Anatomy of a Large Hospital Closure: Assessing Threats and Managing Impact

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EMS Director, Alameda County EMS

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Prehospital Care Coordinator, Alameda County EMS

Objectives

1. Describe how to perform a threat assessment of a hospital closure
2. Identify how to measure the impact of a hospital closure on an operational area and region
3. Describe how to prepare their hospital for anticipated surges associated with a nearby hospital closure
Is a Hospital Closure in Your Future? … It is Very Likely

Hospital Closures Since 2010: 283 Hospitals at Risk

Percent Vulnerable

The Vulnerability Index identifies 283 rural hospitals statistically clustered in the bottom tier of performance.
4,032 Beds Lost Over 10 Years

Source: California Health Care Almanac, Aug. 2015

Hospital Bed Capacity is Shrinking, So Where and How Do We Surge?

Source: California Health Care Almanac, Aug. 2015
### Licensed Acute Care Beds, by Bed Type

#### California, 2004 and 2013

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2013</th>
<th>PERCENTAGE CHANGE 2004 TO 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical/Surgical Acute (Includes C/N)</td>
<td>47,090</td>
<td>48,831</td>
<td>3.7%</td>
</tr>
<tr>
<td>Perinatal (Includes LDR, excludes nursery)</td>
<td>6,403</td>
<td>6,769</td>
<td>5.7%</td>
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<tr>
<td>Pediatric Acute</td>
<td>3,207</td>
<td>3,028</td>
<td>-5.6%</td>
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<tr>
<td>Intensive Care</td>
<td>5,677</td>
<td>6,901</td>
<td>21.6%</td>
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<tr>
<td>Coronary Care</td>
<td>1,574</td>
<td>1,402</td>
<td>-10.9%</td>
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<td>Acute Respiratory Care</td>
<td>53</td>
<td>35</td>
<td>-34.0%</td>
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<tr>
<td>Burn Center</td>
<td>153</td>
<td>147</td>
<td>-3.9%</td>
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<tr>
<td>Newborn Intensive Care</td>
<td>3,247</td>
<td>3,978</td>
<td>22.5%</td>
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<td>Rehabilitation Center</td>
<td>1,712</td>
<td>1,721</td>
<td>0.5%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>69,116</strong></td>
<td><strong>72,812</strong></td>
<td><strong>5.3%</strong></td>
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### Hospitals are Regional Assets

*Manage Closures as Regional Events*

#### General Acute Care Hospitals

- Sacramento Area: 7%
- San Diego Area: 8%
- San Joaquin Valley: 9%
- Greater Bay Area: 11%
- Inland Empire: 11%
- Northern and Sierra: 11%
- Los Angeles County: 23%

#### Licensed Beds

- Sacramento Area: 5%
- San Joaquin Valley: 10%
- Greater Bay Area: 20%
- Inland Empire: 10%
- Northern and Sierra: 10%
- Los Angeles County: 30%

*Source: California Health Care Almanac, Aug. 2015*
Emergency Departments Need Inpatient Support to Meet Changing Demands

Hospital Discharges, by Source of Admission
California, 2004 and 2013

2004
N=3.4 million
- Emergency Department 46%
- Other 54%

2013
N=3.3 million
- Emergency Department 55%
- Other 45%

Source: California Health Care Almanac, Aug. 2015

Average ED Admission Rate 14.7%

Emergency Department Visits per 1,000 Population by Region, California, 2013

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<thead>
<tr>
<th>Region</th>
<th>Visits</th>
<th>Admission Rate</th>
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<tbody>
<tr>
<td>Central Coast</td>
<td>321</td>
<td>12.3%</td>
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<tr>
<td>Greater Bay Area</td>
<td>315</td>
<td>12.9%</td>
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<tr>
<td>Inland Empire</td>
<td>356</td>
<td>13.4%</td>
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<tr>
<td>Los Angeles County</td>
<td>328</td>
<td>16.2%</td>
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<tr>
<td>Northern and Sierra</td>
<td>452</td>
<td>16.7%</td>
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<tr>
<td>Orange County</td>
<td>280</td>
<td>16.8%</td>
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<tr>
<td>Sacramento Area</td>
<td>361</td>
<td>18.1%</td>
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<tr>
<td>San Diego Area</td>
<td>306</td>
<td>16.5%</td>
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<tr>
<td>San Joaquin Valley</td>
<td>390</td>
<td>14.7%</td>
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Source: California Health Care Almanac, Aug. 2015
Increase in ED Volume Driven By Many Factors

**Emergency Department Beds and Visits**
*California, 2004 to 2013*

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of ED Beds</th>
<th>Number of ED Visits (in millions)</th>
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<tbody>
<tr>
<td>2004</td>
<td>5,658</td>
<td>6.2</td>
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<tr>
<td>2005</td>
<td>5,914</td>
<td>6.9</td>
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<td>2006</td>
<td>6,080</td>
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<td>2007</td>
<td>6,197</td>
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<td>2008</td>
<td>6,526</td>
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<td>2009</td>
<td>6,779</td>
<td>11.7</td>
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<tr>
<td>2010</td>
<td>6,941</td>
<td>11.8</td>
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<tr>
<td>2011</td>
<td>7,161</td>
<td>12.1</td>
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<td>2012</td>
<td>7,371</td>
<td>12.5</td>
</tr>
<tr>
<td>2013</td>
<td>7,593</td>
<td>12.8</td>
</tr>
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Source: California Health Care Almanac, Aug. 2015

86% of Patients Treat and Release
40% Likely Could Go to Other Levels of Care

**Non-Admitted Emergency Department Visits**
*by Acuity Level, California, 2013*

- **Admitted**: 14%
- **Not Admitted**: 86%

Source: California Health Care Almanac, Aug. 2015
Specialty Outcomes: Pre- & Post- Closures
No Increase in Mortality Rates Associated with Hospital Closures … But it Depends on Where it Happens

EXHIBIT 4

Changes in Admission Rates and Outcomes for Three Acute Conditions From the Year Before To the Year After Hospital Closure, Hospital Service Areas (HSAs) With Closures and Matched HSAs Without Closures (Controls)

- Admissions in HSA
- Mortality in HSA

Source: Author’s analysis of data from Medicare. Notes: Admissions (number per 1,000 residents) relate to the left-hand y-axis. Thirty-day risk-adjusted mortality rates (percentages of hospitalizations) relate to the right-hand y-axis. Hospital service areas were matched on region, rurality, and baseline risk-adjusted all-cause mortality. Analyses were adjusted for age, sex, and comorbidities. The p-values for the difference-in-differences analyses were nonsignificant, with the exception of mortality for acute myocardial infarction (AMI), p = 0.005.

Critical Access Hospitals 2014

“Are At Risk”
34 critical access hospitals located in remote, rural parts of the state and frequently serve as the only provider of health care in the community

Source: California Health Care Almanac, Aug. 2015
District Hospitals Have Highest Risk — 56% Have Negative Margins

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Closed**</th>
<th>Open**</th>
<th>DMC</th>
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<tbody>
<tr>
<td>Average Beds</td>
<td>64</td>
<td>99</td>
<td>171</td>
</tr>
<tr>
<td>Region (West)</td>
<td>17%</td>
<td>19%</td>
<td>YES</td>
</tr>
<tr>
<td>Urban</td>
<td>71%</td>
<td>45%</td>
<td>YES</td>
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<tr>
<td>Size: Small to Medium</td>
<td>47%-52%</td>
<td>57%-35%</td>
<td>Medium</td>
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<tr>
<td>Non-Profit</td>
<td>49%</td>
<td>52%</td>
<td>YES</td>
</tr>
<tr>
<td>Operating Margins</td>
<td>-20%</td>
<td>-1%</td>
<td>&gt; -20%</td>
</tr>
<tr>
<td>Safety Net Hospital</td>
<td>32%</td>
<td>17%</td>
<td>YES</td>
</tr>
</tbody>
</table>


The Asset: Doctor’s Medical Center San Pablo (DMC)

- Largest hospital in West Contra Costa County
- Served a community of 250,000
- Had 79% of inpatient beds in West County
- Provided 59% of ED care
- Served 62% of 9-1-1 ambulance traffic
- Received 11.8% of ED admissions from skilled-nursing facilities (SNFs)
- Intervention Center
  - 50% of stroke patients
  - 100% of ST segment elevation myocardial infarction (STEMI) patients
- Dialysis patient resource
- Cancer Center
Doctor’s Medical Center San Pablo
Utilization Snapshot 2013

- Active beds
  - 171 total
  - 83 (med/surg) + 64 (tele) beds
  - 24 ICU beds
  - 25 ED stations
- ED volume
  - 41,903 ED visits
  - 29%, or an average of 33 patients per day, are current procedural terminology (CPT) severe or critical
- Treat and release (T&R) and ED admit rate
  - T&R: walk-in 92%
  - T&R: ambulance 69%
  - DMC ED admit rate 10.5%
  - Kaiser Richmond ED admit rate 4.69%
Timeline ... Lots of Uncertainty, A Slow-Moving Disaster

- Opens in 1954 and financially challenged since 1990s
- November 2013 – Fiscal emergency declared
- April 15, 2014 – Notice of potential closure submitted to health officer/EMS, July 25, 2015 close date
- June 5, 2014 – Notice of closure to stakeholders and California Department of Public Health (CDPH)
- June 9, 2014 – Hospital rescinds notice to close at public hearing
Timeline … Lots of Uncertainty, A Slow-Moving Disaster (cont.)

- June 13, 2014 – EMS files mandated impact report to CDPH
- Aug. 14, 2014 – Hospital staffing crisis, closed to 9-1-1 ambulance traffic
- Aug. 27, 2014 – Hospital closes to emergency ambulance traffic
- February 2015 – Worker adjustment and training notification (WARN) letter issued; will close after April 14, 2015
- March 2015 – District votes to close
- Hospital closes April 21, 2015

Contingency Planning 101

**2011 Closure Plan #1**
- Partner/county funding
- Closure averted

**2013 Closure Plan #2**
- Tax measure passes
- Closure averted

**2014 Closure Plan #3**
- State Impact Report submitted
- Closure averted
- EMS traffic stopped
  Aug. 7, 2014

**2015 Final Closure Plan #4**
- Hospital closes April 21, 2015
2011 Impacts of Closure Consultant Report (Abaris)

>105% ED surge to Kaiser Richmond

- 12-13 additional EMS transports per day
  - Kaiser Richmond: 15 ED stations

- Increased acuity of patients
  - Kaiser Richmond: 8 critical care beds
  - Increased intrafacility transfer to higher level of care
    - DMC: 1,546 patients in 2012
    - Kaiser Richmond: 555 in 2012

- Increased patient safety risk

12 other EDs disproportionately impacted

- Particularly Kaiser, Contra Costa Regional Medical Center, Children’s and Alta Bates

Out-of-county transport will become common

- Closest ED may be out of county (e.g., Alameda, Solano, Marin)
- Trauma/STEMI/stroke intervention

Regional emergency and inpatient services will be affected
Operational Area Objectives

1. To support patient movement to appropriate hospitals
2. Preserve EMS response times to West Contra Costa County residents
3. Protect Kaiser Richmond from unsafe patient care conditions due to medical surge (directed destination)
4. Support EMS and hospital preparedness within the operational area
5. Assure timely, appropriate and coordinated response using medical mutual aid as needed

Planning Considerations

• Threat analysis
  • Controlled closure
  • Sudden collapse
• Community alternatives
  • Urgent care, community clinics, out-of-county resources
• Situational awareness for stakeholders
  • Fire, law, air and ground transport, dispatch, hospitals, clinics, policymakers, communities, health districts and health plans, media
Medical/Health System Threats

- Controlled closure
- Sudden collapse
- Limited EMS assets
- Patients coming after closure
- Multi-casualty and disaster
- Mutual aid constraints
- Walk-in patients overrun other hospitals

Maintaining Situational Awareness: Data-Driven Information

- **Every 8 hours** hospital available beds for emergencies and disasters (HAvBED)
- **Off-load times status** (First Watch)
- **Compliance with status notifications**
  - Census alert level
  - Internal disaster
  - Computed tomography (CT), trauma, STEMI, stroke
- **Polling of ED walk-in volume**
- **Timely adverse event reporting**
- **Medical health operational area coordinator (MHOAC) conference calls**
- **Stakeholder conference calls**
Readiness Phase: Develop Incident Action Plan

- Assess county-wide emergency department status, hospital capacity and ambulance flow, and prepare to activate EMS operations
- Collect and review specific regional and operational area plans for “Operation Doctors San Pablo Closure” related to medical response
- Review contingency plan for Kaiser Richmond to facilitate safe patient conditions in the event of medical surge
- Advise Region II Regional Disaster Medical Health Coordinator/Specialist (RDMHC/S) and state EMSA of activities, plans and availability

Readiness Phase: Develop Incident Action Plan (cont.)

- Advise Contra Costa EMS providers and hospitals of preparation activities
- Advise Contra Costa on-call health officers of readiness activities and response plans
- Assign EMS staff for assignment to the EMS Operations Center
- Develop plans to support patient movement and interfacility transfer
- Coordinate community messaging with DMC, Kaiser Richmond, Alameda County and Contra Costa Health Services (CCHS) public information officer
Response Phase:
Planning for a Worst-Case Scenario

- Activate EMS operations and EMS system notifications
- Assess operational area status
  - Hospitals
  - EMS system
  - Ambulance strike team to be on standby
- Notify EMS staff, on-call health officer, EMS providers, Alameda County EMS, Region II California Emergency Management Agency (Cal EMA) and state EMSA when EMS Operations Center has been activated

Response Phase:
Planning for a Worst-Case Scenario (cont.)

- Provide 24/7 monitoring of ReddiNet while EMS Operations Center is activated and monitor situation development
- Support MHOAC functions
  - Provide CDPH, Office of Emergency Services (OES) and Regional Disaster Medical Health Coordinator (RDMHC) with situational reports
- Support intelligence and planning for next operational period
- Daily conference calls with affected stakeholders to monitor and support emergency operations
California Health and Safety Code 1300 – Local EMS Agency Obligation

“Within 60 days after the County receives written notification of a proposed downgrade or closure of emergency services, the Local EMS Authority shall complete an impact evaluation, conduct a public hearing and submit those findings to the California Department of Health Services and the State EMS Authority.”

Overview:
EMS/Medical/Health Analysis

Health System Situational Awareness

• Local and regional redistribution of >44,000 patients/year
• Increase in Contra Costa EMS ambulance resources required (up to 30%)
• Public Health Emergency Incident Level 2 coordination required

• Estimated redistribution of approximately 12,000 EMS transports/year
• 22 transports per day (DMC portion)
• Situational redistribution of Kaiser portion of EMS transports (14/day)
Overview:
EMS/Medical/Health Analysis (cont.)

Regional ICU and Med/Surg bed capacity increased since 2011
- Added 38 ICU beds since 2009
- Added 297 beds in Contra Costa and 324 beds in Alameda

Likely Scenario: ED/EMS system surges
- 120 additional patients per day (includes EMS)
- Extended ED walk-in and EMS wait times
- Increased destination time for cross-county and out-of-county destinations
- Field on-scene ambulance delays up to 15-20 minutes during peak periods
- Increased needs for rapid intrafacility transfer

Reduced capability to respond to expanded events without rapid mutual aid
EMS Agency Mission: Coordinate Response

- **Redistribute** an average of 33 West County EMS transports per day between 16 possible facilities
  - Walk-ins = wild card
- **Manage Kaiser Richmond impacts**
  - Before: average of 14 per day
  - After: average of 22 per day
- **Next closest hospitals out of county impacted**
  - Alameda County and Solano

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EMS Agency Mission: Coordinate Response (cont.)

- **Manage perception vs. reality**
  - Small numbers, large percentage shifts
- **Coordinate the operations area response**
  - Alameda County, Marin, Solano EMS agencies
  - Sutter, Kaiser, Contra Costa Health Services, John Muir
  - Contra Costa Health Plan nurse call centers
  - Diversion and no diversion counties
ED (Walk-in and EMS) Impacts With Closure – Where Would They Go?

16 available hospitals ... 7 to 8 additional patients per day

### Impact on ED Volume 2011 - 2015

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<tbody>
<tr>
<td><strong>West County - Total Volume</strong></td>
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<tr>
<td>Doctors Medical Center, San Pablo</td>
<td>40,473</td>
<td>1,619</td>
<td>25,242</td>
<td>1,733</td>
<td>Hospital is closed effective August 1, 2011</td>
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<td>Kaiser Foundation Hospital, Richmond</td>
<td>26,528</td>
<td>1,903</td>
<td>44,916</td>
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<td>67,583</td>
<td>4,499</td>
<td>69,545</td>
<td>4,826</td>
<td>70,680</td>
<td>4,712</td>
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<td><strong>Other Contra Costa County - New Volume Only</strong></td>
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<tr>
<td>Contra Costa Regional Medical Center</td>
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<td>1,201</td>
<td>2,572</td>
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<td>Kaiser Foundation Hospital, Walnut Creek</td>
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<td>John Muir Medical Center, Concord</td>
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<td>170</td>
<td>421</td>
<td>486</td>
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<td>San Ramon Regional Medical Center</td>
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<td>Sutter Delta Medical Center</td>
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<tr>
<td><strong>Outside Contra Costa County - New Volume Only</strong></td>
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<tr>
<td>Alameda County Med Center - Highland</td>
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<tr>
<td>Alta Bates Summit Medical Center - Alta Bates</td>
<td>-</td>
<td>705</td>
<td>1,243</td>
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<td>1,864</td>
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<tr>
<td>Children’s Hospital at Oakland²</td>
<td>-</td>
<td>964</td>
<td>2,385</td>
<td>1,466</td>
<td>2,950</td>
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<td></td>
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<tr>
<td>Kaiser Foundation Hospital, Oakland</td>
<td>-</td>
<td>114</td>
<td>283</td>
<td>292</td>
<td>302</td>
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<td>Kaiser Foundation Hospital, Vallejo</td>
<td>-</td>
<td>64</td>
<td>157</td>
<td>163</td>
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<tr>
<td>Marin General Hospital</td>
<td>-</td>
<td>15</td>
<td>37</td>
<td>38</td>
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<tr>
<td>Sutter Solano Medical Center</td>
<td>-</td>
<td>33</td>
<td>82</td>
<td>85</td>
<td>88</td>
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<td></td>
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### Operational Area Task

Redistribution of >7K-8K transports per year

An increase of 6 ambulances a day spread over 4-5 out-of-county hospitals
Location of EMS Calls By City: Similar

Transport Destinations:
Major Changes Before and After
Transports By Day of the Week

Transports By Hour of Day: Similar
Gender Distribution: No Change

Age Demographics Transported
Primary Impression: Neurologic Calls Up

Impact on EMS Patient Transfer of Care Times
EMS Transfer of Care – Never Event (> 60-Minute Waits)

Not affected by EMS increases

Trauma Center Activations
EMS & Patient Impact: Minimal

Trauma plan supports current destinations

<table>
<thead>
<tr>
<th>Facility</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
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<tbody>
<tr>
<td>EL CERRITO</td>
<td>14</td>
<td>23</td>
<td>19</td>
</tr>
<tr>
<td>EL SOBRANTE</td>
<td>13</td>
<td>17</td>
<td>17</td>
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<td>HERCULES</td>
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<td>KENSINGTON</td>
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<td>NORTH RICHMOND</td>
<td>45</td>
<td>57</td>
<td>45</td>
</tr>
<tr>
<td>PINOLE</td>
<td>29</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td>RICHMOND</td>
<td>97</td>
<td>102</td>
<td>128</td>
</tr>
<tr>
<td>RODEO</td>
<td>11</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>SAN PABLO</td>
<td>61</td>
<td>52</td>
<td>49</td>
</tr>
<tr>
<td>Grand Total</td>
<td>279</td>
<td>314</td>
<td>308</td>
</tr>
</tbody>
</table>

Total number of trauma activations by city for the years 2011-2013. Source: Trauma Registry.
EMS/Ambulance Utilization
STEMI and Stroke System Plan: Redistribute to Next Closest

- 8053 EMS transports
  - 61% of West County EMS traffic
  - 68% EMS transports involve Richmond and San Pablo residents
- Intrafacility non-EMS transport
  - Transports from ED: 952
  - Critical care transports: 136
- Closest stroke centers
  - Alta Bates, Summit, Kaiser Permanente (KP)-Oakland, KP-Vallejo, Marin General
  - John Muir Medical Center (JMMC) - Concord, KP-Walnut Creek
- Closest STEMI centers
  - JMMC-Concord
  - Marin General, Alta Bates Summit, Highland, KP-Vallejo

- DMC-EMS STEMI receiving center transports
  - Next closest 15-27 minutes away
- STEMI
  - 100% of West County
  - EMS: 70-78 per year
  - Elective + walk-in (2012)
    - 546 cardiac procedures
- EMS-DMC Stroke: Serves 50% of West County stroke (2013)
  - 127 Neuro/cerebral vascular accident (CVA) suspect
  - 87 EMS Stroke criteria met

High-Risk Heart Attack: STEMI

![Pie charts showing transport destinations for STEMI patients in West Contra Costa County]
High-Risk Heart Attack: STEMI (cont.)
More Patients Calling 9-1-1

High-Risk Heart Attack: STEMI (cont.)
Improved Intervention Times

The following STEMI System performance data represents time to intervention from first 911 call, from first medical contact e.g. paramedic, from time of arrival at an intervention hospital. National performance standards for a high performance STEMI System are 90 minutes from 911 to intervention and 90 minutes from door to intervention. 2013 represents when DMC was open to all ambulances. 2014 represents when DMC was closed to all ambulances. During that time all performance metrics improved for the West County community because as a STEMI system the increased time for 911 transport provides the proper time the cardiac cath intervention team needs to BE READY to receive the patient UPTO ARRIVAL. These patients are more likely to go straight to intervention when this occurs.
Stroke Patient Destination

Stroke Alerts Patient Location:
More Patients Calling 911
Out-of-County Traffic Up 20%

Average Transport Time:
4-7 Minute Increase

<table>
<thead>
<tr>
<th>City</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crockett</td>
<td>0:19:13</td>
<td>0:19:25</td>
</tr>
<tr>
<td>El Cerrito</td>
<td>0:16:40</td>
<td>0:19:13</td>
</tr>
<tr>
<td>El Sobrante</td>
<td>0:16:56</td>
<td>0:21:26</td>
</tr>
<tr>
<td>Hercules</td>
<td>0:18:50</td>
<td>0:22:25</td>
</tr>
<tr>
<td>Kensington</td>
<td>0:20:15</td>
<td>0:21:42</td>
</tr>
<tr>
<td>Richmond</td>
<td>0:12:17</td>
<td>0:16:17</td>
</tr>
<tr>
<td>Pinole</td>
<td>0:16:35</td>
<td>0:22:29</td>
</tr>
<tr>
<td>Port Costa</td>
<td>0:23:30</td>
<td>0:27:42</td>
</tr>
<tr>
<td>Rodeo</td>
<td>0:18:51</td>
<td>0:21:13</td>
</tr>
<tr>
<td>San Pablo</td>
<td>0:11:24</td>
<td>0:18:39</td>
</tr>
</tbody>
</table>

SOURCE: AMR CAD DATABASE
Preparing for the “Perfect Storm” in a Small Emergency Department and Hospital

John W. Morehouse, MD
Chief, Emergency Department
Kaiser Richmond
Infrastructure at Richmond – Circa 2014

Kaiser Richmond

- ED 18 beds
  - 15 beds in main ED
  - 3 low-acuity care spaces
- Hospital 50 beds
  - 8 ICU beds, 50 total hospital beds
  - One CT
- Specialty bariatric surgery and maxillofacial surgery center
- Hospitalists, general surgery and gynecology on-site
- No obstetrics, orthopedics, urology or many other specialties on-site
What it Sometimes Feels Like is Going On!

Challenge: Maintain Safe and Quality Patient Care

- Inputs:
  - Walk-in volume
  - EMS volume
- Outputs:
  - Transferring strategies to outside hospitals
  - Improving internal workflows to provide more efficient care
  - Increase staffing (RNs, MDs, techs, support services)
  - Utilize EMS cooperative strategies
  - DIRECTED DESTINATION – not diversion or bypass
Directed Destination

- Utilize EMS cooperative strategies
  - DIRECTED DESTINATION — not diversion or bypass
- Condition depends on local volume and acuity
- Utilizes National Emergency Department Overcrowding Score (NEDOCS) to estimate overcrowding
- Current status communicated via ReddiNet and via an internal alert system
- Internal workflows and resources shifted to accommodate surges and return-to-normal status

<table>
<thead>
<tr>
<th>EMS Notification</th>
<th>Criteria</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operations</td>
<td>Capacity for care</td>
<td>No action</td>
</tr>
</tbody>
</table>
| YELLOW | ANY 2:  
  - ALL ED treatment spaces full  
  - No hospital capacity  
  - 5 boarding or 2 ICU pts  
  - > 2-hr wait for emergency severity index (ESI) 3 patients  
  - > 15 ESI 3-5 waiting | EMS: Stable patients informed of likely delay |
| RED | ALL ED treatment spaces full AND no inpatient capacity  
AND any of the following:  
  5+ boarding or 2+ ICU pts, 2-hr wait for ESI 3, or > 15 ESI 3-5 waiting | EMS: Stable patients informed that RCH is not available. **Open to high-acuity patients** |
| BLACK | ALL ED treatment spaces full AND no inpatient capacity  
AND any two (2) of the following:  
  5+ boarding or 2+ ICU pts, 2-hr wait for ESI 3, or > 15 ESI 3-5 waiting | EMS: Open only to critical patients |
Supporting Community Alternatives to ED Care

• KP provided more than $2 million to remodel nearby LifeLong Community Health Center to accommodate urgent care patients, and provided logistic, design and other material support
• Many of these patients were previously seen at Doctor’s Medical Center ED
• Additional $2M in state funding will allow further expansion of hours and services
• Between May and July 2015, more than 3,000 patients were seen at LifeLong Urgent Care

Life in the ER Since April 22, 2015

What might have looked like this:  Looks more like this:
Summary

- Outstanding partnership with EMS and community agencies have meant continued success despite:
  - 30% year-over-year increase in volume
  - Marked increase in ambulance traffic
  - “Kaiser Richmond continues to demonstrate outstanding patient transfer of care times to support ambulance return to service for the next 9-1-1 call.”
  - Similar length of stay (LOS) for ED patients as prior era
  - Extremely short LOS for low-acuity patients
  - No increase in (already brief) waiting times
  - No significant change in percentage of patients that elope, or leave without being seen.
  - No measurable adverse outcomes
Impact on Alameda County

Fred Claridge, Director, EMS
Michelle Voos, EMT-P, Hospital Liaison
Alameda EMS

Background

Alameda County is the 7th largest county in California and serves 1.5 million residents over 813 square miles

- Runs 150,000 9-1-1 calls annually
- Primary exclusive operations area (EOA) provider – Paramedics Plus
  - Fire-based ambulance response by Berkeley, Alameda, Albany and Piedmont Fire
- 13 receiving hospitals equipped to receive 9-1-1 ambulance system patients
- Four primary regions – North, South, Mid and Valley
“North” County Region Populations

City of Oakland 413,775
City of Berkeley 112,580
City of Alameda 75,988
City of Albany 18,539
City of Emeryville 10,080
City of Piedmont 10,667

Source: California Census 2014
## Hospitals Serving “North” Region

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Number of 9-1-1 Transports (2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alameda Hospital</td>
<td>2,895</td>
</tr>
<tr>
<td>UCSF Benioff Children's Hospital</td>
<td>1,687</td>
</tr>
<tr>
<td>Alta Bates Summit Medical Center (ABSMC) Berkeley campus</td>
<td>3,775</td>
</tr>
<tr>
<td>Highland Hospital</td>
<td>14,505</td>
</tr>
<tr>
<td>Kaiser Oakland</td>
<td>7,061</td>
</tr>
<tr>
<td>ABSMC- Oakland campus</td>
<td>12,587</td>
</tr>
</tbody>
</table>

## History of ED Diversion

- Longstanding history of ED diversion
- County policy permitted EDs to place themselves on ED divert (using strict guidelines)
- Stakeholder meetings – quarterly receiving hospital committee meetings
- ED diversion not necessarily an ED problem
- Anxiety surrounding removal of ED diversion
History of ED Diversion (cont.)

Use of “bypass” – hospital ED holding two (2) or more ambulances for more than thirty (30) minutes

- EMS-driven decision
- County policy change
- Exceptions noted (specialty centers, obstetrics, sexual assault, closest most appropriate)
- Use of Reddinet to capture
- Monthly reports to each ED director

Looking Ahead …

- Continue collaboration with ED partners and CHA
- EMS blog wait times [www.alcoems.org/blog](http://www.alcoems.org/blog)
- East Bay Chapter CEO meeting bi-annually
Summary: Hospital Closures
A Loss of Critical Infrastructure

- Public health emergency
- Significant regional impacts
- Increased EMS system utilization
- Richmond and San Pablo patients most affected
- Increased walk-ins: Alameda, Kaiser-Richmond, ambulatory planning needed
- Community impacts undefined
- Walk-in ED flow unknown
- Dialysis, SNFs, homeless centers
- Outreach and joint communication

Other Facilities: ED Impacts

ED/hospital surge conditions
- Intermittent and sustained
- Minor, moderate, severe

Long transports
- 15-27 minutes longer
- Cross-county and multi-county

Two- to threefold increase in intrafacility transfers
- Secondary to walk-in acuity
Other Facilities: ED Impacts (cont.)

Higher Acuity
- Potential increase in mortality and morbidity

Patient Safety Risks
- EMS/ED staffing and fatigue
- Mismatches in definitive care

Patients Affected
- Prolonged walk-in ED wait times, 10-12 hours
- Patient-EMS offload times, 5-9 fold increase
- Separated from family and support networks
- Undefined ambulatory and urgent care access

Community Impacts Are Real
Incident Action Plan Recommendation
EMS plan in place, but plan for walk-ins required

Activate Command Centers
- Pre-closure and acute phase
- Ambulatory/urgent care planning

Coordinated Regional Approach
- EMS
- Hospitals
- Regional Disaster Medical Health Specialist (RDMHS)

Coordinated communications
- Regional Joint Information Center (JIC)
- All public information officers

Daily Operations
- Conference calls
- Situational management
Community Awareness is Challenging

Care Access Alternatives
“Not everyone needs an emergency department”

- Surrounding hospitals
- Urgent care
- Community health centers
- Private clinics
- Freestanding emergency department
- Non-911 medical transportation
- Public transportation
Low-Acuity ED Walk-In Access Alternatives: West County Health Care Centers

Low-Acuity ED Volume:
- 15,000 to 20,000
- 41-55 patients per day

Clinics
- North Richmond for Health
- Planned Parenthood (3)
- Brookside Community Health
- West County Health Center
- Kaiser Pinole Medical Offices
- RotaCare Richmond Free Clinic
- Brookside Community Health

Barriers
- After-hours availability
- Community utilization practices

Opportunity
Redistribute to appropriate ambulatory care settings

Hospital Closures and Other Access to Care: Impacts Yet Unknown

- Dialysis
- Cancer center
- Specialty and private practice
- Nursing homes
- Urgent care
- Ambulatory care
7 Skilled-Nursing Facilities
Outreach and Redistribution Needed

11.8 % of DMC ED admissions from SNFs or residential care facilities (OSHPD 2010)

Be Ready for the Unexpected

Dawn Gideon: CEO
“Health care executive with human touch”
Nov. 23, 1958 – June 4, 2015
Even With a Good Plan of Action, Questions and Consequences Arise

Recovery Phase … Still Working the New Norms

- Recovery is situation-dependent
  - External factors
    - Flu, Ebola, raves
  - Community and stakeholders
  - Resources for operational area capability
  - Collaboration with partners
  - Communication and information sharing
  - Data matters
  - Politics and media
Planning for the Next Flu Season

Daily operational area ED volume

<table>
<thead>
<tr>
<th>Average Countywide ED Volume</th>
<th>Normal</th>
<th>10% Surge</th>
<th>15% Surge</th>
<th>20% Surge</th>
<th>30% Surge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contra Costa</td>
<td>1135</td>
<td>114</td>
<td>170</td>
<td>227</td>
<td>341</td>
</tr>
<tr>
<td>Alameda</td>
<td>1450</td>
<td>145</td>
<td>218</td>
<td>290</td>
<td>435</td>
</tr>
<tr>
<td>Per 21 Hospitals</td>
<td>123</td>
<td>12</td>
<td>18</td>
<td>25</td>
<td>37</td>
</tr>
</tbody>
</table>

Contra Costa County: 8 extra ED inpatient admissions per day
Alameda County: 10 extra ED inpatient admissions per day
CDPH Pandemic Threshold 5.6%

The Enormous Efforts to Save the Hospital ... May Fail

<table>
<thead>
<tr>
<th>Doctors Medical Center</th>
<th>80,000 Patients, 7,500 Jobs, &amp; Your Life Are On the Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEARLY 100% IMPACTED</td>
<td>Save Lives KEEP NAC Day 340</td>
</tr>
<tr>
<td>We Save Lives KEEP NAC</td>
<td>Day 340</td>
</tr>
<tr>
<td>Today, tomorrow, every</td>
<td></td>
</tr>
</tbody>
</table>

100
Toward the End, Hospital Staff Need Certainty

“Make a decision.”

Final Days: ED Closed Last
New Delivery Systems May Begin

LifeLong Urgent Care - San Pablo
is here for you and your family!
Open every day from 12-8pm
2023 Vale Road, San Pablo, CA 94806 | www.lifelongmedical.org

Planning for Community Recovery
“It takes a village”
Regional Response Required

Questions?
Thank you

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