Contra Costa EMS Agency

Continuous Quality Improvement
Core System Measures
Annual Report
2015
System Utilization
2015

Data Source: First Watch
Contra Costa County
911 Ambulance Response and Transport
CQI Annual Report 2015

N= 94,278 Responses
N=73,027 Transports
Contra Costa County 911 Ambulance
% Transport per Response by Month
CQI Annual 2015

N = 94,278 Responses
N = 73,027 Transports
Mean Transport/Response = 77%
EMS Diversion By Hospital
Cumulative Hours
Jan - Dec 2015
N=925 Total Hours on Diversion

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCRMC</td>
<td>405</td>
</tr>
<tr>
<td>KR</td>
<td>207</td>
</tr>
<tr>
<td>SRRMC</td>
<td>149</td>
</tr>
<tr>
<td>SDMC</td>
<td>67</td>
</tr>
<tr>
<td>KWC</td>
<td>52</td>
</tr>
<tr>
<td>JMMC-WC</td>
<td>45</td>
</tr>
<tr>
<td>JMMC-C</td>
<td>0</td>
</tr>
<tr>
<td>KA</td>
<td>0</td>
</tr>
</tbody>
</table>
Contra Costa EMS
Hospital Diversion Hours % by Cause
CQI Annual Report 2015

N=925 Total Hours on Diversion 2015

- CT: 66%
- Other: 29%
- STEMI: 29%
- Trauma: 5%
CQI Report Annual 2015

% Base Hospital Calls by Type

N=3577 calls

- Diversion 57%
- Activation 23%
- Other 20%
CQI Report
Annual 2015
Systems of Care
Cardiac Arrest

Data Source: CARES Registry 2015.
% Bystander CPR by Year

5 Year Comparison
2011-2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Series1</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>35%</td>
</tr>
<tr>
<td>2012</td>
<td>34%</td>
</tr>
<tr>
<td>2013</td>
<td>32%</td>
</tr>
<tr>
<td>2014</td>
<td>39%</td>
</tr>
<tr>
<td>2015</td>
<td>40%</td>
</tr>
</tbody>
</table>
Cardiac Arrest Survival
Utstein Survival by Year
5 Year Comparison
2011-2015

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>503</td>
<td>35%</td>
</tr>
<tr>
<td>2012</td>
<td>528</td>
<td>32%</td>
</tr>
<tr>
<td>2013</td>
<td>512</td>
<td>26%</td>
</tr>
<tr>
<td>2014</td>
<td>542</td>
<td>38%</td>
</tr>
<tr>
<td>2015</td>
<td>683</td>
<td>28%</td>
</tr>
</tbody>
</table>
STEMI ALERTS
Totals by Year
2012 - 2015

- 2012: N=209, 2.4% Increase
- 2013: N=213, 7.4% Increase
- 2014: N=230
- 2015: N=309, 34% Increase
Cardiac Arrest Survival by First Rhythm, 2012-2015

Died

Shockable

- 361
- 214

Unshockable

- 1493
- 214

Unshockable: 87.5% Died, 12.5% Survived

Shockable: 62.8% Died, 37.2% Survived
Cardiac Arrest Rhythm by Witness Status, 2012-2015

Unshockable

- Unwitnessed Arrest: 805
- Witnessed Arrest: 902

Shockable

- Unwitnessed Arrest: 0
- Witnessed Arrest: 424

Cardiac Arrest Rhythm by Witness Status, 2012-2015

Unshockable

- Shockable: 26.3%
- Unshockable: 47.2

Shockable

- Shockable: 73.7%
- Unshockable: 52.8%
Median Time to Intervention by Rhythm, 2012-2015

Time to CPR
- Unshockable
- Shockable

Time to Defib
- Unshockable
- Shockable

Shockable Rhythm by Bystander CPR, 2012-2015

Cardiac Arrests
- Unshockable
- Shockable

Rhythm, 2012-2015

- Unshockable
- Shockable
**Shockable Rhythm by Bystander CPR, 2012-2015**

<table>
<thead>
<tr>
<th></th>
<th>Shockable CPR</th>
<th>First Responder/EMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shockable</td>
<td>43.5%</td>
<td>55.0%</td>
</tr>
<tr>
<td>Unshockable</td>
<td>33.5%</td>
<td>66.5%</td>
</tr>
</tbody>
</table>

**Cardiac Arrest Survival by Hospital STEMI Center, 2012-2015**

- **Not STEMI**:
  - Died: 233
  - Survived: 37

- **STEMI**:
  - Died: 860
  - Survived: 378
### Cardiac Arrest Survival by Hospital

**STEMI Center, 2012-2015**

- STEMI: 69.5% Died, 30.5% Survived
- Not STEMI: 86.3% Died, 13.7% Survived

### Age Adjusted Yearly Cardiac Arrest Rate

- 2012: 46.1 per 100,000
- 2013: 43.9 per 100,000
- 2014: 44.4 per 100,000
- 2015: 54.5 per 100,000

*Age Adjusted to 2000 U.S. Census*
**Age Adjusted 4-Year Cardiac Arrest Rate by Region, 2012-2015**

- West County: 250.5
- Central County: 136.0
- East County: 239.3

*Age Adjusted to 2000 U.S. Census. Rates calculated using 2015 population estimates*
Trauma System
Annual 2014

Data Source: Trauma Registry
Number of Trauma Patients vs. Trauma Center Activations by Year

- 2011: 1,484 Patients, 886 Trauma Center Activations
- 2012: 1,636 Patients, 1,097 Trauma Center Activations
- 2013: 1,588 Patients, 959 Trauma Center Activations
- 2014: 1,526 Patients, 1,123 Trauma Center Activations
- 2015: 1,766 Patients, 1,471 Trauma Center Activations
Median Prehospital On Scene Time Interval
Blunt vs. Penetrating Trauma By Quarter
Annual 2015

Data Source: AMR MEDS
Times rounded up
EMS Events
2015
EMS Events Reported by Month
2015

Frequency

Month

Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

Off Load Delays

Other
EMS Events by General Category
2015
% Policy 4010 vs. Other Event

Policy 4010
44%

Other Events
56%
EMS Events by Characteristics
2015
Number per Characteristic
N=1042

- ITF: 386
- PES: 324
- DEST: 169
- C3: 98
- Divert Red: 26
- AED: 18
- Misc: 21

[Bar chart showing the counts for each category]
END REPORT
Annual 2015
2015
Quality Improvement Initiatives
Quality Improvement Initiatives

High Performance Cardiac Arrest & CPR (HPCA)

The purpose of HPCA is to increase the quality of CPR provided to patients in cardiac arrest. In 2014, indicators to measure quality such as compression, ratios, depth and pauses for shock were developed and deployed. In 2015, the appointed QI Team pulled data to review and determined that our save rate had increased slightly. The program continues to be monitored and new programs are being developed to enhance this project. Further evaluation and reporting will continue in 2016. Sustaining the performance gain will be the top initiative goal in 2016.
Quality Improvement Initiatives

EMS Patient Off-Load Time Reduction

In 2014, an initiative to monitor and reduce the handoff times between ambulances and hospital emergency departments was implemented by the CCCEMS with the support of the CQI team. Current measures reflect that during high-volume periods, patients arriving at emergency departments by ambulance are often waiting longer than 30 minutes for offloading. Measures and other pertinent information continued to be reviewed by internal staff and the QLC. Reports were updated monthly and hospital leadership continued to be informed.

Outcomes showed some slight decreases in off-load times, however, goals for reduction continue to be a challenge for some hospitals. This initiative will continue to be monitored and acted on for further improvement in the 2016 improvement cycle.
Quality Improvement Initiatives

Pediatric Medication Safety

The goals and objectives of the Pediatric Medication Safety initiative was to reduce pediatric medication inaccuracies and to measure and sustain improvements. Data was gathered and reviewed by EMS Staff and published in the EMS Best Practices newsletter. A QLC Task Team was appointed and indicators developed. In 2014, we initially found a reduction by introducing a more accurate length based measuring tool for the paramedics to use. In 2015, we began to see an increase return. The length based measuring device was again evaluated, improved and reinstituted onto the paramedic ambulances. We will continue to evaluate and look for reductions in 2016. Pursuing a sustaining plan to continue reduced pediatric medications inaccuracies will be a challenge for this initiative in the years 2016-17.