Full scale
 - Real world events
- Include health care disparities in scenarios
- After Action Reports
- Lessons Learned
- Restart Planning Cycle

Planning is a Continuous Process

Consider Resiliency Building in Process



Exercise Description

Description: This exercise was a functional exercise (virtual) planned for a maximum of six hours for exercise play and Hot Wash activity. The exercise included 28 hospitals that care for pediatric patients in New York City and the following agencies; New York Fire Department (FDNY), New York City Emergency Management (NYCEM), the New York City Department of Health and Mental Hygiene (DOHMH), New York City Medical Reserve Corps (MRC) and the Pediatric Intensivist Response Team (PIRT). The exercise was designed to prepare New York City for a catastrophic pediatric event. The scope included hospital surge, communications, activation of the NYC Pediatric Disaster Plan and secondary transport.

Exercise Scenario

- **Scenario:** It is a Thursday morning, approximately 8AM, with spring like weather conditions. An explosion of unknown origin occurs on a school bus at a nearby school. Patients begin to arrive to your hospital that have been self-evacuated. You learn from FDNY that several ambulances are headed your way with patients of various acuity levels. Similar incidents have taken place throughout New York City.



Unclassified//For Public Use

28 Hospital Exercise Video

- https://youtu.be/1g1bGj-_Rb4

Key Findings from 28 Hospital Surge Exercise

Surge Beds/ Capacity/Capability

- Added 1105 Surge Beds (baseline pediatric inpatient unit beds 1039) – **double capacity**
- Added 254 PICU Surge Beds (baseline 224 beds) – **more than double capacity**
- 304 ED Critical Care Surge Beds
- 312 ED Non-Critical Care Surge Beds
- 203 OR Surge beds
- **268 Adult Medical ICU Surge Beds**
- **120 Additional Adult Surgical ICU Surge Beds**
- 342 Pediatric Ventilator capable surge beds
- NICU total surge beds available after rapid patient discharge 24/7

Key Findings from 28 Hospital Pediatric Surge Exercise

Communications:

- Over 70% of the participating hospitals utilized phone calls, emails, text messaging, and face-to-face discussions to communicate situational awareness
- Almost all hospitals were able to communicate with staff and to contact them about coming in during the surge event

Supplies:

- Over half (54%) of participating hospitals reported having gaps in their pediatric supplies during the exercise due to the influx of critical patients
- 6 hospitals reported not having a burn cart to deploy during a disaster

Key Findings from MSEL Question Responses (Cont.)

Staffing:

- Some hospitals had difficulty providing pediatric subspecialty services such as, Neurosurgery, Ear Nose and Throat (ENT), Orthopedics, Plastics, Vascular Surgery and Trauma Surgery
- 100% of Hospitals created Mental Health Response Teams for patients and Staff

Transfer:

- All hospitals were able to identify patients requiring secondary transport and to provide information on the transport form
- Only 39% of participating hospitals identified appropriate staff to accompany patients during FDNY secondary transport
- The Fire Department was able to send the Pediatric Intensive Care Review Team a list of patients for secondary transport and subsequently receive the PIRT's triage and prioritization patient list

Key Findings from MSEL Question Responses (Cont.)

Patient Tracking:

- 93% of hospitals were able to track patients during the event
- 70% of the participating hospitals utilized paper to track and register patients, approximately 50% also used electronic methods

Surge: Mental Health/Risk Communications

- 100% of hospitals established Family Information Service Centers for Reunification
- 100% of Hospitals created Mental Health Response Teams for patients and Staff
- 100% of Hospitals established an area for press briefings and a designated Public Information Officer

Lessons Learned

- Working directly with hospitals to create and implement pediatric specific surge/evacuation plans as part of overall preparedness improved surge and secondary transport capabilities.
- Conducting multiple group and individual exercise planning meetings yielded many valuable changes in hospital plans even before the exercise took place.
- Assessing the availability of sufficient pediatric subspecialty and intensive care staff for a surge of critically ill pediatric patients is necessary for good outcomes.
- Adult staff and surge capabilities should be incorporated into the pediatric surge response, especially at Tier-2 hospitals.
- Disaster mental health issues should be addressed for children, families and hospital staff with the provision of adequate staff and appropriate space.
- A Family Reunification and Information Service Center (FISC) should be part of Surge planning.

Lessons Learned

- Working directly with hospitals to create and implement pediatric specific surge/evacuation plans as part of overall preparedness improved surge and secondary transport capabilities.
- Conducting multiple group and individual exercise planning meetings yielded many valuable changes in hospital plans even before the exercise took place.
- Assessing the availability of sufficient pediatric subspecialty and intensive care staff for a surge of critically ill pediatric patients is necessary for good outcomes.
- Adult staff and surge capabilities should be incorporated into the pediatric surge response, especially at Tier-2 hospitals.
- Disaster mental health issues should be addressed for children, families and hospital staff with the provision of adequate staff and appropriate space.
- A Family Reunification and Information Service Center (FISC) should be part of Surge planning.

Response: Emergency Management Considerations

- ESF8 real time participation (include above SME representation as needed)
- ESF6, ESF7, interaction, Non-medical impacts, Food, Shelter, Clothing

Resiliency Building

- Essential pre-event to improve outcomes from disaster physical, psychosocial, disaster mental health impacts
- Should address special needs of the pediatric population in the overall context of disasters for children, their families and the overall population
- Should address health care disparities
- Should become part of overall and disaster mental health planning, response and recovery

Regional Pediatric Surge Planning Proposed Model

- Regional situational awareness collected from each state, bed availability, needs/resource availability
- Web based real time situational awareness, communications, bed matching
- Coordination of External Resources, ESF8/ESF6, ESF7, local, county, state to National (ASPR/FEMA/CDC, etc. input)
- Regional Incident Command Structure, control of asset across state lines
- Regional Resource Response Telemedicine, CBRNE/Poison Control, Response Teams, National Guard, DOD, mutual aid transport
- Regional Psystart/ mental health match needs/resources, local state, regional
- Regional Transport/ Train utilization match needs to resources
- Education, training, exercises within regional model that includes health care disparities and pediatric patients as represented in the population



Unclassified//For Public Use



Thank You for Participating!

WRAP-EM ASPR Center of Excellence
Special Thanks to
NYC Pediatric Disaster Coalition
National Pediatric Disaster Coalition

Michael Frogel MD FAAP
MikeFrogel@gmail.com