Appendix F

Background, Initial Needs Assessment, and Gap Analysis

BACKGROUND

As a recipient of Hospital Preparedness Program (HPP) funding, Los Angeles County (LAC) Emergency Medical Services (EMS) Agency has been working on enhancing the surge capacity and capabilities of the healthcare community in order to effectively respond to mass casualty incidents due to terrorism or natural disasters. The Pediatric Surge Program was initiated following the 2009 H1N1 pandemic that disproportionately affected children and stressed hospital systems' capacity for pediatric intensive care unit (PICU) beds and equipment. such as pediatric ventilators.

This program includes a countywide plan on how each hospital within LAC would contribute to caring for pediatric patients in the event of a surge that largely impacts children. This plan is aligned with and supports LAC's compliance with the HPP Capabilities Capability 1: Healthcare System Preparedness; Function 7, coordinate with planning for at-risk individuals and those with special medical needs, and Capability 10: Medical Surge. Children are a designated vulnerable population requiring special planning and response. This plan provides details on how each hospital within LAC will support a pediatric surge of patients including surge targets and patient type. This plan also includes parameters for transporting children from prehospital field operations to healthcare facilities and transferring of patients amongst hospitals.

Program Goal: To enhance LAC's pediatric surge capacity to meet the medical needs of children during a disaster. The LAC surge target is to enhance pediatric capacity by 100%.

CURRENT STATUS (As of original publication of this plan, May 2013)

Current Status of Pediatric Care

The 4,084 square miles of LAC is home to 2 million children ages 18 and under. This equates to 20% of the total LAC population (U.S. Census 2022). LAC Department of Public Health uses Service Planning Areas (SPAs) in the county to plan public health and clinical services for the residents of these areas. LAC is divided into eight distinct geographic areas: Antelope Valley, East, Metro, San Fernando, San Gabriel, South, South Bay, and West. These areas are shown in Figure 1.

Figure 1 - Population density map

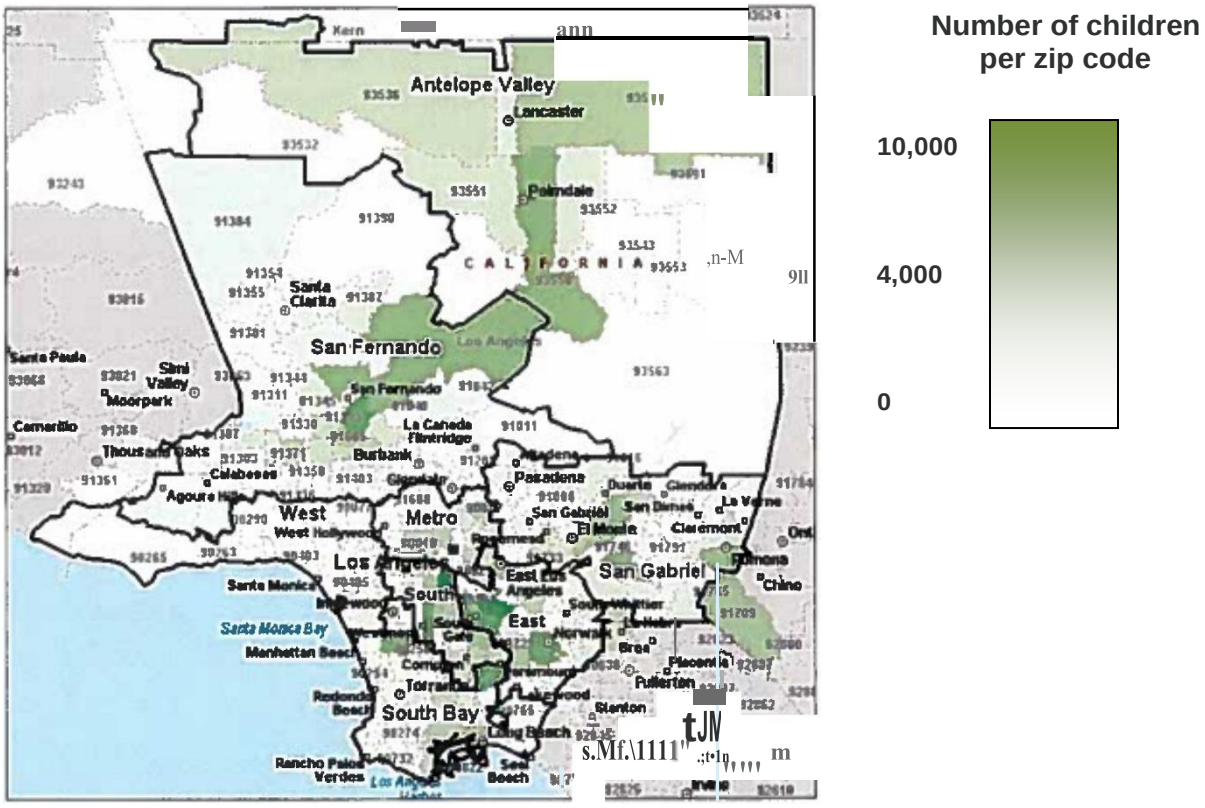


Figure 2 - Population and beds by Service Planning Area

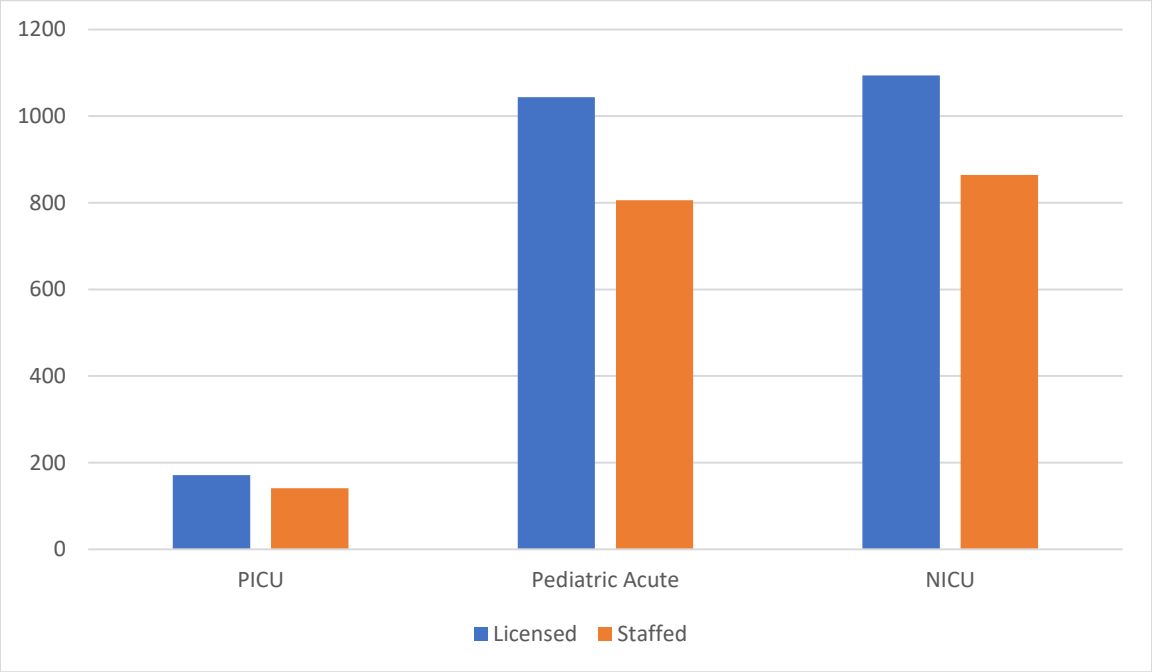
Service Planning Area (SPA)	Pediatric Population	Licensed PICU Beds	Total Capacity During Pediatric Surge	Licensed Beds per 100 Children
Antelope Valley	113,511	0	22	0.19
East	379,976	0	105	0.28
Metro	283,977	97	385	1.36
San Fernando	532,864	18	90	0.17
San Gabriel	459,786	8	11	0.24
South	340,370	0	14	0.04
South Bay	388,105	30	199	0.51
West	107,981	24	57	0.53

Sources Figures 1 and 2: Population - Nielsen Claritas 2009, Ages 0-17. Bed Data -Combination of OSHPD YE 2010 updated with Pediatric Surge Plan Survey data.

Pediatric Bed Capacity

Figure 3 shows the California Office of Statewide Health Planning and Development (OSHPD) data year ending June 2010 which was used as a method for calculating the surge targets for this plan. The number of staffed beds was used as a baseline to calculate the surge target of 100% bed capacity.

Figure 3 - Pediatric bed capacity



Distribution of Pediatric Services in Los Angeles County Hospitals

Figure 4 - Hospitals with pediatric units

	NICU Only	Pediatric Acute Unit Only	NICU and Pediatric Acute Unit	PICU, NICU and Pediatric Acute Unit	No Pediatric Inpatient Services
Number of Hospitals	15	11	16	13	32

Sources Figure 3: OSHPD Year Ending June 2010
Figure 4: OSHPD Year Ending June 2010 and Pediatric Surge Plan Survey and Focus Group data

SIMULATED BED NEEDS

Based on the LAC Emergency Medical Services Agency Gap Analysis project, it is estimated that the following pediatric beds will be needed for each of the following scenarios:

- Pandemic Flu- 97,470 pediatric medical/surgical (med/surg) beds and 28,136 PICU beds. This scenario is based on no mitigation efforts, e.g., no vaccinations in the population. Since vaccinations are part of the current healthcare system, it is anticipated that fewer beds will be needed than the above estimates due to the mitigation efforts.

- Improvised Explosive Device (IED)-195 pediatric med/surg beds and 52 PICU beds.

- Major Earthquake - 5,047 total patients with a maximum need of 2,205 ICU beds. A proportional allocation translates to 1,463 pediatric med/surge beds and 639 PICU beds (Total patients in scenario X 29%, i.e. percent of child population).

This plan will meet the simulated number of casualties for the IED scenario. LAC's response agencies will need to implement mitigation activities (i.e., vaccination campaign, infection control programs and messaging, and medical countermeasures) for the pandemic flu scenario to reduce the impact of the outbreak and allow the healthcare system to respond to the estimated surge of casualties. This plan will meet the simulated number of critical care patients if adult ICU hospital beds are used in addition to the PICU beds.

PEDIATRIC SURGE GAPS AND OPPORTUNITIES

Pediatric Surge Gaps

The following gaps have been identified in pediatric surge capacity and capability as a result of the countywide survey and data analysis, which was conducted between April 7 and May 16, 2011 with a 94% (78/83 HPP participating hospitals) response rate.

1. **Limited Pediatric Bed Capacity on a Daily Basis:** Pediatric bed capacity throughout LAC on any given day is limited. Per the OSHPD data, 13 ? hospitals provide pediatric intensive care services with a total of 141 staffed beds as of June 2010. Forty- seven percent (40/87) of hospitals in LAC provide some type of inpatient pediatric services (OSHPD).

Eight (8) hospitals are designated as Pediatric Medical Centers (PMC), According to the EMS Agency, Reference 318, PMC Standard, the PMC provides an emergency department capable of managing complex pediatric emergencies, and a Pediatric Intensive Care Unit (PICU), with experience in pediatric critical care.

Thirty-seven (37) ~~Forty-one~~ hospitals are designated as Emergency Departments Approved for Pediatrics (EDAP) ~~(LAC EMS Agency 9/2012). According to the EMS Agency~~ Reference 316, EDAP Standards ~~definition,~~ an EDAP facility is "A licensed basic or comprehensive emergency department that is designated ~~approved~~ by the Los Angeles County ~~of Los Angeles~~ Emergency Medical Services (EMS) Agency to receive pediatric patients via the 9-1-1 system. These emergency departments provide care to pediatric patients by meeting specific requirements for professional staff, quality improvement, education, support services,

equipment, supplies, medications, and established policies and procedures."

2. **Geographic Variability:** Based on OSHPD 2010 data, the majority (31%) of pediatric beds are located within the Metro SPA, followed by the South Bay SPA (20%). Despite the continued increase in the number of children in the eastern and northern areas of the County such as Santa Clarita and Antelope Valley, pediatric medical and surgical care remains centralized in the Metro SPA area. The Antelope Valley SPA is served by two hospitals, one of which provides pediatric acute hospital services (Antelope Valley Hospital).

3. **Limited PICU Capacity:** There are no PICU beds available in the Antelope Valley, East, or South SPA. For facilities with PICU beds, the average daily census ranged from one to twenty-two, with an average of 7.31. Three facilities with PICUs reported an average daily census greater than eight.

4. **Limited Pediatric Specialty Physician Resources:** Half of the facilities reporting the availability of pediatric general surgeons have contracts with those physicians. The contracts are not necessarily exclusive; therefore, it is possible the data overestimates the availability of pediatric surgeons. Twenty facilities reported having pediatric anesthesiologists. Of those reporting, nine indicated they were hospital-based, another nine indicated they were contract physicians, while two responses were left blank. Nine out of 15 (60%) facilities with pediatric emergency medicine have dedicated physicians. This will require emergency medicine physicians and emergency departments, regardless of EDAP status, to be prepared at a basic level to handle pediatric emergencies.

5. **Varying Availability of Pediatric Trained Staff:** Staffing resources vary by facility. Of the 21,175 nurses reported in the survey, 6,557 (31%) are reported as certified in Pediatric Advanced Life Support (PALS). Two percent of reported nurses had taken the Emergency Nursing Pediatric Course. Of the Respiratory Therapists reported, over half are PALS certified (55.6%).

6. **Less Availability of Pediatric Critical Care Supplies:** Eighty-eight percent of facilities reported having code blue carts with pediatric drugs and intubation supplies. Sixty-seven percent have routine EDAP or pediatric equipment supply carts. However, 68% percent of facilities reported having pediatric critical care supplies and equipment.

7. **Limited Ability to Accept and Receive Children:** Forty-one percent of facilities reported that they had a physician available 24/7 that could accept pediatric patients to their hospital for inpatient admission. Fifty-three percent of the facilities are EDAP.

Surge Capacity Opportunity

Based on the survey findings, there is an opportunity for hospitals to use additional space to increase surge capacity within their facilities. Two opportunities throughout Los Angeles County include the Post Anesthetic Care Unit (PACU) and outpatient clinic space. Below are some significant statistics of these areas:

- PACU beds
  - 53% of facilities currently care for children in their PACU
  - 444 PACU beds exist
  - Average of 9 nurses in each PACU

- Outpatient Clinic
  - 25% of hospital facilities operate pediatric outpatient clinics
  - Median volume = 80 visits per day
  - 482 patient rooms
  - 144 nurses and 188 physicians [1]

1. *Physician and nursing data is likely an underestimate. Data was incomplete. Four hospitals indicating they had capacity did not repott nursing and physician numbers. An additional two locations did not report the number of nurses.*

Countywide Pediatric Surge Targets

Surge targets are calculated based on pediatric capacity and capability. The surge goal is based on 100% of staffed bed capacity reported by hospitals to OSHPD for the year ending June 2010.

Figure 5 - Surge target goals

Bed Type	Current Staffed Beds	Surge Goal- 100% of surge capacity	Total Capacity During Pediatric Surge
PICU	141	141	282
Pediatric Acute Beds	806	806	1612

Source: OSHPD Year Ending June 2010