Contra Costa County Chevron Fire Incident

Pat Frost RN, MS, PNP
  Director, Emergency Medical Services, Contra Costa Health Care Services

Malcolm Johnson, MD
  Director, Emergency Department, Doctors Medical Center San Pablo

Shirley Steinback, RN
  Medical Group Administrator, Kaiser Permanente East Bay

Caryn Thornburg (Moderator)
  Safety, Emergency Management and Sustainability Officer, ValleyCare Health System
Pat Frost RN, MS, PNP  
Director, Emergency Medical Services  
Contra Costa Health Care Services  

Patricia Frost is the Director of Contra Costa County Emergency Medical Services. She worked as a nurse practitioner and clinical educator at Lucile Salter Packard Children’s Hospital at Stanford for 23 years, where she served on the Hospital Disaster Committee. She began her career as a neonatal and pediatric critical care and transport nurse at Children’s Hospital at Oakland. Pat has participated as both an educator and a member of medical relief pediatric surgical teams in Ecuador and Vietnam. She was the on-call EMS duty officer and EMS branch director during the Chevron incident and was responsible for managing the Contra Costa County Medical Health Operational Area response.

Malcolm Johnson, MD  
Director, Emergency Department  
Doctors Medical Center San Pablo  

Dr. Malcolm Johnson is the director of the emergency department at Doctors Medical Center in San Pablo, where he has worked since 2006. His department treats more than 40,000 patients each year. Dr. Johnson maintains a strong commitment to ensuring underserved patients have access to quality health care. He attended the University of Wisconsin at Madison for medical school and completed his emergency medicine training at Emory University in Atlanta, Georgia.
Shirley Steinback, RN  
Medical Group Administrator  
Kaiser Permanente East Bay

Shirley Steinback is the Medical Group Administrator for Kaiser Permanente, East Bay. She collaborates with the Physician in Chiefs in leading a team of 868 physicians and 2,500 employees to serve approximately 297,900 members in the East Bay. She is a member of the senior leadership team and leads and executes strategic initiatives in the areas of quality, service, access, people, efficiency, reputation and growth. Her scope of responsibility includes the ambulatory departments located at the Oakland and Richmond Medical Center, and Alameda and Pinole Medical Offices. She is accountable for aligning and mobilizing people and activities to achieve Kaiser Permanente’s strategy of quality and service differentiation. Shirley has 30 years of service with Kaiser Permanente. Prior to coming to Kaiser, she worked as nurse and educator for the Sequoia Unified High School District and staff nurse at UCSF Medical Center. Shirley has over 40 years of experience within the health care industry.

Caryn Thornburg  
Safety, Emergency Management and Sustainability Officer  
ValleyCare Health System

Caryn Thornburg has been in the health care industry since 1976. She is a retired U.S. Army combat veteran, having served in third-world countries in field hospitals and on medical response teams in austere conditions following disasters. Caryn is a member of the State Mission Support Team and Secondary Workgroup for the HICS IV Revision project. She is also an instructor for CHA’s Active Shooter, IAP and HICS trainings. She has participated as a member of the Statewide Medical and Health Exercise Workgroup and in the CDPH Surge Capacity project and the Emergency Food Advisory Group. Caryn worked with the Bay Area Urban Area Security Initiative Medical and Public Health projects to sustain and improve the region’s capacity to prevent, protect against, respond to and recover from terrorist incidents and catastrophic events. She also worked for U.S. Army at the Regional Training Site – Medical as a training supervisor and exercise planner for field hospitals, aviation, transportation and logistical supporting units.
Overview of the Event

Pat Frost, RN
Contra Costa Health Care Services
## Overview of the Event

- Timeline of events
  - HazMat event
  - Medical surge event
    - Effects and activities associated with the medical surge

## Contra Costa Timeline:
Snapshot of Major Events

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1828</td>
<td>Fire erupts</td>
</tr>
<tr>
<td>1838</td>
<td>Community Warning Sirens informing community to Shelter-in-Place (SIP) and auto activated MCI alert issued by Sheriff's Dispatch</td>
</tr>
<tr>
<td>1855</td>
<td>EMS Command Activated</td>
</tr>
<tr>
<td>1858</td>
<td>HazMat Command Center activated</td>
</tr>
<tr>
<td>1907</td>
<td>HazMat on scene forms joint command with Chevron and Fire to assess community impact</td>
</tr>
<tr>
<td>1927</td>
<td>County Health Level 3 SIP issued</td>
</tr>
<tr>
<td>2031</td>
<td>MCI upgraded to level 3 (&gt; 50 patients affected)</td>
</tr>
<tr>
<td>2342</td>
<td>SIP lifted after HazMat air sampling</td>
</tr>
<tr>
<td>0100</td>
<td>Hospitals report close to normal operations</td>
</tr>
</tbody>
</table>

![Image of a flammable vapor cloud](image_url)

*Caption: A flammable vapor cloud that led to the fire rises 1,000 feet above the Chevron refinery in Richmond. Photo: Tony Lee / SF*
Fire occurred while Chevron operations personnel evaluating a reported leak in the No. 4 crude unit when an 8-inch pipe bursts.
911 Medical Call Volume

8/6/2012 1828 through 8/7/2013 0500
117 responses (25% surge)
Contra Costa Operation Area
Medical Health Response Acute Phase

HazMat and Fire Event
6 hours
- Command Centers activated
- Assess situation and impacts
- Deploy and coordinate resources
- Surge tents deployed
- Both hospitals sheltered-in-place
- Ambulance mutual aid
- Tier 3 MCI declared (>50 patients)
- KR/DSP placed on internal disaster
- Rapid triage and discharge
- Mitigate disruption of EMS system

Medical Health Response Phase
Medical Surge Event: 18 days

Surge, Surge and More Surge
Community Reaction and Effect on Med/Health Community
- Command Center operations
- Surge resources managed
- Staffing and rapid credentialing
- Mutual aid from other facilities
  - Schools of nursing/medicine (Toro)
  - CEP ED physician deployment
  - Paragon registration
- Physician/mid-level practitioner staffing challenging
- Medical reserve corp deployment
- EMTALA and liability

Hospitals in Response Area

Kaiser Richmond
Doctors Med Ctr San Pablo
Kaiser Richmond Hospital

Hospital Capacity
- 50 inpatient beds
- 15 ED bays
- 8 critical care beds
- > 30,200 ED visits/year
- 7 minutes away
- 2.2 miles from event

Doctors Medical Center Profile

Hospital Capacity
- 189 licensed beds
  - 154 general acute-care
  - 35 MICU beds
- 25 ED treatment rooms
- > 40,000 ED visits/year
- Public, district hospital facility
- 13 minutes away
- 8.6 miles from event

Chevron Incident Medical Surge

Aug 6 – Aug 23
Cumulative Totals as Incident Progressed

- Kaiser Richmond
- Doctors San Pablo
- Cumulative sarco incidence rate
Reported Medical Complaints

- Sore throat
- Burning eyes
- Shortness of breath
- Cough
- Reactive airway exacerbations
- Chest pain
- Anxiety
- Worried well

Industrial Accidents and Richmond
“One of the most dangerous places to live in the nation”
Environmental Protection Justice Study 2010

Measuring Impacts and Effects
Shirley Steinback, RN
Kaiser Permanente East Bay
Malcolm Johnson, MD
Doctors Medical Center San Pablo
Measuring Impacts and Effects

Kaiser Permanente East Bay:

- What about the patients?
  - How ill were the patients?
  - When did you know this was not business as usual?
  - Where did they all go?
- Supplies that ran critically short?
  - How did you get more?
- How was patient tracking coordinated?

- At first, they were all headed toward the ED
- Then we opened Tent City

KP Richmond Tent City
Measuring Impacts and Effects: Supplies

- Staff — requested from KP Oakland
- Water bottles for patients — Contract
- Forms in Spanish — requested from Livermore, and nearby KP sites
- Medical equipment and supplies — for the tents

Measuring Impacts and Effects: EMR

Doctors Medical Center San Pablo

- What about the patients?
  - How ill were the patients?
  - When did you know this was not business as usual?
  - Where did they all go?
- Supplies that ran critically short?
  - How did you get more?
- How was patient tracking coordinated?
Measuring Impacts and Effects: Patients: How many, and where did they all go?

- Code Green called within 30 minutes of emission
  - Initial 24 hours
  - Long-term
- Challenges and Solutions
  - Shortcuts where possible, but same level of care

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space management</td>
<td>Triage</td>
</tr>
<tr>
<td>Long-term patient volume surge</td>
<td>Workflow assessment</td>
</tr>
<tr>
<td></td>
<td>Shortened Process</td>
</tr>
<tr>
<td></td>
<td>Anticipated Patient Need</td>
</tr>
</tbody>
</table>

Measuring Impacts and Effects: Supplies

- Supplies
  - Expected
  - Surprises
- “People” Supplies/Resources
  - Electronic Medical Record (EMR) skills
  - Language skills
  - Supportive services
    - Security
    - Food and nutrition
    - Pharmacy
    - Admitting
    - Environmental services (Housekeeping)
      Patients came with many family members; basics like trash and bathroom supplies were hit hard

Measuring Impacts and Effects: How was patient tracking accomplished?

- Patients needed copy of medical record
- Challenges and Solutions
  - Shortcuts where possible, but committed to providing same level of care

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computerized intake process took too long</td>
<td>Captured necessary information by hand</td>
</tr>
<tr>
<td>Specialized skills needed for our Electronic Medical Record system</td>
<td>Staff from only other hospital in Bay Area volunteered</td>
</tr>
<tr>
<td>Surge of patients returning later for records</td>
<td>Alternate outside location for pick-up</td>
</tr>
</tbody>
</table>
Op Area Resource Requests — Relationships Make a Difference

Being resourceful matters when resources are limited

Communications with Op Area Partners
Medical Surge in NON-Disaster

- Communication will vary during event
- Plan for failures in interoperable communication in response phase
- Plan to respond independent of assistance
- Staffing likely the biggest problem
- OK to act...ask for forgiveness later

Response when all the rules are on is complicated

Media and Communications
Understanding Community Response
Community Impacts

Uncoordinated Community Messaging and Surge

Event 2012 Chevron (30-day report)

<table>
<thead>
<tr>
<th>Event</th>
<th>2012 Chevron (30-day report)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance</td>
<td>Sulfur dioxide, methane, non-methanehydrocarbon, hydrogen sulfide, nitric oxide</td>
</tr>
<tr>
<td>Release</td>
<td>9100 lbs. sulfur dioxide, 48 lbs. hydrogen sulfide, 1700 lbs. methane, 3300 lbs. non-methane</td>
</tr>
<tr>
<td>Vapor Cloud</td>
<td>3000 to 4000 feet high</td>
</tr>
<tr>
<td>Wind speed</td>
<td>11–12 mph, direction SE</td>
</tr>
<tr>
<td>CWS Level</td>
<td>Level III</td>
</tr>
<tr>
<td>Initial ED impacts</td>
<td>Approximately 1000 within 24 hours; no deaths</td>
</tr>
<tr>
<td>Medical Surge duration</td>
<td>18 days</td>
</tr>
<tr>
<td>Total surge</td>
<td>15,213</td>
</tr>
<tr>
<td>Hospitalizations</td>
<td>4 (2 pediatric)</td>
</tr>
<tr>
<td>Medical complaints</td>
<td>Respiratory distress, SSO, nausea, irritated skin, burning eyes/throat</td>
</tr>
</tbody>
</table>
Questions?

Top 3 Take-Away Lessons

Pat Frost, EMS and Med Health Operational Area Coordination:
1. Take the lead and facilitate communication and coordination frequently
2. Extraneous factors (history, politics, media and community messaging) will play unanticipated roles in response and recovery
3. Use all the tools in your toolbox... They work!

Top 3 Take-Away Lessons

Shirley Steinback, Kaiser Richmond:
1. Initiate communication with Chevron sooner to anticipate the effects of their decision-making
2. Activate ICC Medical Director immediately
3. Decision to set up tents sooner
Top 3 Take-Away Lessons

Dr. Malcolm Johnson, Doctors Medical Center, San Pablo:
1. Look to your organization’s strengths to get through emergency
2. Live and breathe disaster plan
3. Importance of communications cannot be understated

Thank you

Pat Frost, RN, MS, PNP  (925) 313-9554  patricia.frost@hsd.cccounty.us
Shirley Steinback, RN  (510) 752-7501  shirley.steinback@kp.org
Malcolm Johnson, MD  (510) 970-5315  malcolmjohnson@cep.com
Caryn Thornburg (Moderator)  (925) 373-4178  ethornbu@valleycare.com