



- This presentation was given at the California Hospital Association 2010 Disaster Conference on September 22 and 23rd in Sacramento.
- The session was followed by a panel discussion of Contra Costa County Hospital Pediatric Champions working on our local surge efforts.
- A script for this slide-set is added for your information.
- Please share with interested parties.




Objective: Step-by-Step Pediatric Surge



- ✓ Designate/Empower Champions
- ✓ Risk Analysis: Understand what you are preparing for
- ✓ Gap Analysis: Assess where you are
- ✓ Establish A System of Pediatric Preparedness
- ✓ Integrate into Current Workflow
- ✓ Participate in Regional Surge Planning


2

- Our objective today is to help everyone bring back to their communities, robust strategies to jumpstart local preparedness efforts because solutions are absolutely within reach.
- There are 6 key steps.
- Today my colleagues and I would like to share our efforts implementing these solutions.



“Failing to Plan is Planning to Fail”

... Benjamin Franklin



Getting Started

“All emergency planning is local”

Dr. Jeffrey Upperman
CHLA National Disaster Center

3

- The good news is that guidance is not only there it is “overflowing”.



Surge Capacity

**“It is inevitable that all hospitals
in a **large-scale disaster**
involving pediatric patients will
be overwhelmed.”**

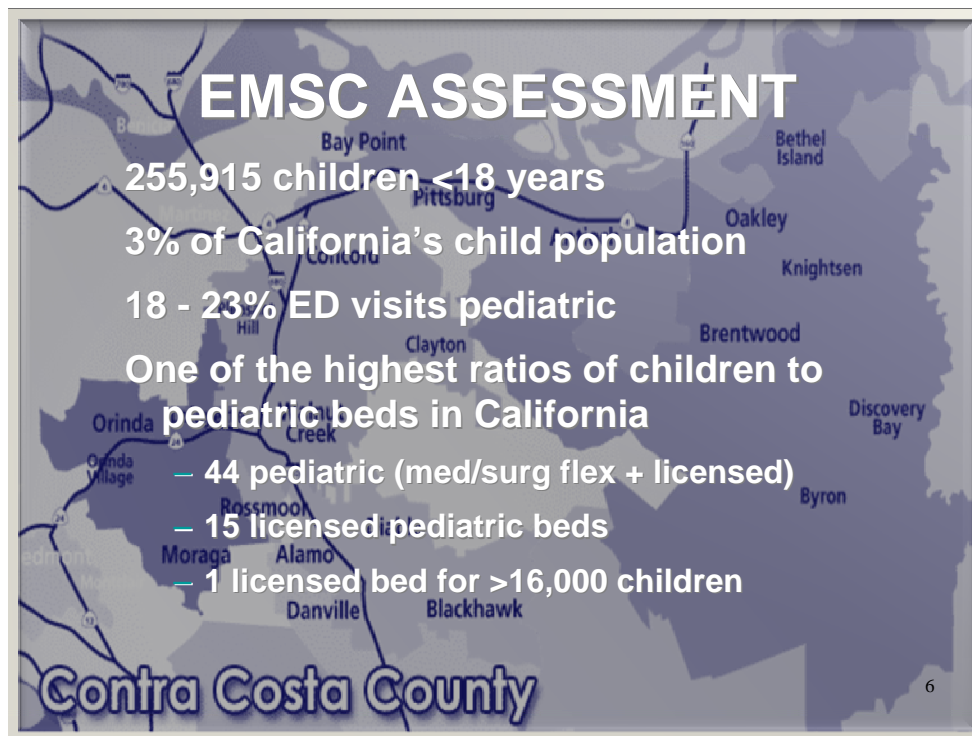
198- March 24, 2010

4

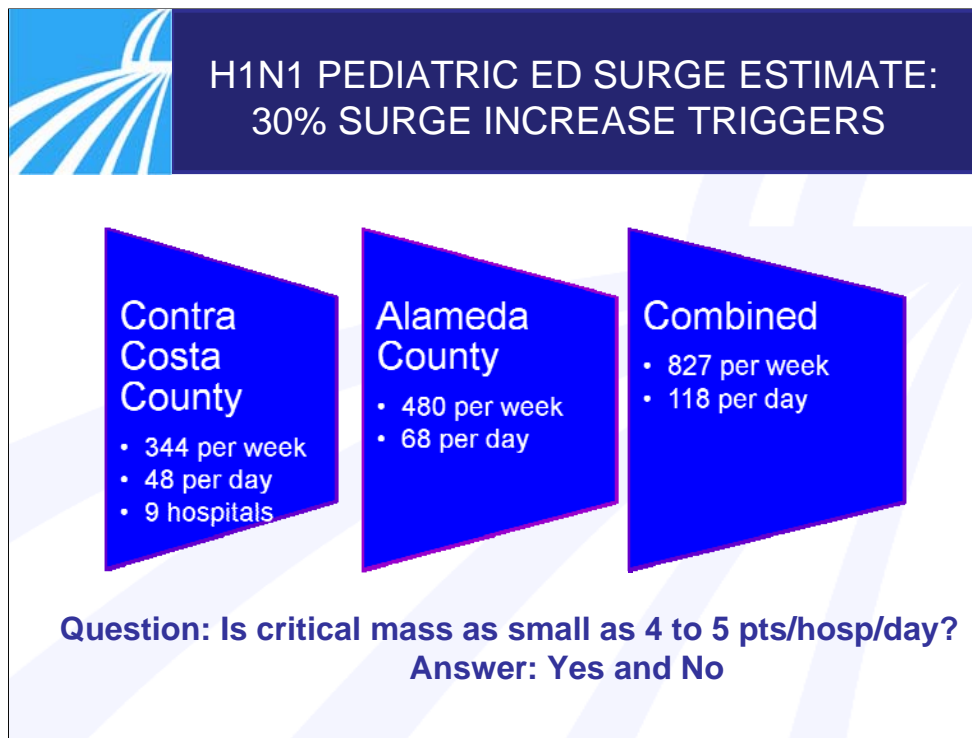
- Contra Costa County is similar to many communities in that, under present conditions, we could be overwhelmed in much less dire situations than the “large-scale disaster”.
- Being “overwhelmed” is just a bus accident, school fire, or mall shooting away.
- The California State document references that 15-20% of victims in mass casualty will be children however our collective national experience demonstrates up to 30% of children could be affected.



- And the sentinel event is more likely to occur than we may want to admit....
- During H1N1 Contra Costa was hit hard in the first wave and had one of the highest case rates and death rates in California.



- Understanding what we had in our own backyard was critical. This is Contra Costa:
- Prior to H1N1 the County EMS Agency conducted an update of our Emergency Services for Children (EMSC) program.
- To perform this evaluation we used the California State EMSC program criteria.
- It was this 2008 assessment that allowed us to identify vulnerabilities as H1N1 hit.
- The EMSC Program began as a national initiative in the 1990's to support uniform standards of care that emphasized early access to pediatric emergency, trauma and critical care.
- It helped communities assure that they have the infrastructure to provide appropriate pediatric emergency services.
- EMSC served as a vehicle to assure that our emergency departments and prehospital providers were all pediatric capable and met standards of care for equipment, competency and staff.



- Our neighboring county Alameda also had completed their EMSC survey which helped us determine the pandemic's joint impact.
- The two counties have a strong tradition of EMSC collaboration.
- We share a pediatric regional center located in Alameda county which also serves Marin, Solano and San Joaquin.
- During H1N1 that regional pediatric center was seeing Contra Costa's entire county ED surge volumes every week and at the height of the pandemic hit 50% ED surge capacity at regular intervals .
- Under normal conditions pediatrics makes up to 25% of our community hospital ED volume.
- Up to 90% of these visits are treat and release.
- During the surge all Contra Costa facilities were working with a 30% ED surge rate at regular intervals.
- For our two counties a 30% pediatric surge looked like this.
- We began to realize that our pediatric critical mass could be as small as 4-5 pts/hospital/day.
- Luckily the admission rates were small, length of stay was only 3 days and very few children required the highest level of care.




So how did we get here?



8


- It did not happen overnight...




<http://www.latimes.com/news/la-me-pediatric-hospital25-2009jan25,0,2113367.story>
From the Los Angeles Times

Pediatric care shrinks across California
More than 800 beds were lost from 1998 to 2007, with roughly half of those cuts in Los Angeles County.
By Kimi Yoshino
January 25, 2009

Pediatric care shrinks across California





Unintended Consequences

- In Jan 2009 this LA times article revealed that pediatric acute care bed capacity had been shrinking throughout the state and in many places there were literally no pediatric acute care beds.



PEDIATRIC EMERGENCY PREPAREDNESS “Do We Need to Hit the Reset Button”

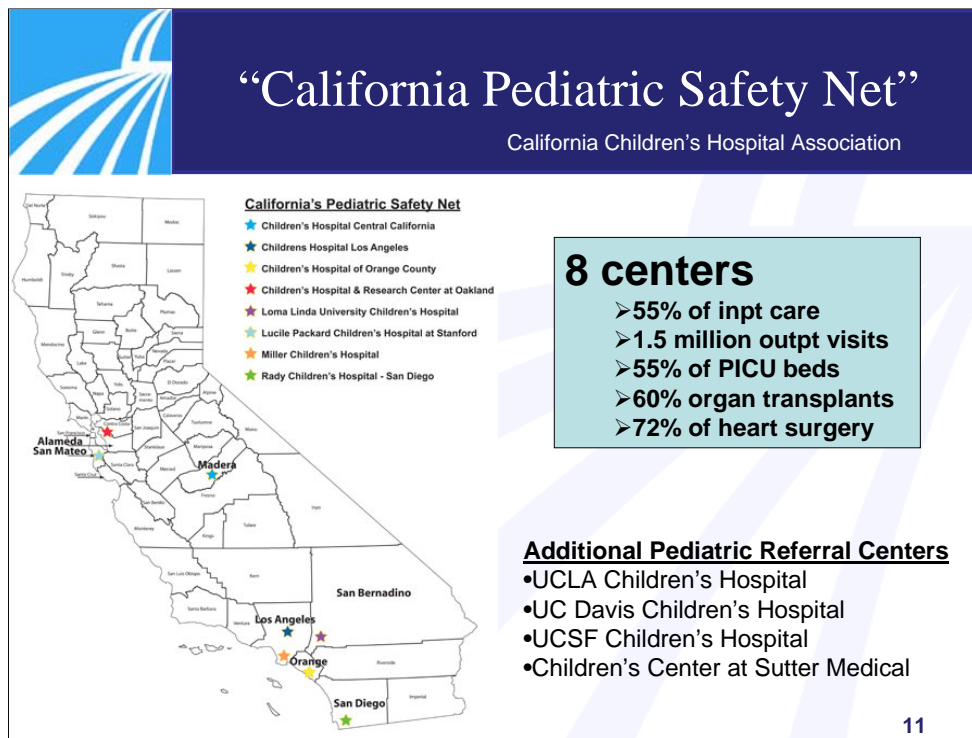
Dealing with Unintended Consequences



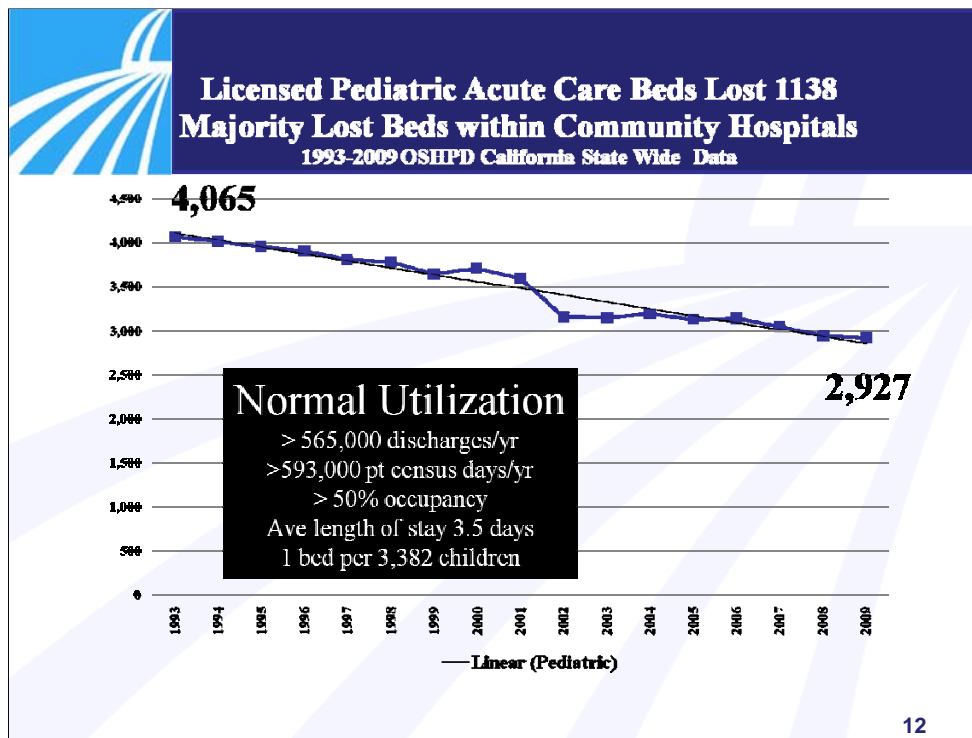
In promoting pediatric center care have we made children **“radioactive”** to our community hospitals?

Have we **“hyper-regionalized”** at the expense of a systematic degradation of inpatient pediatric competency?

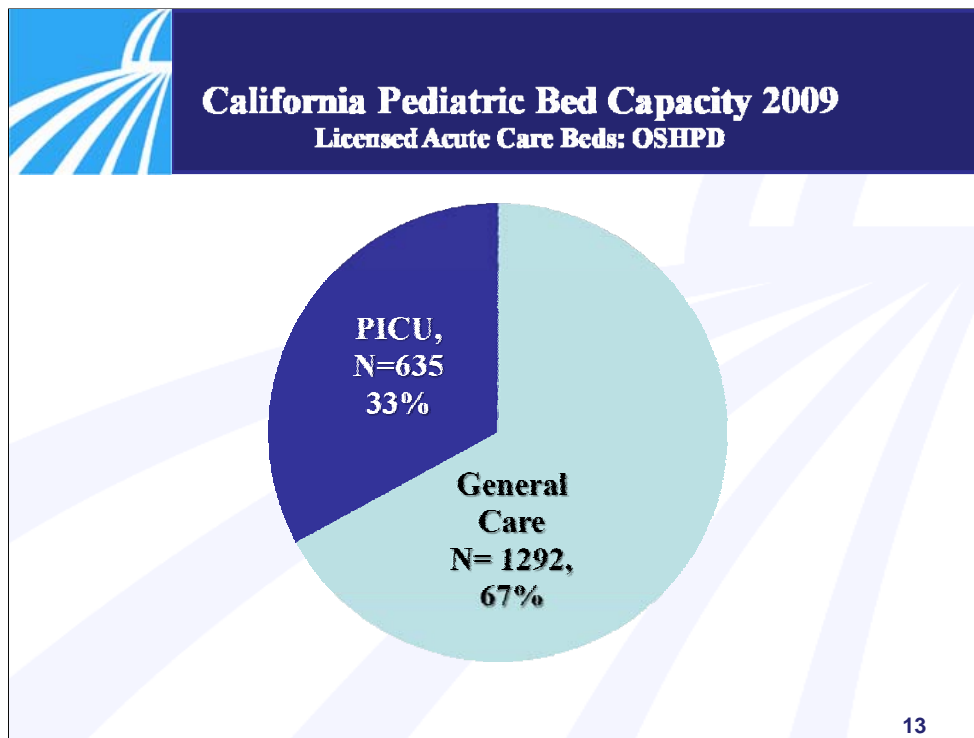
- The same EMSC efforts that had improved pediatric care had unintended consequences.
- Hospitals eliminated their community pediatric beds and with that the infrastructure for pediatric competency, staff and equipment.
- In our county 3 hospitals eliminated their pediatric units and with that 40% of the county pediatric acute care capacity disappeared in less than 5 years.



- In California 8 Key Regional Centers make up the majority of pediatric inpatient care in California.
- They provide >55% of pedi inpatient care.
- Have 55% of the PICU beds in the state.
- Their patient acuity is 25% higher than other hospitals that treat children.
- Receive 42% of pedi transfers in the state and have 10 times the number of neonate transfers.
- The California Children’s Hospital Association consists of 8 regional private children’s hospitals centers and 4 associate members.



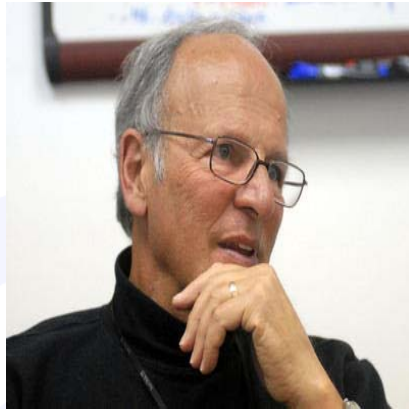
- Since 1993 California has lost >25% of the state's licensed pediatric bed capacity and the trend is continuing.



- Licensed pediatric beds, aka acute care pediatric beds, do not just represent just beds that serve general care pediatric patients.
- They include Pediatric ICU, Pediatric Cardiovascular ICU, Bone Marrow Transplant and Solid Organ Transplant Beds.
- This data was difficult to come by because California has no transparent, reliable system to track PICU beds at the present time.
- We need a mechanism to reliably capture this level of detail when we are “counting beds.”
- OSHPD data is also not always reliable and local data is frequently needed to validate what “really exists.”
- These are moving targets as regional pediatric centers continue to replace their general care beds with PICU/specialty care beds, e.g. UC Davis plans to expand their PICU, Stanford expanded it’s Pediatric Cardiovascular ICU and many other centers have traded their acute care pediatric beds for PICU beds or equivalents e.g. BMT, organ transplant units etc. UCSF is building a new maternal child center to replace pediatric services at their Moffitt Long facility and with that will be expanding their critical care bed capacity.
- Pediatric regional center’s are already moving to become giant ICU’s and there is a need for other hospitals to preserve inpatient general care pediatric units.



Dr. Bertram Lubin CEO Children's Hospital Oakland



3.24.10 Contra Costa Times Interview

80 million dollar loss

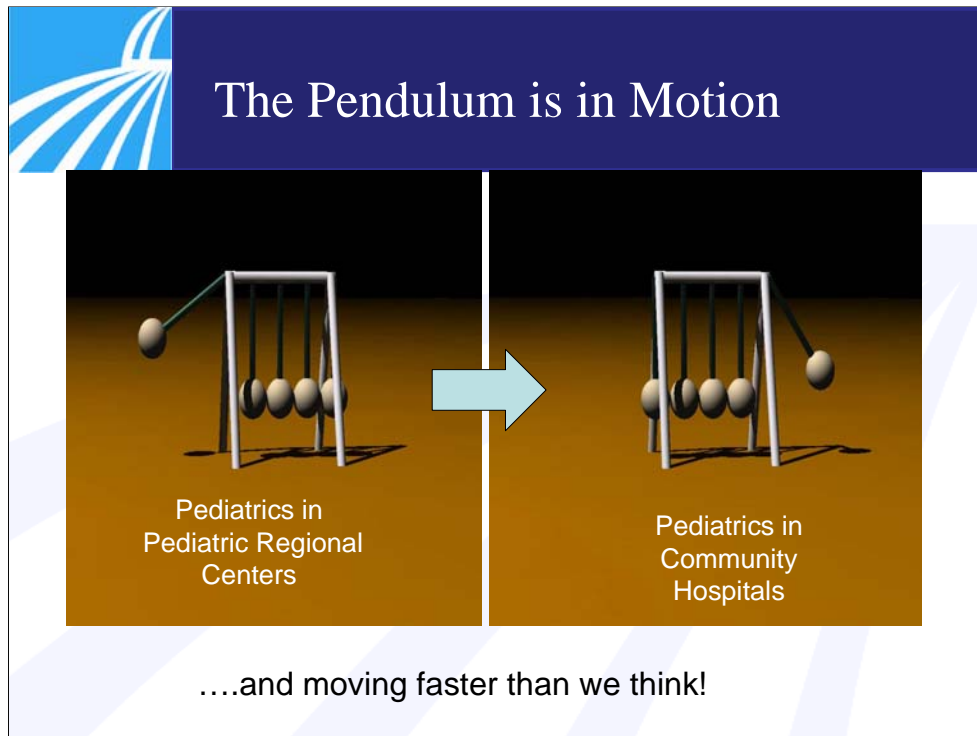
- Economy
- Low Reimbursement
- Rising Health Care Costs

**“Lack of Pediatric
beds at other East
Bay Hospitals”**

- Delivering pediatric care cost effectively is tough and some of our regional centers are fighting for survival.
- This is due to low reimbursement rates and the high cost of specialty center care.



- This is the status quo approach to pediatric/neonatal surge preparedness.
- Head in the sand....finger in the dike and pounding square pegs in round holes.....the answer.....NO!
- We need to bridge the gap between emergency department and inpatient pediatric preparedness.



- With shrinking pediatric regional general care beds there will be opportunities for community hospitals to distinguish themselves in the area of pediatrics with technology and competency.



Community Emergency Departments

“Most children continue to be cared for locally”



Nationally 80% of all children are seen in “non-pediatric” Emergency Departments

Emergency Departments

- 55% serve < 4000 children/year
- 17% serve > 10,000 children/year
- 53% admit children to their own hospital even though no separate pediatric ward



17

- Most children continue to be cared for locally.
- That should not be arbitrarily considered a bad thing.
- Current statistics show:
 - 37% of hospitals have a pediatric ward.
 - 10% have a PICU.
 - 2.5% admit children to adult ICU.
 - But 97.5% send children to other facilities for inpatient care.
- There is an “assumption” that pediatric regional center bed availability is always available when needed during normal operations.
- However when the system is stressed this pediatric capacity rapidly declines.



Surge Strategy: Start with Planning for the In-Between

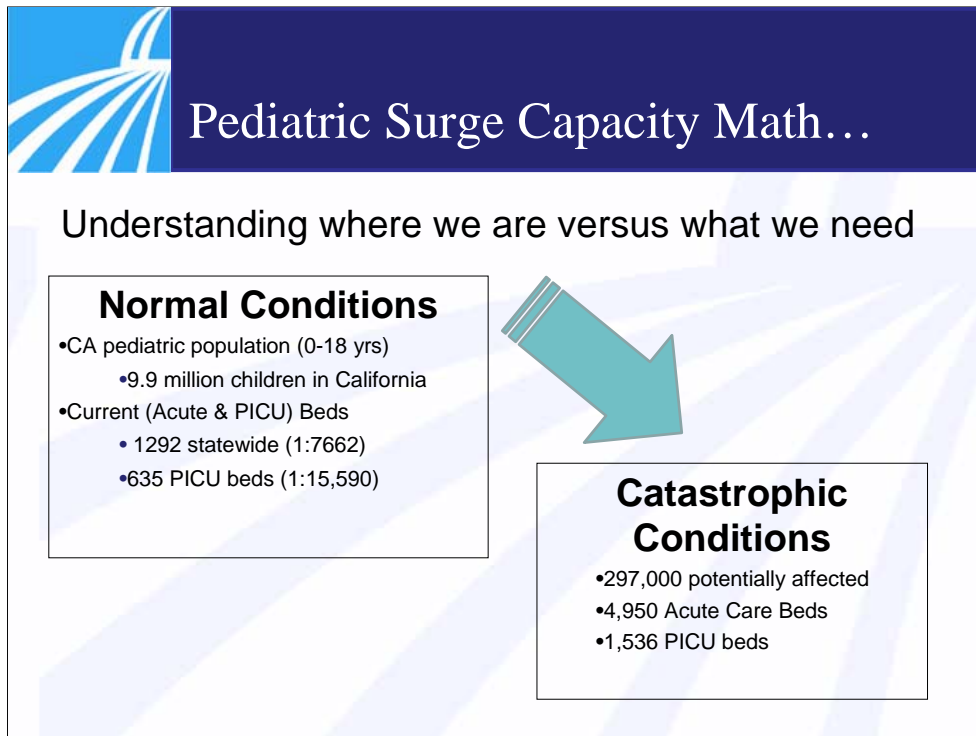
Daily Triage

- When abundant resources are available relative to patient demand
- Do the best for each individual
- Normal Standards of Care

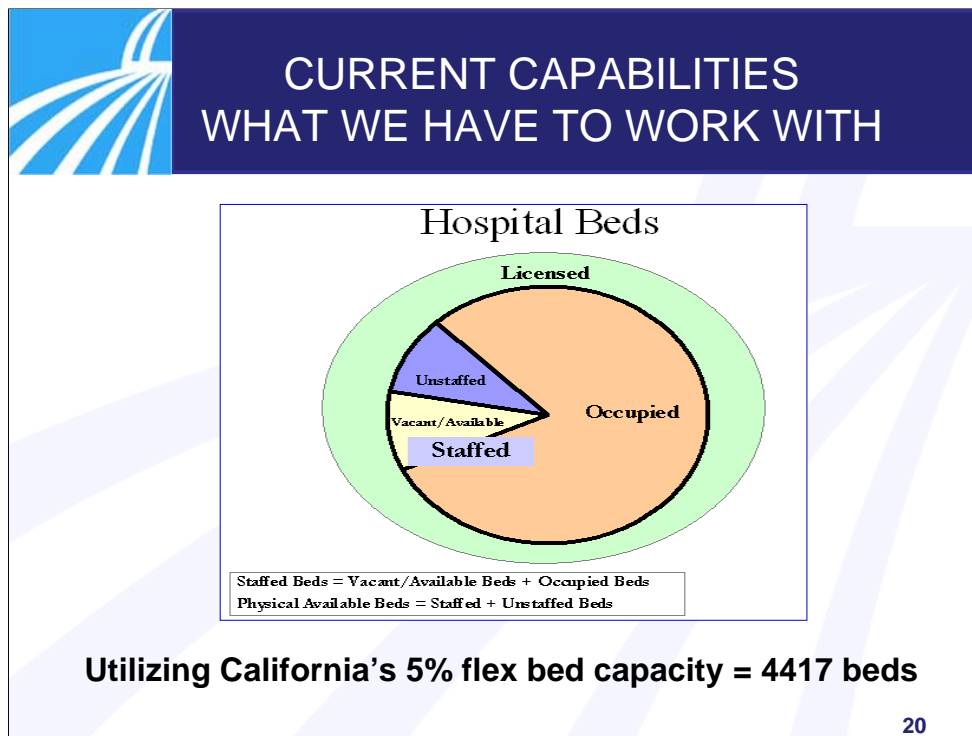
Disaster Triage

- When patient needs outstrip resources
- Greatest good for greatest number of people
- Altered Care Standards
- Recognizes that resuscitation attempts may be futile

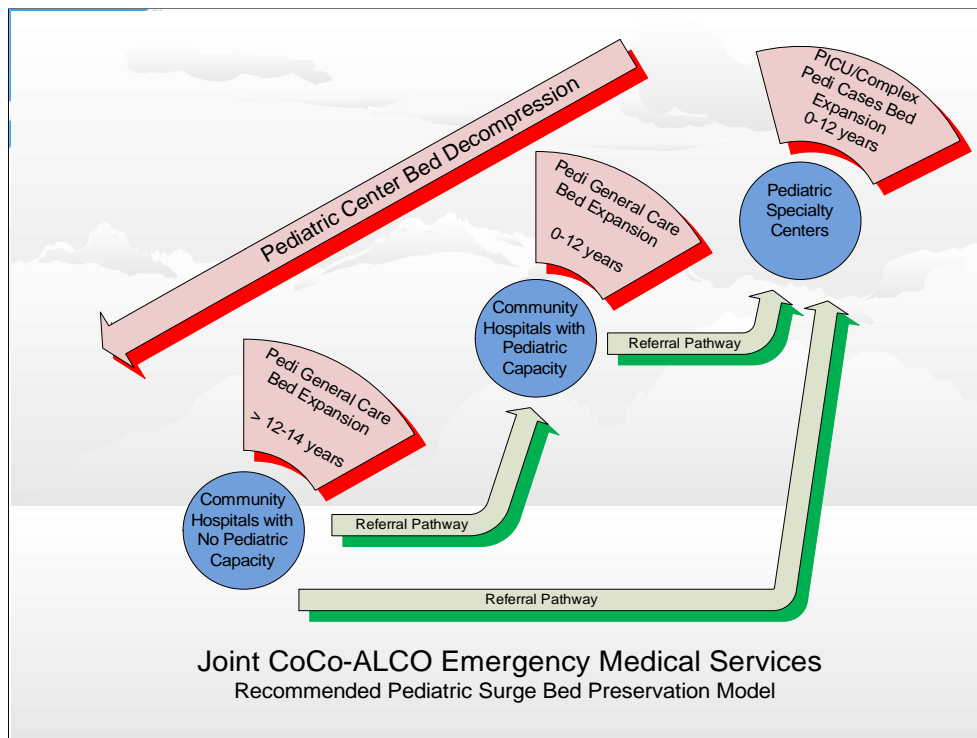
- Today there is an increasingly narrow margin between normal operations and disaster.
- This is especially true in our emergency departments.
- That is why for Contra Costa our approach has been to focus not on the catastrophic but on the “in between.”
- Pediatrics is a high-risk low-frequency population that with surge will become a high-risk high-frequency population.
- We need to prepare for the inevitability!



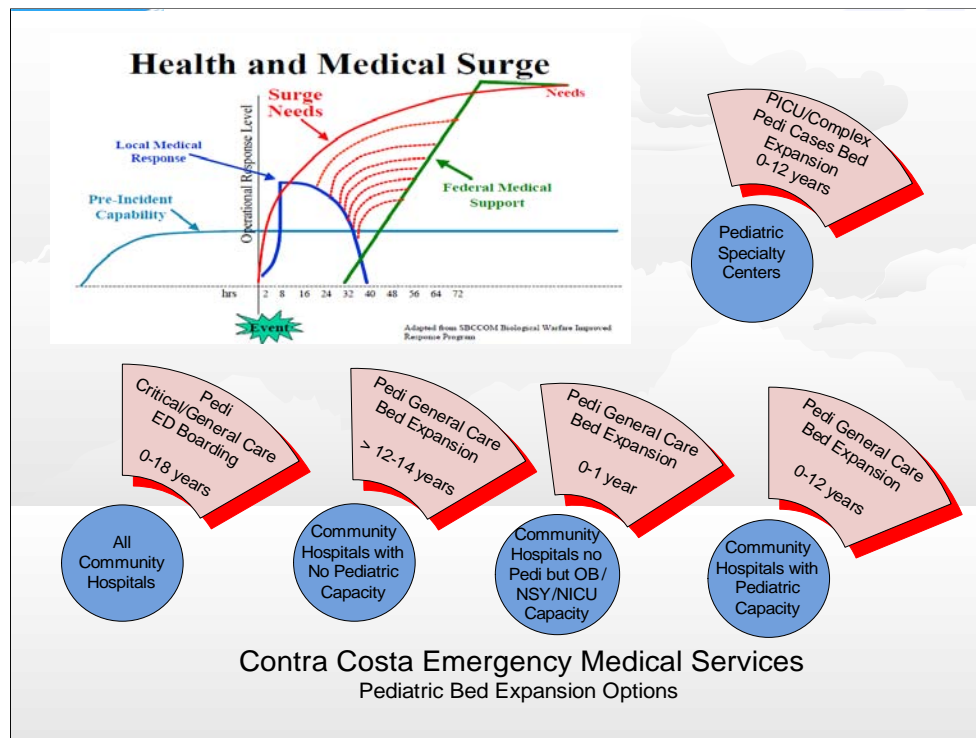
- So how many beds would we have to come up with in the catastrophic?
- It is important to articulate the numbers on a local, regional and state based so we understand what we need and determine if we have the capacity to “get there.”
- In a disaster up to 30% California’s child population could be affected worst case scenario or 297,000 children.
- FEMA expectations recommend 500 pediatric beds/1 million which is equivalent to 4,950 beds needed or an additional 2001 beds.
- The new CDC pandemic expectation suggest that a 300% increase in PICU beds which would be up to 1536 PICU beds.
- This is why we need to approach these issues by actively engaging community hospitals in these efforts.




- Our strategy is to recommend our hospitals to use their 5% flex capacity for pediatric surge preparedness.
- This provides a realistic goal to build infrastructure to support pediatrics in the event of medical surge without enormous cost.
- Licensing and Accreditation allows all hospitals to flex 5% in surge provided appropriate Title 22 requirements for equipment, space and competent workforce are in place.



- Above is the Contra Costa Alameda Surge Model that we are implementing as part of our pediatric and neonatal disaster preparedness efforts.
- It is designed to position regional centers to surge to become giant pediatric critical care centers which is consistent with many national guidelines.
- Stable pediatric patients could be retained in the community or safely transferred back to their local community hospitals where they could be successfully cared for.
- Our expectations are that all facilities would participate choosing from a cafeteria plan of ways to provide inpatient pediatric bed capacity.


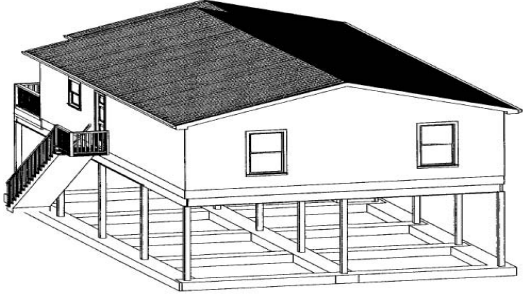


- Options include the following:
- Please note that for this to work all emergency departments must meet EMSC national standards for equipment, space and competent staff.
- ED Boarding: This is the most common reported mechanism that hospitals state they plan to use in event of surge in our community but may not be realistic to accommodate large numbers of children.
- Community Hospitals without pediatrics or well baby nursery: Could take children 12-18.
- Community Hospitals with Nursery, NICU could take older infants up to 3 years of age.
- Community Hospitals with pediatrics would take all ages and more medically complex patients due to their increased competency in this area.



Strategic Plan: Increase and Improve Day-to-Day Pediatric Readiness

A 'Blueprint' for Disaster Readiness



} All-hazard mass casualty event readiness

} Day-to-day emergency readiness

"The Elevated Hurricane Zone Housing Solution"

Slide from Steven Krug chair AAP disaster preparedness advisory council presentation...March 2010

23

- Our strategic plan is to increase and improve day-to-day pediatric readiness.
- Slide from Steven Krug chair AAP disaster preparedness advisory council....March 2010



....and face them head on!



24

- They are our children.



Contrary to reports...
They are not biohazards!



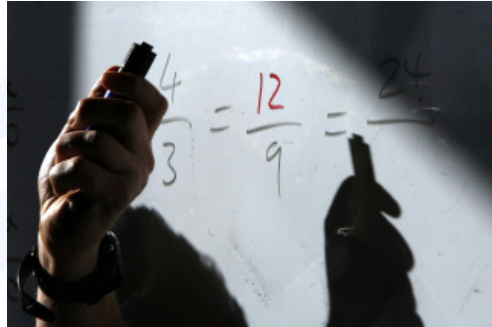
25

- Not biohazards!



There will always be barriers...

- Licensing and Accreditation
- Equipment
- Workforce
- Competency
- Fear
- \$\$\$\$



These problems have solutions within our control!

26

- Yes there will always be barriers.
- However.....these are solvable problems if we focus and collaborate.
- It means taking on a **lean forward** approach to reduce risk and consequences of choosing not to engage on this issue.
- The media optics of children being left behind is guaranteed to come back to haunt us if we fail to prepare for the in-between.

More Toolkits and Resources ...Than Ever Before

The image displays three distinct resource toolkits. The first, 'Pediatric Disaster Preparedness', is a yellow and green booklet with logos for HRSA and the Department of Health and Human Services. The second, 'Pediatric Disaster Resource and Training Center', is a blue card featuring a photo of a man in a uniform and contact information for the CHLADisasterCenter.org. The third, 'The Issues at Hand', is a green booklet with a photo of hands being held.

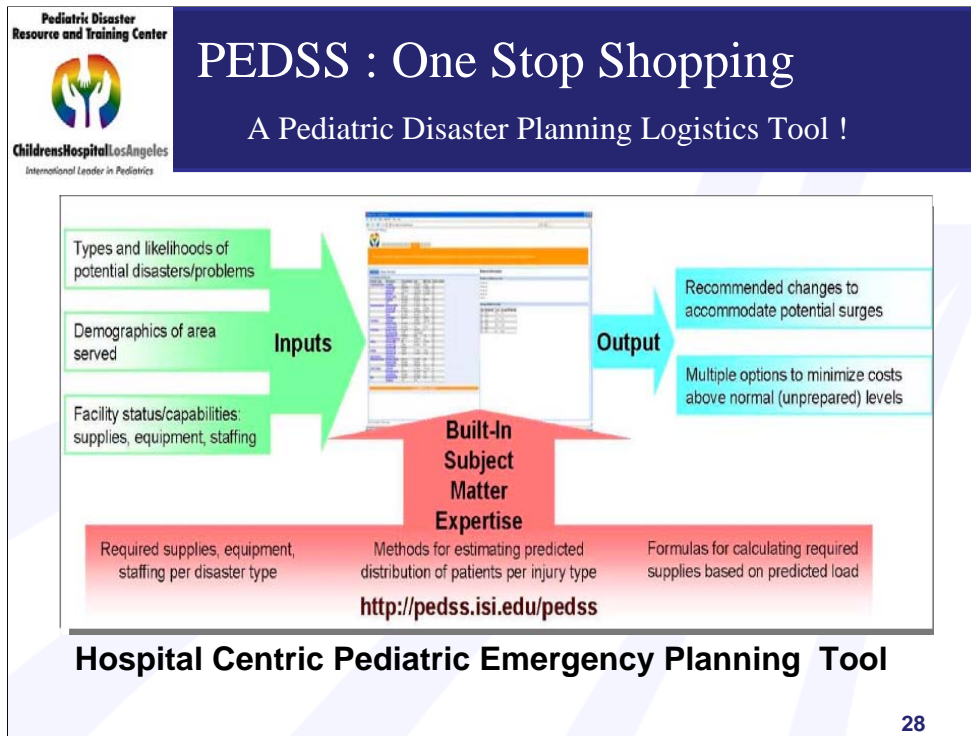
Pediatric Disaster Preparedness:
A Resource for Planning, Management and Provision of Out-of-Hospital Emergency Care
GEORGE FOLTIN, MD • MICHAEL TUNIK, MD
MARSHA TREIBER, MFS • ARTHUR R. COOPER, MD

Pediatric Disaster Resource and Training Center
Phone: 323-361-7607
Phone: 866-726-5163
Web: www.CHLADisasterCenter.org
Email: info@CHLADisasterCenter.org
Disaster Center Contact Information

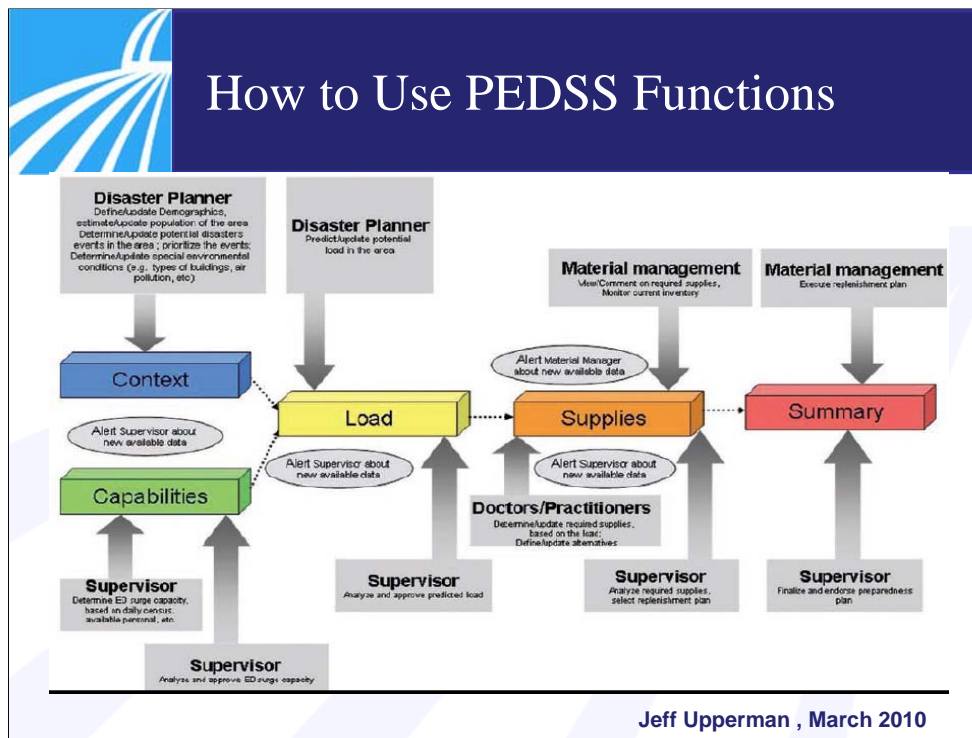
The Issues at Hand

27

- The guidance is ready to be implemented.
- We just have to understand what we have and use these resources to guide us in filling the gaps.
- There is a need for more implementation and to resist the urge to reinvent what is already vetted.
- Less plans more action!



- Contra Costa strongly recommends the use of the PEDSS Tool.
- This is a plug and play powerful disaster preparedness program....risk assessment, equipment, still evolving.



- Slide from Jeff Upperman,webnair March 2010



Plan to Treat Victims of All Ages

Pediatric population is a challenge

- Physiologically vulnerable
- Not small adults

Children may be targets

Pediatric triage psychologically difficult

Children will be disproportionately affected



**HOW DO WE RESPOND WITH
CONFIDENCE AND COMPETENCE?**

- We have been told over and over again to plan to treat victims of all ages.



Kids and Disasters

The Challenges

- May be unable to self identify
- Unreliable historians
- Impaired communication
- Supervision required to avoid harm
- Afraid of staff in PPE
- Requires staff to decontaminate
- Unable to legally consent for medical care
- Physiological and developmental differences increase vulnerabilities



31

- The guidance not only tells us what to expect but also what to do about it.
- Kids are normally a low frequency high risk population....but in a disaster they will become a high frequency high risk population.



Pediatric Equipment/MedsSize Matters

•The Right Tools for the Job

- Pharmaceuticals
- Compounding
- Lab (Micro-sampling)
- Respiratory Equipment
- Fluids and Nutrition
- Cribs/restraints/car seats

•Safety and Supervision



32

- Our workforce needs the right tools for the job..it is possible to solve that problem.
- In a recent study by Dr. Marianne Gaushe-Hill it was noted that pediatric magil forceps were the most common piece of missing emergency. equipment. Expect all of you to go back and make sure your hospitals have this equipment
- Safety and supervision is paramount in pediatrics but this is true for all our patients.
- Compounding capabilities in the pharmacy is an essential capability to support appropriate care of children.
- By enhancing safety practices for children there is a **halo affect** that benefits the organization by improving the safety culture.



Pediatric Handheld Decision Support

“There’s an App for That!”

Smartphone Technology


- ✓ 81% Clinicians
- ✓ 50% Use for Patient Care
- ✓ App Cost: \$2 - \$55



33

- Smart Phone technology puts critical resources in the palm of your hand including just in time training and video conferencing.
- According to the ICMCC (International Council on Medical and Care Compunetics) It is estimated that 81% of clinicians will have a smartphone by 2012.
- 50% of clinician use these devices for patient care.


Decision Support Software



PEMSoft®

**CLINICAL
PEDIATRIC
DECISION
SUPPORT
SOFTWARE**

The image shows a group of children and a doctor, and a close-up of a hand being examined with a stethoscope.



eBroselow

Click above to choose Tape Color

Home About Demo Contact Us

1-kg 2-kg 3-kg 4-kg 5-kg 6-kg 7-kg 8-kg 9-kg 10-kg 11-kg 12-kg 13-kg 14-kg 15-kg 16-kg 17-kg 18-kg 19-kg 20-kg

Prepositioning Guide

Infants 12 - 14 kg Automatic 12 - 14 kg SoftCollaps 12 - 14 kg

Inf-Infant 12 - 14 kg Automatic 12 - 14 kg Inf-Inf 12 - 14 kg

Crash 12 - 14 kg Power Plate 12 - 14 kg Semi-Rigid 12 - 14 kg

Non-Invasive 12 - 14 kg

Navigation

Introduction

- Injuries
- Anaphylaxis
- ICD
- Securus
- Intoxication
- Fluid & Blood Therapy
- Resuscitation Therapy
- Chemical Weapons
- DKA
- Burns
- Toxicology
- Supplemental Agents
- Obstetrics
- Obstetrical Procedure
- Chemical Weapons
- Resuscitation Guide
- Quick Reference
- Utilities
- Prints/Reports

Navigation

Home

If a Broselow Tape Color has been called in from EMS click the color above on the color bar and the appropriate kilogram tab will be changed to that color.

“Tools are only as good as the people who use them”

34

- 34

Embrace National Models for Pediatric Emergency Assessment

General Assessment

If at any point during the general assessment you identify a life-threatening problem, immediately start lifesaving actions and get help!

Appearance	TICLS: Tone, Interactivity, Consolability, Look/Gaze, Speech/Cry		
	All normal?	Any abnormal?	
Work of Breathing	Normal effort	Increased effort	Abnormal sounds
		Decreased effort	
Circulation	Normal skin color, no external bleeding	Abnormal skin color	External bleeding
Not life threatening → Go to primary assessment		Life threatening → Act!	

Pediatric Assessment

Assess-Categorize-Decide-Act (ACDA)

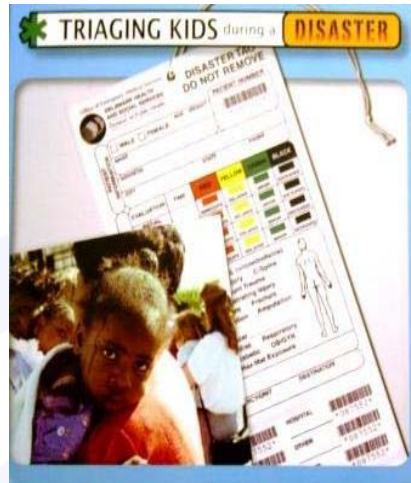
Primary Assessment

If at any point during the general assessment you identify a life-threatening problem, immediately start lifesaving actions and get help!

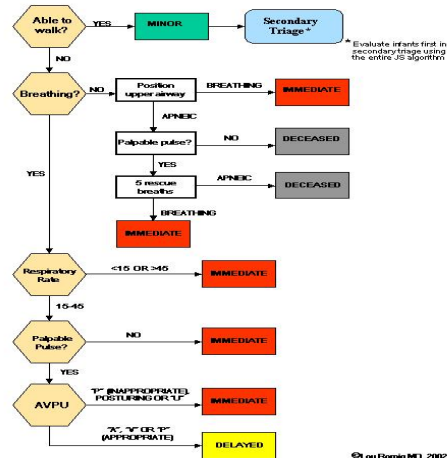
Airway	Clear		Maintainable		Not maintainable
Breathing	Respiratory Rate	Respiratory Effort	Air Movement	Airway and Breath Sounds	Pulse Oximetry
	Normal Fast Slow Apnea	Normal Nasal flaring Chest retractions Head bobbing Seesaw respirations	Normal Decreased	Airway Sounds: Stridor Barking cough Gurgling	Breath Sounds: Prolonged expiration Wheezing Crackles
Circulation	Heart Rate	Pulses		Capillary Refill Time	Skin Color, Temperature
	Normal Fast (tachycardia) Slow (bradycardia)	Peripheral: Normal Weak Absent	Central: Normal Weak Absent	Normal: 2 seconds or less Delayed: >2 seconds	Pale skin Mottling Cyanosis Warm skin Cool skin
Disability	AVPU Pediatric Response Scale			Pupil Size Reaction to Light	Blood Glucose
	Alert	Responds to Voice	Responds to Pain	Unresponsive	Normal Abnormal
Exposure	Temperature			Skin	
	Normal	High	Low	Rash	Trauma

- Most of all we need to be able to talk the same language when assessing the child presenting in crisis taught in PALS and PEARS American Heart Association pediatric emergency courses.
- Focuses on the early identification of the “pre-arrest state.”
- But did you know that this approach to assessment can be used in every patient encounter, built into normal workflow and improve outcome for your entire patient population!

JumpSTART Pediatric Triage



JumpSTART Pediatric MCI Triage®



- There is a pediatric triage tool but it is not perfect.
- Jumpstart is the most popular and well utilized pediatric triage tool developed by Dr. Lou Romig.
It is referenced in many state and national triage plans.
- Focuses on “injury” aka “trauma” pedi patients.
- To date there is no scientifically vetted tool for pediatric medical triage.



Sacco Triage Method (STM)

Think Sharp Sacco Score $R + P + M + / - A$

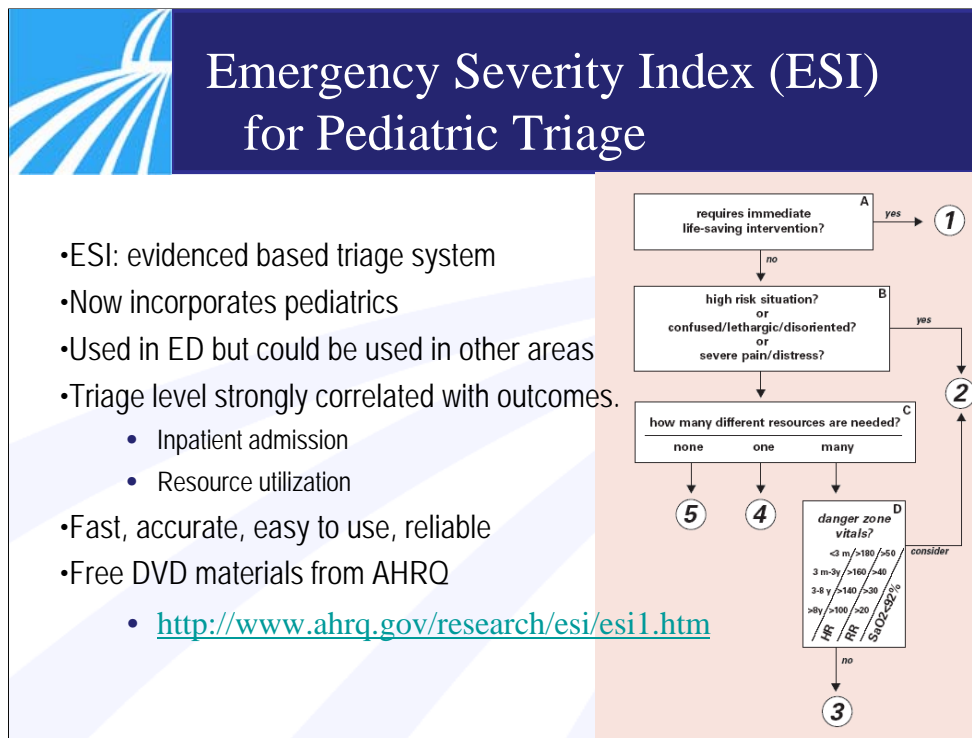
1 min (60 seconds)	0	1	2	3	4
R	0	1-9*	36+	25-35	10*-24
P	0	1-40	41-60*	121+	61*-120
M	No Response	Extension/Flexion	Withdraws	Localizes	Obeys Commands
A Adjustment:	Age: 0-7 +2	8-14 +1	15-54 0	55-74 -2	75+ -3

* - measure must be verified

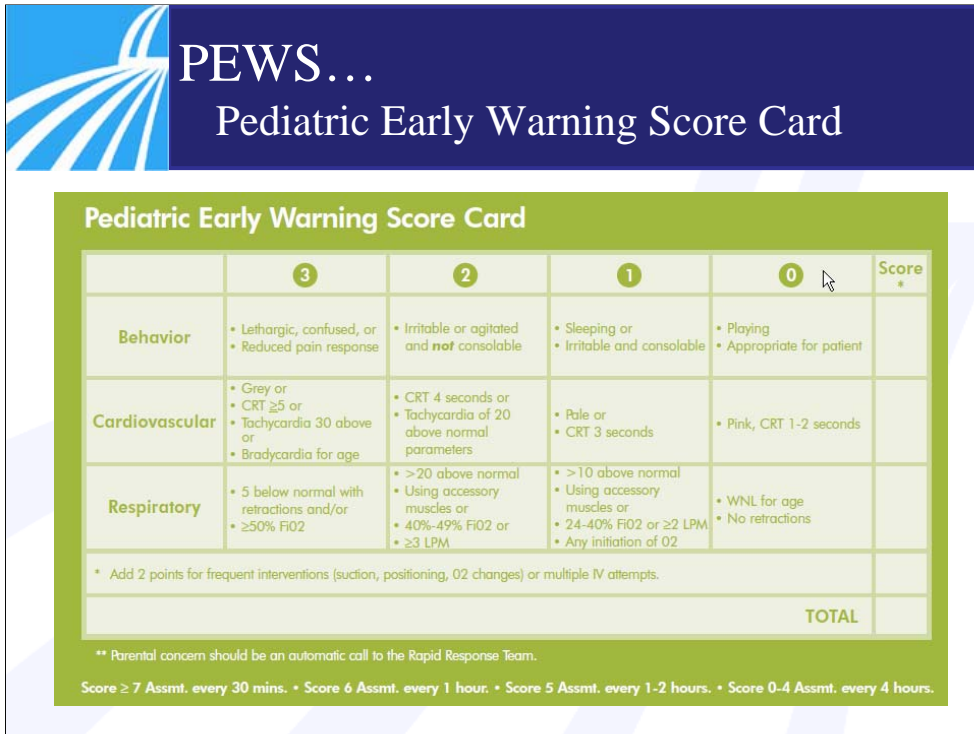
<http://www.sharpthinkers.com>

37

- So we need to be open to innovation when better tools appear.
- This is an example of another triage method that incorporates pediatrics rather than splitting the tool into an adult and pediatric version
- The Sacco Triage Method (STM) is an evidence based outcome driven triage and resource management system that maximizes expected survivors in consideration of the timing, availability and capability of transport and treatment resources.
- Based on a simple physiological score (i.e. respiratory rate, pulse, best motor response) that is computed routinely on every trauma patient and that is correlated to survival probability, triage decisions are made in response to the specific type and size of incident, and the resources that can be brought to bear on its resolution. STM explicitly prioritizes and tracks resource utilization and expected.
- Patient outcome during an incident, creates a triage and regional resource action plan, and provides real time situation and status reports.



- There are evidenced-based tools currently in use that are morphing to address all populations e.g. ESI new version includes pediatrics for the first time
- Incorporating pediatrics into current tools instead of thinking up a “special populations solution” that will be lost on the shelf or some other silo.
- This is what needs to happen more often.



PEWS...
Pediatric Early Warning Score Card

	3	2	1	0	Score *
Behavior	<ul style="list-style-type: none"> • Lethargic, confused, or • Reduced pain response 	<ul style="list-style-type: none"> • Irritable or agitated and not consolable 	<ul style="list-style-type: none"> • Sleeping or • Irritable and consolable 	<ul style="list-style-type: none"> • Playing • Appropriate for patient 	
Cardiovascular	<ul style="list-style-type: none"> • Grey or • CRT ≥ 5 or • Tachycardia 30 above or • Bradycardia for age 	<ul style="list-style-type: none"> • CRT 4 seconds or • Tachycardia of 20 above normal parameters 	<ul style="list-style-type: none"> • Pale or • CRT 3 seconds 	<ul style="list-style-type: none"> • Pink, CRT 1-2 seconds 	
Respiratory	<ul style="list-style-type: none"> • 5 below normal with retractions and/or • $\geq 50\%$ FI_{O_2} 	<ul style="list-style-type: none"> • >20 above normal • Using accessory muscles or • $40\%-49\%$ FI_{O_2} or • ≥ 3 LPM 	<ul style="list-style-type: none"> • >10 above normal • Using accessory muscles or • $24-40\%$ FI_{O_2} or ≥ 2 LPM • Any initiation of O_2 	<ul style="list-style-type: none"> • WNL for age • No retractions 	
* Add 2 points for frequent interventions (suction, positioning, O_2 changes) or multiple IV attempts.					
TOTAL					

** Parental concern should be an automatic call to the Rapid Response Team.

Score ≥ 7 Assmt. every 30 mins. • Score 6 Assmt. every 1 hour. • Score 5 Assmt. every 1-2 hours. • Score 0-4 Assmt. every 4 hours.

- Another outstanding IHI evidenced based tool that increases the competency and reliability of staff to identify children at risk for deterioration.
- Used along with the ACDA (Assess, Categorize, Decide, Act), model of pediatric emergency assessment it helps articulate clear triggers for both staff and physicians when the patient condition is confusing.
- This gets everyone on the same page using consistent and sustainable criteria.
- We recommend this tool to be implemented in any environment sick children may be seen.

Adopt an Off-The-Shelf Curriculum!

40

- Outstanding curriculums exist and are available including free online products that could be utilized to develop just in time training and emergency preparedness core curriculum.
- Encourage your local experts to identify a “core curriculum” that fits your needs and then train consistently with those materials.

American Academy of Pediatrics

Children & Disasters

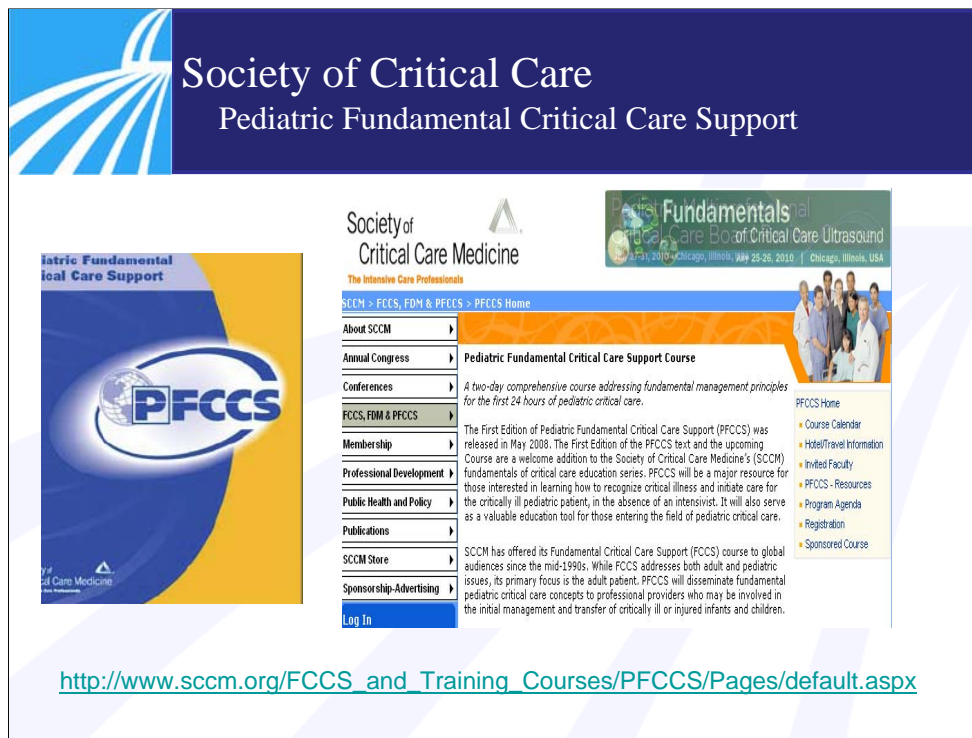


Disaster preparedness to meet children's needs

<http://www.aap.org/disasters/peds.cfm>

41


- AAP has been very active in developing material that support leadership in pediatric competency for both physicians and other health providers.
- This program trains pediatric leaders in the management of disaster relief, care, and rescue for children.
- All 9 modules are available online.



The screenshot displays the Society of Critical Care Medicine (SCCM) website. At the top, the SCCM logo and name are visible. Below this, the 'Pediatric Fundamental Critical Care Support' section is highlighted. The main content area features a sidebar with navigation links such as 'About SCCM', 'Annual Congress', 'Conferences', 'PFCCS, FDM & PFCCS', 'Membership', 'Professional Development', 'Public Health and Policy', 'Publications', 'SCCM Store', and 'Sponsorship-Advertising'. The main text area provides details about the 'Pediatric Fundamental Critical Care Support Course', including its release date (May 2008) and its purpose as a two-day comprehensive course for pediatric critical care. A 'Log In' button is located at the bottom of the sidebar. On the right side, there is a 'PFCCS Home' section with links to 'Course Calendar', 'Hotel/Travel Information', 'Invited Faculty', 'PFCCS - Resources', 'Program Agenda', 'Registration', and 'Sponsored Course'.

http://www.sccm.org/FCCS_and_Training_Courses/PFCCS/Pages/default.aspx

- However curriculums that are expensive to implement and difficult to access are not sustainable and frequently underutilized.
- Although this curriculum directed at training physicians has been in place since 2008 it is only in a handful of places.
- There are no current pediatric faculty or sponsors in California as of Sept 2010.
- Saudia Arabia has implemented this program and California does not.



Learn ICU: Pediatric Online Course (PICU)

Learn ICU

Resident ICU - Pediatric Online Course (PICU) Non-Tracking

This webpage contains the PICU modules. This content is available for use without the need for registration. Please note the content found here does not allow for Program Director oversight, tracking of course work, or testing capabilities. PDF versions of the handouts are available by clicking on the zipped file link and downloading the desired file. PowerPoint versions of the lectures are available by clicking on the zipped file link and downloading the desired file.

- 1-Airway-Intubation
- 2-ABGs
- 3-Post-Op-Cardiovascular Physiology
- 4-Fluids-&-Electrolytes
- 5-Mechanical-Ventilation
- 6-Medical-Errors
- 7-Respiratory-Failure
- 8-Sedation-Analgesia-Relaxants
- 9-Shock
- 10-Cardiovascular-Medications
- 11-Arrhythmias
- 12-Cardiogenic-Shock
- 13-DIC
- 14-Extracorporeal-Life-Support
- 15-Pulmonary-Artery-Catheterization
- 16-Septic-Shock
- 17-Sickle-Cell
- 18-Single-Ventricular-Physiology
- 19-Thromboembolic-Disorders
- 20-Cardiopulmonary-Interactions
- 21-Nutrition
- 22-Hepatic-Failure
- 23-Diabetic-Ketoacidosis
- 24-Endocrine-Emergencies
- 25-Disaster&Terrorism
- 26-Office-Emergencies
- 27-Stabilization&Transport
- 28-Ethics
- 29-Coma
- 30-Status-Epilepticus

Learn ICU

Resident ICU - Pediatric Online Course (PICU) Non-Tracking

This webpage contains the PICU modules. This content is available for use without the need for registration. Please note the content found here does not allow for Program Director oversight, tracking of course work, or testing capabilities. PDF versions of the handouts are available by clicking on the zipped file link and downloading the desired file. PowerPoint versions of the lectures are available by clicking on the zipped file link and downloading the desired file.

http://www.learnicu.org/Clinical_Practice/Fundamentals/RICU/Pages/PICUModules.asp

- In contrast these are free online materials covering much of the same content.
- Zip files with outlines, power-points and audio accompanied slide presentations.
- Programs built to supplement residency programs but could and should be used for staff training at all levels.
- Evaluate, adapt and make it your own.

More Free Online Training



[http://uat.dcchildrens.com/ch
exwizarding/pediatricdisaste
rbtpprogram/index.html](http://uat.dcchildrens.com/ch/exwizarding/pediatricdisasterwbtpprogram/index.html)

↓



Children's

National Medical Center®

[http://hsc.unm.edu/emersed/
PED/education/onlineEd.shtm](http://hsc.unm.edu/emersed/PED/education/onlineEd.shtm)

↓

- Some of the best just in time training can be located here.
- University of New Mexico UNM Division of Pediatric Emergency Medicine EMSC Online Training Program.



MCHCOM.COM



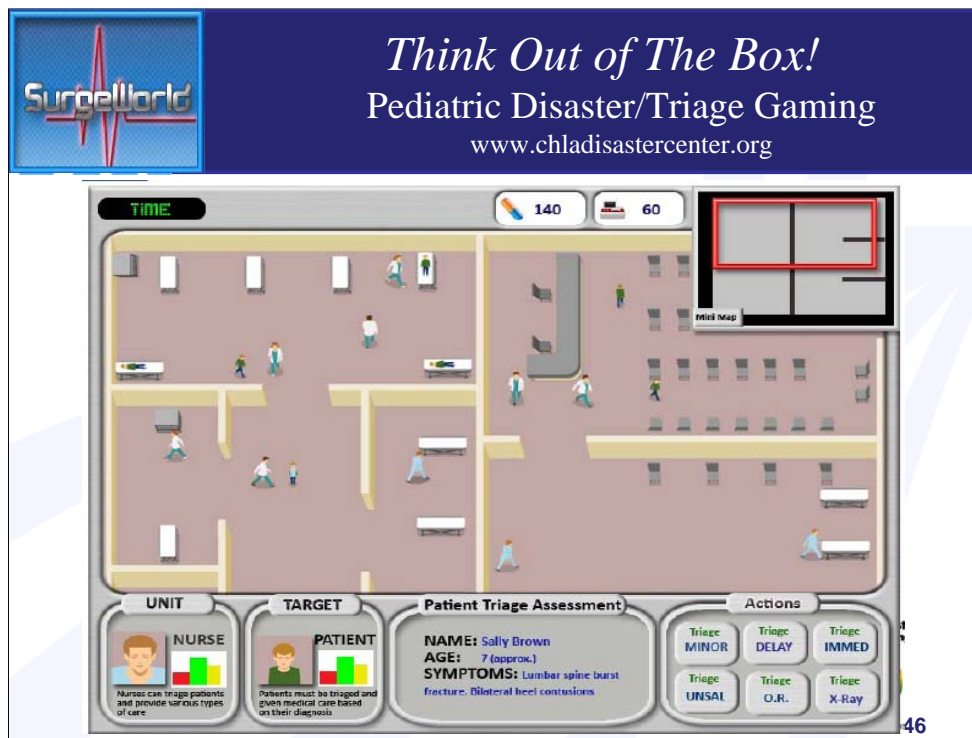
- No Cost
- Accessible 24/7
- Archived and Live Webcasts
- Expert Presentations
 - Tools
 - Resources
 - Powerpoints
 - MP3, Podcasts
 - Downloadable
- Varied Pediatric Topics



MCHCOM.COM Webcast
Communications from MCHB
Maternal and Child Health Bureau

45

- This website offers nationally renowned speakers on disaster preparedness sharing best practices and current approaches to pediatric emergency care.
- One of the best presentations is “State of All Hazards Preparedness for Children: Partnerships & Models for Merging Emergency Department & Disaster Preparedness Efforts.”



- Surge World, the remarkable CHLA resource is an example of the innovative gaming strategies being developed.
- There is nothing wrong with making disaster preparedness fun.
- In fact anything we can do to make pediatrics and neonatal care “less scary” will help build confidence and a “can do” mentality.



- There are literally hundreds of untapped resources online.....with more coming everyday.
- We recommend everyone join the new FEMA website called Lesson's Learned Information Sharing to keep up to date with what is new in all areas of disaster preparedness including pediatrics and neonates.



- The real solutions require collaboration and communication and a regional approach.
- Pediatric and neonatal assets are regional assets and need to be dealt with as such.
- Community hospitals and pediatric centers are just not talking to each other enough....if we were we could come up with solutions.
- Without effective communication we will not be able to effectively respond.



Neonatal Preparedness

Part of the Solution for Pediatric Preparedness



49

- Neonatology has had a strong tradition of regionalization under normal conditions which pediatrics desperately needs.
- That is why our efforts are in collaborating with colleagues in the Northern California Perinatal Transport Network and Illinois EMS Children.
- One of the clear advantages to partnering these groups is that they have a “regional mentality.”
- NICUs’ and their highly trained personnel can also provide resources and care for critically ill infants as well as consultation and support.



Telemedicine/Telehealth The ESCAPE Project



UC Davis

***“Enhanced
Surge Capacity
and Partnership
Effort”***

50

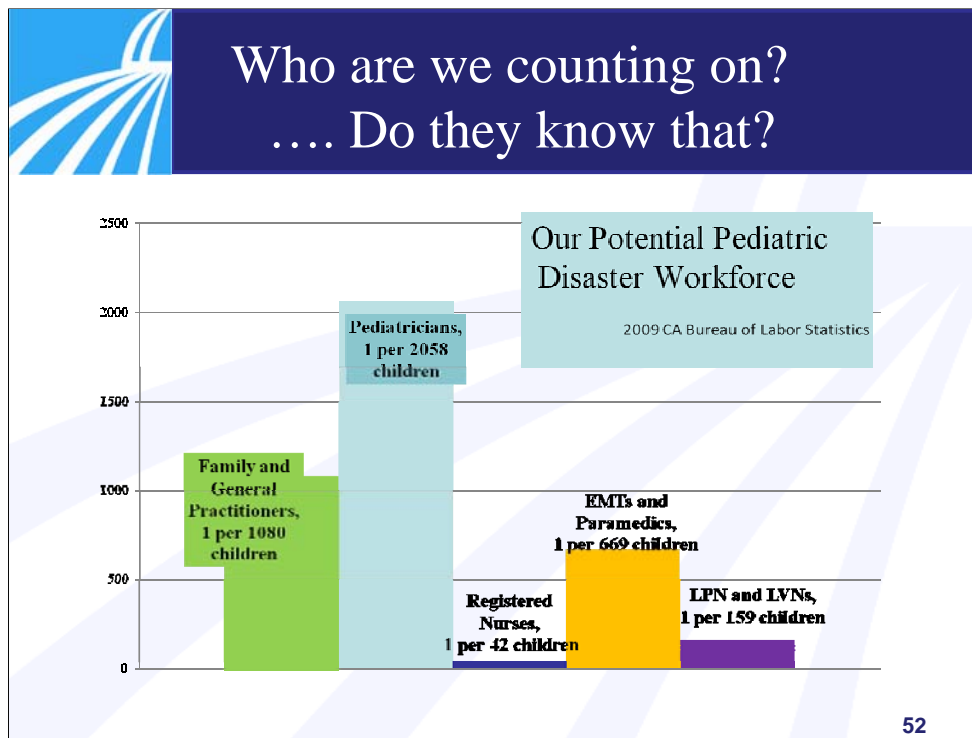
- Telehealth must be integrated into a comprehensive plan to support pediatric and neonatal preparedness.
- ESCAPE has partnered with several different sites including Critical Access Hospitals to implement the bedside care standards for telehealth in the pediatric and newborn population.
- Through telemedicine, pediatric and neonatal standards of care can uniformly applied during a surge and crisis conditions.
- Has successfully established effective support to keep selected critically ill children in their community hospitals.
- NICU doctors caring for children up to 3 years of age and adult intensivists and pediatricians caring for children in remote consultation.

Pediatric Competency



Make a minimum workforce commitment of pediatric competency

- First hand hospital experience demonstrates over and over again that the hours spent by administration and medical staff in preparing and implementing pediatric and neonatal disaster standards and procedures at hospitals are well rewarded.
- Start by recruiting 5-10% of your staff to support the effort and then design opportunities to sustain the competency.



- We have a potential pediatric disaster workforce if we tap into them.
- “We are all disaster workers” but do all these providers know that?
- Total California has about 1 potential health care provider for every 30 children in California....if we empower them to act!
- Pediatricians will be in short supply....Non pediatric providers will be delivering most of the care.



ADULT PROVIDERS AND PEDIATRICS



I could never...

I would never...

I couldn't handle...

I can't imagine...

53

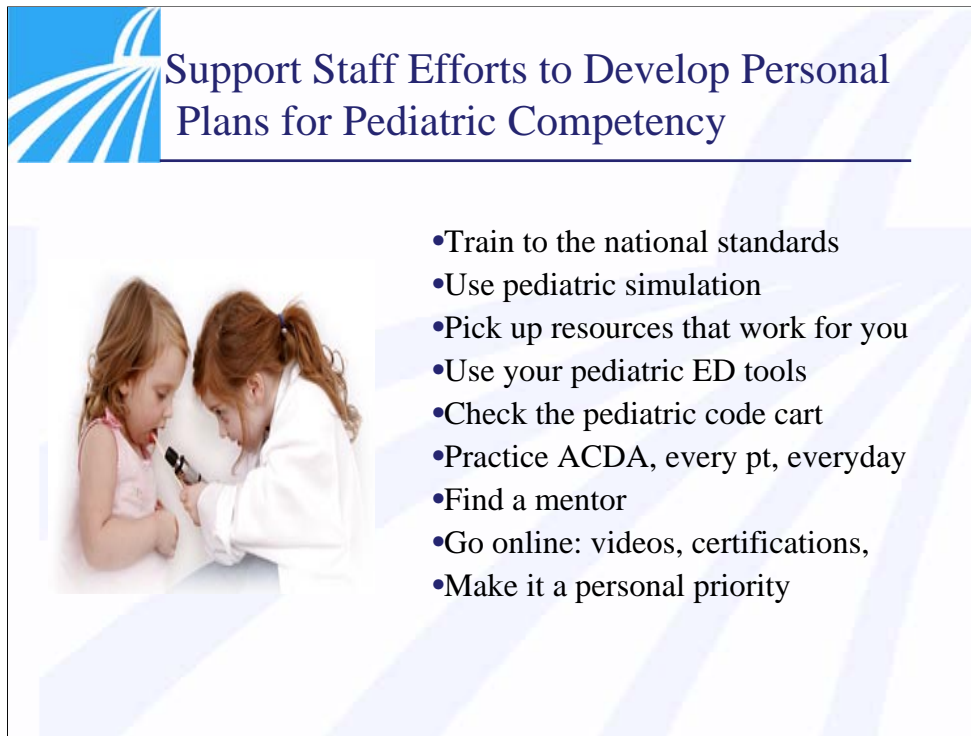
- But this may be our biggest challenge.
- Helping providers to get over their anxiety and fear.
- What they are really saying is that “I don’t feel confident”, “I haven’t done this in a really long time” and “I need support.”



They have been there before..



- In order to start a health care career, every health care provider has been trained in pediatric and infant care!
- The second time around is easier.



Support Staff Efforts to Develop Personal Plans for Pediatric Competency

- Train to the national standards
- Use pediatric simulation
- Pick up resources that work for you
- Use your pediatric ED tools
- Check the pediatric code cart
- Practice ACDA, every pt, everyday
- Find a mentor
- Go online: videos, certifications,
- Make it a personal priority

This is an example of a recipe for personal pediatric competency I encourage with all health care providers:

- Train to the national standards for pediatric care (PALS, ENPC, PEARS, NRP, APLS, ITLS)
- Use pediatric simulation. Pick up pocket resources that work for you e.g. PDA.
- Use your pediatric ED tools e.g. Broselow, pediatric texts, drug lists and check the pediatric code cart.
- Practice ACDA, every patient, everyday and find a mentor.
- Go online: videos, certifications and make it a personal priority.
- Remember that up to 30% of emergency department visits may be pediatric in your local community hospital.
- In the event of a disaster with a 30% pediatric surge patients that volume increases dramatically.
- In a pediatric surge pediatric regional resources are unlikely to be readily available.
- Important to build minimum competencies for this population within your community hospital.
- Pediatric and neonatal preparedness cannot stop between the emergency department and hospital inpatient door!



"Train To Retain" with Muscle Memory



Psychomotor, Realistic, Hands On, Simulation, Clinical Decision-making

- What is also needed is a Fire Fighter Approach to training!
- Psychomotor, realistic, hands-on!
- Why? Because it hardwires training.
- This is a key adult learning principle used in all "high risk" professions where critical competencies make the difference between success and failure e.g. NASA, Airline Pilots, Fire Fighters.



Pediatric Strike Teams for Everyday and Surge Inpatient Support

- ✓ Pediatric Rapid Response Teams
- ✓ Mobile Pediatric Emergency Response Teams (MERPTs)
- ✓ Mobile Pediatric Trauma Teams
- ✓ Pediatric Mental Health Crisis Teams
- ✓ Medical Reserve Corps



57

- Start with building pediatric and neonatal competencies in your current rapid response teams.
- From there consider working with your pediatric regional centers to build Mobile Pediatric Emergency Response Teams (MPERTs) typically used for a Alternate Care Sites.
- A key strategy to support these efforts is to include your community pediatric health care providers.
- Actively recruit them for your local medical reserve core (MRC).



Now no more excuses...



Now no more excuses!



How We Respond Will Matter



“Create the Expectation”

***Give Us One Year!
to
Exercise to Plan***

**A Statewide Exercise 2011
Dedicated to
Pediatrics/Neonates**

- Make children a priority and tell the state to create the expectation!



Our Panelists

- Pam Pshea, Chief Nursing Officer, San Ramon Regional Medical Center
- Vicki Starr PNP, Pediatric Nurse Manager, San Ramon Regional Medical Center
- Jeanne McNair RN, Director of Maternal Child Nursing, John Muir Medical Center Walnut Creek
- Suzanne Fitzgerald MD, Emergency Dept Physician, Kaiser Hospitals East Bay
- Cynthia Frankel RN, MS, Pediatric Disaster Coordinator Alameda County EMS

60

- The following panelists then shared there experiences with supporting competency and preparedness in their community hospitals.
- If you would like to contact them please you can do so through Contra Costa EMS at 925 646-8389.

Pediatric Surge Planning ...Solutions Within Reach Panel Presentation

**Pam Pshea, RN, Chief Nursing Officer
San Ramon Regional Medical Center (SRRMC), San Ramon, California**

When I arrived at San Ramon the facility had the in-house pediatricians providing pediatric inpatient services but the nursing staff did not have a formal resource. I realized the nurses needed a pediatric advanced practice clinical specialist/nurse practitioner to be a nursing resource and the hospital needed someone to oversee pediatric operations house wide because the pediatric patients are placed on the three different units.

Initially I brought on Vicki Starr PNP as a consultant but we both quickly realized the job was a full time endeavor. Support of this new role involved:

1. Facilitating the person to coordinate and do clinical off-site training at Children's Hospital at Oakland our regional pediatric referral center.
2. Doing pediatric classes onsite at San Ramon Regional Medical Center.
3. Establish pediatric competencies for nursing staff on day and night shifts on all units of the hospital.
4. Revise/review all pediatric policies and procedures
5. Oversee and assure adequate supplies for our pediatric crash cart contents/emergency depart.

Today we have pediatric capable nurses throughout the facility. The majority of our nursing staff, on all units, competently care for pediatric patients. Our ICU nursing staff are all PALS (Pediatric Advanced Life Support) certified and serve as in-house pediatric code responders. Our emergency department staff are also PALS certified. Daily rounds are performed on all pediatric inpatients to oversee and coordinate nursing care/teaching that needs to be done.

Pediatric Surge Planning ...Solutions Within Reach Panel Presentation

Vicki Starr, PNP, Assistant Nursing Director for Pediatrics

San Ramon Regional Medical Center (SRRMC), San Ramon, California

SRRMC is a 123 bed acute care hospital in the suburbs of the East Bay. Stanford and UCSF are 45 minutes away; Children's Hospital of Oakland is 20 minutes away. Our hospital contracts with Children's Hospital in Oakland for pediatric hospitalist services, which provides us with a pediatrician in-house 24/7. We provide basic pediatric inpatient as well as outpatient surgery services. We admit children from 7 days of age up 17 years of age. We average 18 admissions per month. About 250 children are cared for in our emergency department per month.

Pediatric patients are admitted to all three units of the hospital; the ICU, general med/surg as well as the step-down/telemetry unit using flex beds. All nursing staff have annual competencies for pediatric patient care. Competencies were established and evaluated by the assistant nurse director for pediatrics via didactic and clinical bedside teaching, which includes daily rounding. The staff needs a nursing expert to be their ongoing resource and support person. Clinical bedside teaching provides an opportunity for validation of the nursing care being provided, while also allowing for guidance towards any improvement needed.

The advanced practice nurse (APN) role involves overseeing all aspects of care on a daily basis. Starting with the ED visit, and on to the admission process (i.e. we do not do direct admits, have streamlined getting children with respiratory distress seen quickly, antibiotics on board before being admitted inpatient, etc.), lab work, radiology, supplies, surgical services support, nursing care support, family support and physician support as well as Joint Commission and Title 22 compliance. The advance practice nurse role also allows for ongoing hospital involvement with outside agencies, i.e. disaster preparedness, with specific involvement in pediatric content as well as community outreach projects.

My recommendations for hospitals without pediatric inpatient services – consider rotating staff through your ED on low-census days in your department. Coordinate with the ED department to ensure staff gets plenty of pediatric exposure. The goal is to de-sensitize staff to children, to specifically address what the staff fears about caring for children. Having the staff communicate with a child and family is an educational experience in itself. Find your physician and nursing liaisons to address competency and policy and procedure development, attend disaster preparation meetings, and assist with hospital disaster preparedness. Address supply issues. Discuss pediatrics in current classes provided. Discuss potential staff needs in the event of a pediatric surge; ask staff to think about how they would put their fears/emotions aside in order to care for critically injured children in need of care.

Prepare an action plan for your nursing supervisors to implement in the event of a pediatric surge and advise the staff of the plan to allow for their mental preparation to meet the demands of a pediatric surge.

Pediatric Surge Planning...Solutions Within Reach Panel Presentation

Jeannie McNair, RN, MBA, Women and Children's Director,

John Muir Medical Center, Walnut Creek California

I am the Women and Children's Services Director at John Muir Medical Center in Walnut Creek, California. John Muir Walnut Creek is a 324-bed level one Trauma Center in the East Bay Area. The Pediatric Department has a combination of pediatric and adult patients and has a capacity of sixteen patients. We currently have only three beds licensed as strictly for pediatric patients; however, we average from three to five pediatric patients at a time.

We have developed the ability to flex up or down as needed dependent upon the volume of pediatric patients. We have cross-trained our staff from Mother/Baby and NICU to float into the department to take care of children during high-census times. In a pinch we could take care of ten to twelve pediatric patients if needed.

Our emergency department has developed a pediatric-friendly area to take care of kids who come in for urgent or emergent care. We have started to see more kids come into the ED as a result of pediatric unit closure at Contra Costa County Regional Medical Center and have partnered with the county to care for these children.

It is important for those of us in Community hospitals to do what we can to maintain our pediatric units to be able to serve as a pop-off valve to the tertiary centers in the event of a surge of pediatric patients. The number of Pediatric ICU (PICU) beds has decreased statewide and they will need to utilize as many beds as possible for PICU patients. This will leave them with medical/surgical patients in need of beds and this is where we can help. If every community hospital could flex to accommodate the less critical pediatric patients it would allow the tertiary centers to take the most critically ill children and potentially save lives.

At my hospital, I have promoted the ability to flex as needed to be able to provide for this very scenario. As a result of having some higher acuity patients, we have implemented the Pediatric Early Warning Scale (PEWS) into our practice. The staff are trained using the scale and given the resources to respond early to patients who are deteriorating. We also have 24/7 in-house Pediatric hospitalists on staff to manage these patients.

We will be building a new 16 -bed pediatric unit in our new patient tower opening in Spring 2011. This will be a designated pediatric unit and will no longer take adult patients. We will also provide outpatient infusion services and specialty pediatric care. Our goal is to fulfill the need in the community for accessible, quality pediatric care and support the tertiary centers in a crisis situation when needed.

Pediatric Surge Planning...Solutions Within Reach Panel Presentation
Suzy Fitzgerald MD, Emergency Physician
Kaiser Permanente Diablo Service Area
Emergency Preparedness – Kaiser Permanente

The Kaiser Permanente Northern California Pediatric Surge Planning Experience:

A regional approach to pediatric surge planning is essential for Kaiser Permanente Northern California, as we have 21 medical centers in the region with varying levels of pediatric capacity at baseline. Our goal is to produce a regional pediatric surge plan to coordinate pediatric care among our medical centers and provide a template for each center to make their own. Our process so far has really been quite simple.

First, we assessed what's already in place in terms of pediatric services and surge plans. Not all medical centers are created equally, and knowing who does what and where has been key.

Next, we reviewed multiple pediatric surge planning resources. We found the New York City Department of Health's Pediatric Disaster Toolkit particularly useful, and have based our plan on their template. The first draft of our regional pediatric surge plan came out in August of this year.

We next assembled a pediatric surge planning subcommittee to begin the review process. We're taking a multi-disciplinary, multi-facility approach. We have regional representatives from all realms of the pediatric care world, including inpatient pediatrics, PICU, NICU, pediatric surgery, anesthesiology, emergency medicine, nursing, and administration. We will also be working with maternal/child health, general surgery, nutrition, pharmacy, security, and others. Although we are early on in the process, we are definitely moving forward.

Pediatric surge planning is approachable:

You don't have to reinvent the wheel. There are a lot of resources out there. No one expects you to suddenly create a PICU where your cafeteria used to be. It doesn't matter if you're a multi-center regional system, a tertiary care facility, or a small community hospital that doesn't admit pediatric patients at all, you just need to be willing to take it up a notch. Push a bit beyond your normal pediatric capacity, whatever that is. And although you might not have multiple medical centers within your system to work with, you need only look around at the other facilities in your community, your county, and your region. In times of disaster, that's your system. You just need to figure out how to coordinate with them in advance.

Physician involvement in pediatric surge planning is crucial:

The importance of physician involvement really can't be stressed enough. We have so much to bring to the table—and it's not just the medical expertise. It's a question of leadership. We're in a unique position to engage all the key players, from the staff we work with on a daily basis to the top-level administrators we report to.

We're the boots on the ground folks and as the providers who will be on the front lines in any surge event, our voices speak volumes. We owe it to the children of California to speak up.

Pediatric Surge Planning ...Solutions Within Reach Panel Presentation
Cynthia Frankel, RN, MN, Pediatric Disaster Coordinator
Alameda County Emergency Medical Services

In a pediatric surge disaster event, the health care capability of hospital systems to meet the surge needs and demands of children may be a challenge with limited beds, staffing, and resources. If our children's hospital tertiary care centers are closed, county operational areas may need to offload children to other hospitals, health care organizations, or alternate care sites. Even with this challenge, viable response solutions and partnerships are within reach.

In Alameda County, a new innovative solution is underway to make a difference for children with a system-wide pediatric preparedness vision, pediatric surge plan and disaster response coalition. A well-prepared pediatric disaster healthcare system vision:

- 1) Effectively manages healthcare consequences of pediatric disasters.
- 2) Responds quickly and with agility to harness all useful public and private resources to cope with a disaster event.
- 3) Functions under adverse circumstances such as an immediate surge of pediatric patients in need of acute care or prolonged surge of pediatric patient and poor situational awareness.

The underlying essential elements for an effective pediatric surge system and vision include:

- 1) Communicate both horizontally with other coalitions and vertically with the local levels.
- 2) Resource sharing among members and neighboring coalitions to share equipment and staff in an emergency with procedures to guide use of crisis standards of care and resources.
- 3) Utilization of public and private assets including communications, coordination, and resources.
- 4) Flexible response to adverse circumstances.
- 5) Functions under a variety of adverse circumstances with healthcare partners and coalitions connected and able to function autonomously if cut off from outside support and direction.
- 6) Healthcare resilience with ability to adapt if parts become disabled, and to recover quickly.

Alameda County EMS recommends pediatric healthcare coalitions for both preparedness and response. The disaster response coalition is a network of healthcare organization and providers that are committed to coordinating their emergency preparedness and response activities to leverage effective pediatric experts and decisions. The purpose is to develop and maintain a comprehensive system in response to emergencies and disasters, that assures effective communication; strategic acquisition and management of resources; and collaborative planning during the response. Every healthcare institution has the opportunity to integrate into the healthcare coalition to make a difference for children. Linked health care organizations could provide for expansion of care for the continuum of patient care. Each new disaster challenges the needs of children and, therefore, we can and must prepare using a system-wide vision and disaster response coalitions to meet their needs. The strategy is an unequivocal call to action to engage health care partners to prioritize children and integrate the response coalition concept in their pediatric surge plans.