Agenda

4:00 p.m. 1. Introduction of Members and Guests

4:03 2. Approval of Minutes from March 9, 2016

4:05 3. Comments from the Public
Members of the public may speak up to 3 minutes each on matters either on or not on this agenda.

4:08 4. Chair’s Report
Kacey Hansen, EMCC Chair

4:16 5. Fire Chiefs’ Report
Fire Executive Chief Representative

4:19 6. Members’ Reports

4:22 7. Quarterly update on Alliance Ambulance Services
Bob Atlas, Assistant Fire Chief, Contra Costa Fire Protection District

4:30 8. Overview of Assisted Outpatient Treatment (AOT)
David Seidner, Program Manager, Contra Costa County Behavioral Health

4:45 9. 5150 Summit Proposal Discussion
Derek Krause, San Ramon Valley FPD / Pat Frost, EMS Director / EMCC Members

4:55 10. EMS Medical Director’s Report
David Goldstein, MD, Contra Costa EMS Medical Director

5:05 11. Ambulance Ordinance
Pat Frost, Contra Costa EMS Director

5:10 12. CAAS / EMSA Complaint
Pat Frost, Contra Costa EMS Director

5:18 13. EMS Director’s Report
Pat Frost, Contra Costa EMS Director


5:30 15. Adjournment

Reasonable accommodations can be made for persons with disabilities planning to attend the EMCC Meeting by contacting EMS Staff at least 24 hours in advance at (925) 646-4690.

Any disclosable public records related to an item on a regular meeting agenda and distributed by the County to a majority of members of the Emergency Medical Care Committee less than 96 hours prior to that meeting are available for public inspection at 1340 Arnold Drive, Suite 126, Martinez, during normal business hours.
Map to Pleasant Hill Community Center, 320 Civic Drive, Pleasant Hill, CA 94523
EMERGENCY MEDICAL CARE COMMITTEE  
CONTRA COSTA COUNTY

MEETING MINUTES  
March 9, 2016

<table>
<thead>
<tr>
<th>Members Present Representing</th>
<th>Members Absent Representing</th>
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</thead>
</table>
| **Chair:** Kacey Hansen *Trauma Center (CC Contract)*  
**Vice Chair:** Gary Napper *Public Managers’ Association*  
**Executive Committee:**  
Ross Fay *Air Medical Transportation Provider*  
Ellen Leng *Alameda-Contra Costa Medical Association*  
Gale Bowen *Contra Costa Sheriff-Coroner*  
Pat Frost *EMS Agency Director (ex-officio)*  
David Goldstein *EMS Agency Medical Director (ex-officio)*  
Michael Johnson *Alliance/American Medical Response*  
Derek Krause *Contra Costa Fire Chiefs’ Association*  
Jon Michaelson *Public Provider Field Paramedic*  
Elaina Petrucci Gunn *American Heart Association*  
Florence Raskin *Hospital Council East Bay*  
David Samuelson *Emergency Nurses Assoc. East Bay*  
John Speakman *District II*  
Kelley Stieler *District I*  
Alvin Tang *Emergency Dept. Physicians (CCC Receiving Hospital)*  
Ross Wilson *Private Provider Field Paramedic*  | Deborah Campbell *District V*  
Gerard Heidkamp *Communications Center Managers’ Association*  
Robert Lutzow *District III*  
Steve Perea *California Highway Patrol*  
Albert Sebilia *American Red Cross*  
German Sierra *EMS Training Institution*  
Steve Simpkins *Contra Costa Police Chiefs’ Association*  
Allan Tobias *District IV*  |

STAFF PRESENT  
Leticia Andreas *Contra Costa EMS*  
Jesse Allured *Contra Costa EMS*

Others Present  
Kim Adams *Reach Air Ambulance*  
Bob Atlas *Contra Costa Fire*  
Steven Blum *Contra Costa Behavioral Health*  
Jan Cobaleda-Kegler *Contra Costa Behavioral Health*  
Lon Goetsch *Contra Costa Fire*  
Joe Greaves *Alameda Contra Costa Medical Association*  
Anessa Hileman *Kaiser Permanente*  
Jill Ray *District II*  
Teo Rivera *Sutter Delta*  
Andy Swartzell *San Ramon Valley Fire*  
Patricia Tanquary *Contra Costa Health Plan*  
Elisa Washington *Hospital Council*

Chair Hansen called the meeting to order at 4:06 p.m.

1. **Introduction of Members and Guests**

2. **Approval of December 9, 2015 Meeting Minutes**  
Member Speakman motioned to approve minutes, seconded by Member Leng; none opposed; motion passed. Minutes approved.

3. **Comments from the Public**  
None.

4. **Chair’s Report - Kacey Hansen, EMCC Chair**  
- Bylaws: Adjustments to membership are effective as of this meeting with alternates seats removed. EMS staff is working with stakeholder groups to submit recommendations to fill vacant seats.  
- June and December EMCC dates have changed to: June 15 and December 7. The location for the June meeting will be at the Pleasant Hill Recreation Center on Civic Drive; December meeting location is TBD.  
- Recognitions for former members: Former alternate members were recognized and will receive certificates of appreciation. Andy Swartzell who has served in various capacities on the EMCC for many years was presented with a special certificate of recognition and a fond farewell on his retirement from San Ramon Valley Fire.

5. **Fire Chiefs’ Report**  
Member Krause reported that he returned from the LAFCO (Local Agency Formation Commission) meeting, where the Municipal Services Review (MSR) report was discussed. The Public review report will be released in late April 2016. Member Krause also updated the group on the status of East County Fire Protection District. Reductions in fire stations in East County have had significant impacts to the EMS System.

6. **Members’ Reports**  
None.

*Alternate*
7. Laura’s Law Update and Psychological Emergencies (5150) Summit Proposal - Derek Krause, San Ramon Valley Fire and Guest Steven Blum CCHS Mental health
   - Discussion on 5150 psychological emergencies that involve multiple stakeholders: County Health, Contra Costa Regional Medical Center, other hospitals, public and private transport providers, transport staff. Challenges include safety, training, legal and resources. Member Krause proposed a 5150 stakeholder summit to revisit countywide 5150 issues. Members Leng and Hansen mentioned a Memorandum of Understanding (MOU) which was established several years ago on 5150 patients.
   - Guest Steven Blum, CCHS Mental Health: Gave a brief update on Laura’s law implementation in Contra Costa in progress.

   Action items:
   - Member Krause offered to compose a letter consisting of a summary of the proposed summit, sending the letter to the EMCC and inviting a representative from each stakeholder to serve on an ad hoc planning committee for the summit.
   - June EMCC invite will be issued to David Seidner from CCHS Forensic Mental Health to explain Laura Law’s process and procedure; and include Douglas Dunn and Lauren Rettagilata from the Assisted Outpatient Workgroup who has been part of the Laura’s Law Implementation.
   - EMS staff will reach out to leadership for Psych Emergency at Contra Costa Regional to participate in the discussion on the 5150 summit planning.

8. Contra Costa Health Plan (CCHP) Efforts supporting West County since Doctors Medical Center (DMC) Closure - Patricia Tanquary, Executive Director CCHP
   - Guest Tanquary discussed various health plan efforts to support West County after the closure of DMC. The Contra Costa Health Plan provides 24/7 advice nurse services for the county. These services are open to any resident in West County, regardless of health plan membership. Advice nurse use has reduced the number of emergency department visits by triaging patients to clinics, urgent care, providing advice for self-care or facilitating physicians for phone consultation.
   - CCHP engages in outreach, such as visiting the Richmond rescue mission. CCHP and Kaiser Richmond are in ongoing dialogue, distributing specific letters and brochures on what a Health Care Provider wants people to do when it is not an emergency. A mobile urgent care unit close to Kaiser Richmond is also being considered.
   - Ongoing efforts are being directed to create easier access to primary care through expanded West County clinic hours and secure email programs to doctors via ccLink.

   - The Alliance transition has been implemented: Ambulance branding continues to progress; Ambulance dispatch communications transitions occurred on February 1; EMS dispatchers from AMR are now co-located with Fire dispatching all ambulances. Further dispatch enhancements are expected to be implemented by April 1.
   - Fire and Ambulance staff integration is going well; field transfer of care is improving; AMR and Contra Costa Fire radio communications are now on the same system.
   - Appreciation extended to EMS Director Pat Frost for her assistance with the Super Bowl mutual aid plan.

10. EMS Medical Director’s Report - David Goldstein, MD, Contra Costa EMS
    - EMS initiated a consolidation of individual meetings to one half day meeting. The first half day meeting convened yesterday.
      - Initial feedback is that the new meeting format is more efficient and respectful of stakeholder time.
      - At the request of stakeholders, EMS is revising treatment protocols to a visual algorithm format. This will be done in multiple stages, with input from various provider agencies. Full implementation is in 2017.
      - EMS is working with East Contra Costa Fire to establish first responder protocols as part of their optional scope for epinephrine and narcan. Once established, the new protocols will create an opportunity for all BLS Fire first responder agencies to use.
    - Initial data for 2015 shows a 20% increase in cardiac arrest. This increase may be associated with some error in data collection. The EMS Agency is continuing to investigate the root cause.

11. Countywide ED/EMS Patient Transfer of Care Public Report: Update - Pat Frost, EMS Director, Contra Costa EMS
    - Public report holding out data for 2014 and first 9 months of 2015 data has been posted. Never Events (patient transfer of care times greater than 60 minutes) have increased for hospitals. Patient transfer of care times were impacted due to the closure of Doctors Medical Center.
    - EMS will be meeting with Sutter Delta leadership regarding offload times and never events on March 22.

12. Review and Approval of 2015 EMS System Plan Objectives - Pat Frost, EMS Director, Contra Costa EMS
    The objectives are part of the annual system plan which is submitted to the state, and lay out what we accomplish regarding our regulatory compliance. Member Frost requested a discussion of the objectives, and motion to approve. Member Fay motioned to approve, Member Speakman seconded; none opposed. 2015 System Plan Objectives approved.

13. EMS Director’s Report - Pat Frost, EMS Director
    - New EMS staff person Michelle Voos will be the new EMS for Children’s (EMSC) Prehospital Care Coordinator. Michelle is a highly experienced Prehospital Care Coordinator from Alameda County EMS and will be working to update our EMSC Program.
    - California State EMS Authority EMS+ HIE grant for $475,000 was submitted: Notifications of awards is anticipated by mid-March. HIE partners include American Medical Response, FirstWatch, Contra Costa Regional Medical Center.
- The work on updating the ambulance ordinance continues; a massive overhaul was necessary. The major changes are associated with non-emergency ambulance services. This effort was informed by EMS Agency participation on the CMS and FBI fraud task conference calls; local experiences with ambulance permit monitoring and increased staffing within the EMS Agency to perform regulatory due diligence. It is anticipated that a draft ordinance will be available at the June EMCC, and go to the Board by the end of the year.
- Contra Costa Times contacted Member Frost regarding an upcoming article about the closure of Doctors Medical Center one year after.
- The CCHS Public Health Department issued a health advisory regarding opioids; please support responsible actions for prescription drugs.

14. Proposed agenda items for June 15, 2016 meeting: Laura’s Law implementation update, 5150 Summit Proposal, Ambulance Ordinance, Quarterly update on Alliance Ambulance Services

15. Adjournment at 5:32pm
ADMINISTRATIVE DIRECTIVE

DATE: May 6, 2016

TO: Contra Costa County Pre-hospital First Responders and EMS Providers

FROM: Dr. David Goldstein, EMS Medical Director

SUBJECT: California AB 15 – End of Life Act (16-CLN-001)

In late 2015, the California Legislature passed the End of Life Act (AB 15), which becomes law on June 9, 2016. The Act allows mentally competent adult residents of the State of California who have a terminal illness with a confirmed prognosis of having 6 or fewer months to live to voluntarily request and receive a prescription medication to hasten their inevitable, imminent death. By adding a voluntary option to the continuum of end-of-life care, this law is designed to give patients dignity, control and peace of mind during their final days.

The Act will be effective June 9, 2016. At that time, terminally ill adult residents of the State of California will have a legal right to expanded end-of-life decisions. The rights afforded by this law ensure that the patient remains in control of their end-of-life decisions. It is important for EMS personnel to be aware of and recognize these rights when interacting with terminally ill patients.

If summoned to or while caring for a terminally ill patient who has exercised an end-of-life option under the Act, EMS personnel should provide comfort care only¹; requests for life-saving interventions after ingestion of end-of prescription medications shall only be honored if requested directly by the patient. EMS providers should determine who called 9-1-1 and why (i.e. to control symptoms or because the person no longer wishes to end their life), and obtain written documentation regarding the patient's end-of-life decision. The EMS provider should withhold resuscitation if there are DNR orders or evidence that the person is one who is exercising their rights under the Act.

Facing death or watching a loved one die is perhaps the hardest thing we face in life. As healthcare providers, these situations are not any easier for us to witness. We must, however, recognize the impact of these events on a patient’s family and loved ones and provide emotional support as necessary while empathizing with the

¹ In general, comfort care includes administration of oxygen, suctioning, manual treatment of an airway obstruction, positioning the patient for comfort and treating pain if expressly authorized in a POLST form or DNR order. Invasive procedures are not a component of comfort care.
situation at hand.

The direction contained within this Administrative Directive will be effective on June 9, 2016. There will not be an immediate change to EMS Policy or Treatment Guidelines; changes will be reflected in accordance with the annual release of the 2017 EMS Policies and Treatment Guidelines. EMS Providers are encouraged to become and remain familiar with the Act and the directions contained within this Administrative Directive.

Questions concerning this change should be referred to Jesse Allured, Program Coordinator, at (925) 646-4690 or via e-mail at Jesse.Allured@hsd.cccounty.us.

Reference:
California AB 15 – End of Life Act
https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520162AB15
The American Heart Association proudly recognizes

Contra Costa County Emergency Medical Services
Martinez, CA

Mission: Lifeline® EMS – BRONZE
Achievement Award - EMS Agency

The American Heart Association recognizes this EMS provider organization for demonstrating continued success in using the Mission: Lifeline EMS program. Thank you for applying the most up-to-date evidence-based treatment guidelines to improve patient care and outcomes in the community you serve.

Nancy Brown
Chief Executive Officer, American Heart Association

James G. Jollis, MD, FACC
Chair, Mission: Lifeline Advisory Working Group

Mark Creager, MD
2015-2016 American Heart Association President

*For more information, please visit Heart.org/MLQualityAwards.
# 9-1-1 Patient Transfer of Care Time

## April 1 - 30, 2016

<table>
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<tr>
<th>Hospital/Other</th>
<th>Average Patient Transfer of Care Time (Min)</th>
<th>Total Number of Transports</th>
<th>90th Percentile (Min) Transfer of Patient Care Time Exceeds this Time in 10% of Cases</th>
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<tr>
<td>CCRMC</td>
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<tr>
<td>Sutter Delta</td>
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<td>0:28:06</td>
</tr>
</tbody>
</table>

*AMR MEDS (ePCR) data.*

*Based on all Contra Costa transports where Time Care Transferred was entered (County-wide AMR Transports).*

*Transfer of Patient Care Times of under 0:01:00 and over 3:00:00 removed from data.*

*All Beh/Psych Transports to CCRMC assumed to be PES*

*All Other Primary Impressions Transported to CCRMC assumed to be ER*

*Doctors Medical Center closed its ER to 9-1-1 Ambulance Traffic on 8/7/2014 at 7:00:00 AM.*
SAFR
Functions Map

Prehospital EHR systems

FirstWatch

EDIE sends ED, billing and outcome data

EHR dataset uploaded to EDIE

If found, data returned to EHR

Paramedic searches EDIE for patient

EDIE sends ED, billing and outcome data

Patient info, status and primary impression sent during transport

ED data, hospital outcome, billing, and discharge data gathered by EDIE

Hospital Status Dashboard or app updates every minute with incoming, arrived, and cleared ambulances, patient info, status, and primary impression

Prehospital EHR dataset validated and made available to hospital staff

Final prehospital EHR uploaded

Patient info, status, and primary impression updated by paramedic during transport

Automatic query once minimum patient info is entered by paramedic

EDIE sends ED, billing and outcome data

Combines all CAD, ProQA, EHR, and EDIE data and made available to authorized users for reporting, real-time analytics, alerts, FirstPass, etc. (event & patient centric)

Outcome Reports

Search
Alert
File
Reconcile
The State of Data Use in EMS

Jay Fitch, PhD
Guillermo Fuentes, MBA
The State of Data Use in EMS

The Cornerstone Series by Fitch & Associates Tackles the Topic of Key Performance Indicators for EMS Practitioners and Agencies

It's clear there is increasing interest among EMS leaders in using data to improve our ability to monitor our systems—often in real time—and to translate that data into information that can improve systems and ultimately patient care. Powered by Fitch & Associates’ experience in all 50 states over three decades, the series will be an up-to-date overview of how agencies can—and are—using their data. Future installments of the Cornerstone Series will cover:

• Performance Measurement and Benchmarking
• How to Measure Financial Performance
• How Data Can Help Improve Safety
• Beyond Response Time: Operational Measures in EMS
• Using HR Data to Strengthen the Workforce
• How Access to Hospital Outcome Measures Will Benefit EMS

To start the series, we did our own research to get a sense of how EMS agencies are using data currently, and the challenges they face.

Contents

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About the Authors

Jay Fitch, PhD, is the founder and president of Fitch & Associates, a fire service and ambulance consultancy based in Kansas City, Missouri. Dr. Fitch is internationally recognized for leadership as a consultant, educator and innovator in the fields of EMS and public safety. He has written and spoken extensively, contributing hundreds of articles and seminars to enhance the profession. He previously served as an EMS Director for major cities and board chair of both a municipal fire district and healthcare facility.

Guillermo Fuentes, MBA, is a partner at Fitch & Associates. He supervises statistical and operational analysis, computer modeling and the development of deployment plans, as well as major technology purchases and communications center installations for clients. He previously served as the Chief Administrative Officer of the Niagara Regional Police Agency in Ontario, Canada, and Associate Director of EMS for the Niagara Region, and served as Deputy Director of Operations in Montreal, Canada.

About Fitch & Associates

For more than three decades, the Fitch & Associates team have provided customized solutions to the complex challenges faced by EMS agencies of every size and service model, both private and public. From system design, objective review and competitive procurements to comprehensive consulting services and on-site interim leadership, Fitch & Associates helps communities ensure their emergency services are both effective and sustainable. For ideas to help your agency improve performance in the face of rising costs, call 888-431-2600 or visit www.fitchassoc.com.
When trying to make improvements within an EMS agency, measurement and evidence are essential tools in the decision-making process and in understanding the impact of any changes. Meaningful data can drive smart, evidence-based decisions and make EMS agencies more effective and efficient. Many EMS organizations are in the early stages of creating systems to use data for regular, meaningful analysis to inform operational, clinical and budgetary decision-making.

In an effort to learn more about the state of data collection, data analysis and data-driven decision-making in EMS, Fitch & Associates partnered with EMS1 to survey hundreds of EMS professionals and leaders. The results of the Cornerstone Survey, presented here, provide insight into how the EMS profession is using data right now—and how it isn’t.

**“The survey’s findings suggest that many agencies are struggling to devote the resources needed for meaningful data analysis.”**

The survey showed that most EMS agencies are collecting vast amounts of data, which is clearly an important first step. But the survey’s findings suggest that many agencies are struggling to devote the resources needed for meaningful data analysis—including personnel, time and technology. Information gleaned from agency data is, after all, essential to helping EMS agencies demonstrate their value to taxpayers, patients, city councils, state agencies, hospitals and other partners in a changing reimbursement landscape.

Many agencies could also do more to communicate to internal and external stakeholders the importance of data analysis and its role in helping the agency make smarter decisions about staffing, clinical care, resource needs and more.

Our goal is not only to assess the needs of the industry as EMS agencies ramp up their investments in data collection and analysis, but also to provide insight and assistance to help you improve. In the coming months, we will be sharing articles, whitepapers, webinars and other resources as part of the Cornerstone Series to help EMS agencies—big and small—move toward evidence-based practices, meaningful data analysis and data-driven decision-making.

**Key Findings**

The Cornerstone Survey confirmed that many EMS agencies are collecting and using data to drive agency improvement, with an overwhelming majority (94.4 percent) of survey respondents saying data analysis is a part of their decision-making process.

Other interesting findings include:

- EMS agencies track a wide variety of metrics related to clinical information, operational efficiency, financial outcomes, the workforce and safety. The most commonly tracked metrics included total response time, scene time, billing collection rate, STEMI recognition, cardiac arrest return of spontaneous circulation (ROSC) and intubation success rate. Most agencies use a NEMSIS-compliant tool to capture patient information.

- EMS agencies report they are regularly reviewing data reports for a number of purposes, frequently to examine response time and clinical skills performance. Agencies still struggle to gain access to hospital data in a way that’s reliable and able to be used meaningfully.

- Many agencies face notable barriers to data collection and analysis, including time constraints, lack of expertise and software tools that don’t meet their data analysis needs.

- EMS agencies report being somewhat prepared for a shift toward pay-for-performance models, and many have begun measuring patient satisfaction and experience.

**About the Survey**

Nearly 500 EMS professionals participated in the Cornerstone Survey, with a majority (61 percent) reporting that they were part of the senior leadership of an organization and most of the remainder representing field supervisors and quality improvement coordinators. They represented a diverse range of service delivery models, with about 20 percent each from fire departments, private for-profit agencies and private nonprofits. The other 40 percent included government “third-service” agencies, hospital-based services and public-utility model organizations.

The survey results also represent agencies both large and small. More than a third reported that their agencies responded to between 1,000 and 10,000 EMS incidents per year. A significant proportion (21.8 percent) also came from large agencies that respond to more than 50,000 incidents per year. Survey respondents from organizations that respond to fewer than 1,000 incidents each year comprised 12.5 percent of the total survey sample.
How Data Is Being Collected and Used

Perhaps not surprisingly, the vast majority of EMS practitioners surveyed—more than 94 percent—stated that their agencies currently use data to drive improvement efforts. While more than two-thirds expressed confidence in the completeness and accuracy of the data their agencies are collecting, it is clear that they still frequently lack access to much of the information they need and only analyze a limited subset of the data. However, with more than three-fourths reporting use of a NEMSIS-compliant tool to capture patient information, the National EMS Information System has certainly aided local EMS organizations looking to have access to patient care data in order to measure performance.

Additionally, many respondents stated that their agency regularly incorporates data from other organizations into agency improvement processes. Most often, they stated that they incorporate data from dispatch centers (70.4 percent) or hospitals (56.9 percent). A significant percentage of respondents reported that their agency uses data from fire departments or other first responders (35.0 percent) or aeromedical services (20.1 percent). That more than half of the EMS professionals who responded said their agencies were using hospital data is significant, yet until that number reaches closer to 100 percent, we know that EMS still isn't where it needs to be. As part of the healthcare continuum, and in order to improve patient care, EMS needs access to hospital information.

**IMPLICATION**

Although many EMS agencies report incorporating data from other organizations, more needs to be done to ensure EMS has the information it needs to serve patients and evaluate and improve care. Just over half of EMS agencies surveyed are receiving data from hospitals, which can provide information that is vital to the delivery of seamless care and to the quality improvement process. Every day, EMS providers across the country provide hospitals with patient data. Agencies need to turn those relationships into data-sharing partnerships, where hospitals consider it routine business to provide outcome information to their EMS colleagues.

What Are EMS Agencies Measuring?

While the survey revealed that EMS systems are tracking a wide range of measures, six stood out as the most commonly used, by more than 300 respondents. They include operational measures, a financial measure and several clinical measures:

- Total response time
- Scene time
- Collection rate
- STEMI recognition
- Cardiac arrest return of spontaneous circulation (ROSC)
- Intubation success rate

Other commonly examined statistics include overtime hours and costs, turn-out (or “chute”) time, stroke recognition and injury rates from lifting and moving patients.

In general, it is clear that what EMS measures is influenced more by what data is available than by what truly matters to patient outcomes. Operational process measures are still by far the most commonly viewed measures, with more than three-fourths of survey respondents reporting that response time and call volume are regularly examined. The majority of respondents also reported examining clinical process measures, such as skills performance and protocol compliance, while fewer than half said they regularly look at patient outcomes.

**IMPLICATION**

EMS too often relies on the data and measures that are easy to find and calculate, rather than the ones that can be most effective in assessing performance and making improvements. This often leads to changes that improve on those measures but may not make the system more effective.
Operational Data

More than half of the survey respondents stated their agency measured the following operational data points:

- Total response time
- Scene time
- Chute/turn-out time
- Call processing time
- Total dispatch time

Given that the data most frequently collected and used by EMS are response times, it’s interesting that agencies were nearly split on how they define that measure, with about 42 percent using time from receiving the call to arriving on scene, and 38 percent starting the clock on dispatch instead.

**How do you define response time?**

- From call received to on scene: 42%
- From dispatch to on scene: 38%
- From unit en route to patient side: 6%
- From dispatch to patient side: 4%
- From call received to patient side: 4%
- Other: 5%

If using response time to assess system health, it’s most important that an agency pick a definition and remain consistent in order to see any trends over time. However, with many EMS agencies benchmarking times against each other and various standards, it is critical to ensure that agencies are only comparing their times to those that are measured using the same definitions for when the clock should start and stop.

**IMPLICATION**

Operational data is most useful when it helps an agency understand how to make changes to become more efficient or better communicate its value and/or resource needs. Agencies should focus on data that helps:

1. Understand how busy the system is, i.e., supply and demand of resources.
2. Communicate to the community, partners and other stakeholders return on investment and justify the value of the EMS agency or growing resource needs.

Clinical Data

Measuring clinical metrics such as protocol compliance or clinical skills or procedure success rates is essential to knowing that the agency is properly treating patients and focusing training in the right areas. Clinical outcomes offer an important way for EMS agencies to justify their lifesaving value to the public and to policymakers. Most of the clinical metrics collected by EMS agencies are focused on clinical skills and procedure success rates and not patient outcomes, which could present challenges should reimbursement be more directly tied to outcomes in the future. More than 75 percent of respondents said their agencies measure return of spontaneous circulation, while only half of respondents said they look at survival-to-discharge, when assessing cardiac arrest outcomes. This is yet another example of how limited access to the right data can create barriers to good measurement, as ROSC is considered an inferior measure to survival-to-discharge. Looking only at ROSC can in fact sometimes cause EMS providers to think improvements are being made, even though increases in ROSC rates do not always lead to increases in survival.

Process measures, such as intubation and IV success rates, can help an agency assess its own training efforts, but it is unclear if there is any tie between skills success and clinical outcomes.

On an encouraging note, a large majority of survey takers reported that they assess how well their agencies identify stroke and STEMI patients, two clinical conditions where EMS can make a significant difference in people’s lives simply by recognizing the problem and getting the patient to the right care at the right time.

**IMPLICATION**

Given the increasing focus on patient outcomes, more outcome-based measures could be prioritized among the clinical data collected by EMS agencies. To do so, most EMS agencies will need to work with hospitals and other healthcare organizations to create a system for consistent tracking and reporting of patient clinical outcomes.

Even where clinical process measures continue to be a focus, it is important to align them with positive outcomes and to tie data on clinical process to training and improvement.

Other Data

Survey participants also reported collecting and analyzing information related to finance, safety and the workforce. The vast majority of EMS organizations said that they reviewed transport collection rates as well as cost and revenue per transport. More than 80 percent said they also regularly look at overtime hours and associated costs. A much smaller percentage analyzes data on employee turnover, satisfaction and wellness.

A significant number of respondents are also looking at several health and safety issues, including injury rates from lifting and moving patients and vehicle collision rates. Only a handful are tracking data on crew fatigue and workload.
### By the Numbers: What’s Being Measured and Tracked

#### Operational Data

<table>
<thead>
<tr>
<th>Metric</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total response time</td>
<td>80.43%</td>
</tr>
<tr>
<td>Scene time (STEMI, CVA, Trauma)</td>
<td>76.09%</td>
</tr>
<tr>
<td>Chute/turn-out time</td>
<td>68.36%</td>
</tr>
<tr>
<td>Call processing time</td>
<td>60.39%</td>
</tr>
<tr>
<td>Total dispatch time</td>
<td>59.66%</td>
</tr>
<tr>
<td>At-hospital time</td>
<td>57.00%</td>
</tr>
<tr>
<td>Transport time</td>
<td>54.11%</td>
</tr>
<tr>
<td>Travel time</td>
<td>51.45%</td>
</tr>
<tr>
<td>Total task time</td>
<td>46.62%</td>
</tr>
<tr>
<td>Unit hour utilization (UHU)</td>
<td>45.65%</td>
</tr>
<tr>
<td>At-patient-side time</td>
<td>45.65%</td>
</tr>
<tr>
<td>Dispatch assignment accuracy</td>
<td>41.55%</td>
</tr>
<tr>
<td>Other</td>
<td>3.86%</td>
</tr>
</tbody>
</table>

#### Clinical Data

<table>
<thead>
<tr>
<th>Metric</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEMI recognition</td>
<td>76.27%</td>
</tr>
<tr>
<td>Cardiac arrest: ROSC</td>
<td>75.30%</td>
</tr>
<tr>
<td>Intubation success rate</td>
<td>73.12%</td>
</tr>
<tr>
<td>Stroke recognition</td>
<td>69.01%</td>
</tr>
<tr>
<td>IV success rate</td>
<td>63.44%</td>
</tr>
<tr>
<td>Time to 12 lead</td>
<td>54.00%</td>
</tr>
<tr>
<td>Medication errors</td>
<td>54.00%</td>
</tr>
<tr>
<td>STEMI door-to-balloon time</td>
<td>52.54%</td>
</tr>
<tr>
<td>Cardiac arrest: survival-to-discharge</td>
<td>46.73%</td>
</tr>
<tr>
<td>Pain management</td>
<td>43.10%</td>
</tr>
<tr>
<td>Patient restraint (physical or chemical)</td>
<td>22.76%</td>
</tr>
<tr>
<td>Sepsis recognition</td>
<td>18.16%</td>
</tr>
<tr>
<td>Heart failure recognition</td>
<td>13.08%</td>
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<tr>
<td>Other</td>
<td>8.23%</td>
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</table>

#### Finance Data

<table>
<thead>
<tr>
<th>Metric</th>
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</thead>
<tbody>
<tr>
<td>Collection rate</td>
<td>87.02%</td>
</tr>
<tr>
<td>Revenue per transport</td>
<td>72.38%</td>
</tr>
<tr>
<td>Cost per transport</td>
<td>66.02%</td>
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<tr>
<td>Other</td>
<td>5.52%</td>
</tr>
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</table>

#### Workforce Data

<table>
<thead>
<tr>
<th>Metric</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overtime hours/costs</td>
<td>81.99%</td>
</tr>
<tr>
<td>Turnover rate</td>
<td>53.74%</td>
</tr>
<tr>
<td>Employee satisfaction</td>
<td>50.14%</td>
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<tr>
<td>Employee wellness</td>
<td>5.52%</td>
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<tr>
<td>Meal breaks</td>
<td>11.08%</td>
</tr>
<tr>
<td>Other</td>
<td>4.43%</td>
</tr>
</tbody>
</table>

#### Safety Data

<table>
<thead>
<tr>
<th>Metric</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury rates (lifting and moving patients)</td>
<td>77.84%</td>
</tr>
<tr>
<td>Injury rates (everything else)</td>
<td>72.02%</td>
</tr>
<tr>
<td>Vehicle collision rates</td>
<td>68.98%</td>
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<tr>
<td>Patient safety</td>
<td>59.56%</td>
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<td>Cost of time lost due to injuries</td>
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<td>Crew fatigue/workload</td>
<td>31.30%</td>
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<tr>
<td>Violence against workforce</td>
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</tr>
<tr>
<td>Sleep time (24-hour or longer shifts)</td>
<td>19.67%</td>
</tr>
<tr>
<td>Other</td>
<td>1.66%</td>
</tr>
</tbody>
</table>
Barriers to Data Analysis

Data is only useful when analyzed in a way that places it within context and allows the information to drive or influence decisions. Survey respondents reported a number of barriers to meaningful data collection and analysis in EMS agencies.

Barriers to Data Collection and Analysis
A large majority of survey respondents (76.2 percent) cited a lack of time as the biggest barrier to using data effectively. A majority also pointed to a lack of expertise and knowledge as an obstacle, and nearly half felt that they did not have the technological capabilities necessary to perform adequate data collection.

Many survey respondents (19.6 percent) lacked confidence that data they collected would actually be used in the decision-making process. Other barriers cited include cost, lack of personnel, poor data quality, lack of appropriate software tools and a struggle to collaborate with other organizations such as hospitals.

Data Collection and Analysis Resources
As with many roles within EMS agencies, the task of collecting and analyzing data is often left to someone who has minimal training and experience, often a paramedic who teaches herself on the job before being rotated to another post. A majority of survey respondents (67.0 percent) stated that their agency does not have a dedicated data analyst. In cases where an agency does have a dedicated data analyst, about 40 percent of survey respondents stated this person was not formally trained in data analysis.

IMPLICATION
In order to effectively use data through meaningful data analysis and reporting, EMS agencies need to dedicate budget and staff time to hiring and training more data analysts. Return on investment needs to be assessed with budgeting staff time or new software tools for reporting and analysis to understand how more trained professionals or better tools could save time and money in the long run.

Time for data collection and analysis needs to be built into the agency’s workflow and staff job description to assure that this is a valued part of the agency’s operations. Much like an agency should set aside resources for fleet maintenance or medical equipment, there must be funding allocated for the collection and analysis of data. Where time and resources for data analysis are significantly limited, agencies can look to other entities, from local universities to health departments, for assistance. Partnering with other local EMS agencies or other healthcare providers to share the costs of the technology or personnel needed for data analysis may also facilitate greater data sharing and more comparative data analysis.

Which of these is a barrier to data collection and analysis?

- Time
- Expertise/knowledge
- Technology
- Information isn’t going to be used
- Other
As mentioned above, nearly half of survey respondents listed technology as one of the barriers to data collection and analysis. Some respondents mentioned the limitations of the software, while others mentioned its cost. The vast majority (72.6 percent) of respondents use software solutions to create automated data reports, yet clearly many don’t believe their current software is meeting their needs.

**What Software Tools are Being Used?**

The most frequently used software tools for EMS data reporting and analysis were those embedded within electronic PCR systems or CAD systems. Nearly half of survey respondents (49.7 percent) reported their agencies use Microsoft Excel or Access or a similar program. Some agencies reported using other solutions, such as FirstWatch and FirstPass or other third-party analysis programs.

**Are Agencies Investing in New Software Tools?**

Although most survey respondents use software in data reporting, and nearly half identified technology as one of the barriers to data collection and analysis, a majority (54.5 percent) stated their agencies were not discussing or had no immediate plan to invest in new technology to improve data collection and analysis.

Only 17.4 percent of respondents said their agency would soon make investments in technology to help with data collection and analysis. Another 12.4 percent of respondents said their agency had done so recently; 15.7 percent of respondents said they would like to invest in new software but did not have the funding to do so.

**IMPLICATION**

EMS agencies should work collaboratively with software companies and other healthcare agencies to articulate their need for software that is affordable and user-friendly and allows for sharing across agencies and organizations. New tools should be NEMSIS-compliant to allow for consistency and benchmarking between organizations. Where EMS agencies have invested in new software to help with data collection and analysis, they should be open to sharing their experience using the software with software developers as well as other agencies looking to invest in new tools.
Preparing EMS for Changes in Reimbursement

With the healthcare reimbursement system still in flux, it is unclear what payment for EMS will look like in the near and distant future. However, the shift away from fee-for-service to a pay-for-performance or value-based model is clearly underway and will have significant impact on EMS operations and finances. Part of that shift will likely involve the use of performance measurement to demonstrate effectiveness and efficiency, whether directly to payors or to other stakeholders, including patients and regulators.

When asked whether local city or county leadership or other stakeholders see value in performance measurement, the majority of survey respondents (63.2 percent) stated that they did. When it comes to preparedness for pay-for-performance in EMS, though, only a quarter of survey respondents said they felt “prepared” or “very prepared” for this change.

Measuring Patient Satisfaction

Within the pay-for-performance framework, the importance of tracking patient satisfaction and using it to rate providers or adjust reimbursement rates has gained traction. EMS agencies, too, are attempting to measure patient experience and satisfaction; 58.7 percent of survey respondents said that their agency was trying to track this metric. Of the agencies that tracked patient satisfaction and experience, 69 percent tracked it internally, about 18 percent measured it through a third-party, and 13 percent said it was not measured through either means. A majority of survey respondents (78.8 percent) responded that their agency measures patient satisfaction and experience using a mail-in survey, while about 20 percent said they used phone surveys.

IMPLICATION
As EMS prepares for changes in reimbursement models, it can look to other organizations in the healthcare system to gauge how they have responded to the move toward value-based reimbursement. Measuring patient satisfaction not only prepares EMS agencies for a possible use of this measure by payors, but it can provide important insight into how the agencies are perceived by the communities they serve.

Summary

The Cornerstone Survey revealed that EMS agencies’ leaders understand the importance of using information to drive decision-making but struggle to find the time, resources and knowledge to ensure they are accurately and consistently using data to measure the right things.

According to the survey, EMS agencies track a wide variety of metrics including measures of clinical outcomes, operational efficiency, financial outcomes, the workforce and safety. Across agencies, six metrics stood out as the most commonly tracked:

- Total response time
- Scene time
- Collection rate
- STEMI recognition
- Cardiac arrest ROSC
- Intubation success rate

Although many, if not most, EMS agencies are systematically tracking data, a number of organizations point to barriers to meaningful data analysis. Most often cited were lack of time, lack of knowledge and expertise, and lack of adequate technology. Just as EMS agencies should not be satisfied if paramedics are not trained properly to perform their jobs or do not have the proper tools to treat patients, they should not ignore the importance of having appropriate resources to use information and data to make decisions. Otherwise, it is nearly impossible for them to know how their agency is performing or whether changes are having the intended impact.

“Just as EMS agencies should not be satisfied if paramedics are not trained properly to perform their jobs...they should not ignore the importance of having appropriate resources to use information and data to make decisions.”

The results of the Cornerstone Survey conducted by Fitch & Associates suggest that EMS is in a time of transition regarding how agencies collect, analyze and use data. While this may be daunting, it also provides an opportunity for agencies to embrace data-driven decision-making and set up systems, budgets and personnel to align with this approach.
Patient Transfer of Care Times by Facility
90th PERCENTILE OF ALL FACILITIES
May 2015 - April 2016
64,944 Transports (5,412 per Month)
Source: AMR MEDS (ePCR Database)
Patient Transfer of Care Times by Facility (90th Percentile)

May 2015 - April 2016

Source: AMR MEDS (ePCR Database)

John Muir - Concord
John Muir - Walnut Creek
Kaiser Hospital - Antioch
Kaiser Hospital - Richmond
Kaiser Hospital - Walnut Creek
Contra Costa Regional Medical Center
Sutter Delta Medical Center
PES - Contra Costa Regional Medical Center

Month & AMR Transport Volume

<table>
<thead>
<tr>
<th>Month</th>
<th>5,407</th>
<th>5,304</th>
<th>5,290</th>
<th>5,209</th>
<th>5,222</th>
<th>5,399</th>
<th>5,282</th>
<th>5,629</th>
<th>5,756</th>
<th>5,354</th>
<th>5,672</th>
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<td>May '15</td>
<td>Jun '15</td>
<td>Jul '15</td>
<td>Aug '15</td>
<td>Sep '15</td>
<td>Oct '15</td>
<td>Nov '15</td>
<td>Dec '15</td>
<td>Jan '16</td>
<td>Feb '16</td>
<td>Mar '16</td>
<td>Apr '16</td>
<td></td>
</tr>
</tbody>
</table>
Patient Transfer of Care Times by Facility (90th Percentile)
John Muir - Concord
May 2015 - April 2016
9,684 Total Transports (807 per Month)
Source: AMR MEDS (ePCR Database)
Patient Transfer of Care Times by Facility (90th Percentile)

John Muir - Walnut Creek

May 2015 - April 2016

9,152 Total Transports (763 per Month)

Source: AMR MEDS (ePCR Database)
Patient Transfer of Care Times by Facility (90th Percentile)
Kaiser - Antioch
May 2015 - April 2016
6,190 Total Transports (516 per Month)
Source: AMR MEDS (ePCR Database)
Patient Transfer of Care Times by Facility (90th Percentile)
Kaiser - Richmond
May 2015 - April 2016
9,951 Total Transports (829 per Month)
Source: AMR MEDS (ePCR Database)
Patient Transfer of Care Times by Facility (90th Percentile)
Kaiser - Walnut Creek
May 2015 - April 2016
6,833 Total Transports (569 per Month)
Source: AMR MEDS (ePCR Database)
Patient Transfer of Care Times by Facility (90th Percentile)
Contra Costa Regional Medical Center
May 2015 - April 2016
5,514 Total Transports (460 per Month)
Source: AMR MEDS (ePCR Database)
Patient Transfer of Care Times by Facility (90th Percentile)

CCRMC - PES

May 2015 - April 2016

7,983 Total Transports (665 per Month)

Source: AMR MEDS (ePCR Database)
Patient Transfer of Care Times by Facility (90th Percentile)
Sutter Delta Medical Center
May 2015 - April 2016
9,637 Total Transports (803 per Month)
Source: AMR MEDS (ePCR Database)
Sutter plans future closing of Berkeley emergency services

By Judith Scherr, Correspondent
East Bay Times

Posted:Mon Apr 25 14:35:22 MDT 2016

BERKELEY -- By 2030, or possibly sooner, there may be no emergency medical services in Berkeley.

Alta Bates Summit Hospital will close its acute care facility and emergency department in south Berkeley sometime between 2018 and 2030, hospital officials said, confirming rumors swirling around the city for years.

The services will be consolidated at the Summit campus, in Oakland, as mandated by SB 1953, which requires by 2030, hospital facilities will be able to withstand a major earthquake.

The issue was highlighted March 29 when the City Council voted unanimously to direct the city Disaster and Health commissions to evaluate the consequences on the community of the closures and to explore alternatives.


Councilman Jesse Arreguin expressed outrage.

"Sutter's using the requirement that the Alta Bates Campus be earthquake safe as an excuse to consolidate services," he said. "Moving acute care to Summit is going to make it that much more (difficult) for somebody in dire need of medical attention."

Arreguin added that with last year's closure of Doctors Hospital in San Pablo, "this is a huge issue for the whole I-80 corridor."

Sutter Health CEO Chuck Prosper contended in an October 2015 memo to staff, that Alta Bates had to shut down services.

"We face a State of California seismic deadline that requires us to cease inpatient, acute care services at Berkeley's Alta Bates Campus in 2030," he wrote, conceding that the issue goes beyond earthquake safety.

"Regardless of the seismic deadline, we must adapt to changes in health care if we are to survive in today's world," he wrote. "Operating two full service hospitals less than three miles apart is inefficient. In today's hypercompetitive environment, employers and consumers are choosing health services based on costs as much as quality. To excel we must be competitive."

In an email exchange with this newspaper, Alta Bates spokeswomen Carolyn Kemp said she was unable to add detail to the future plans.

"We do not have a finalized long range plan at this time and therefore there are also no building plans," Kemp said in an April 8 email. "Ultimately our goal is to reuse the Alta Bates site in its permitted capacity."

There are no plans to relocate the cancer and behavioral health services at the Herrick site, she said in an April 19 email.

Councilman Kriss Worthington, like Arreguin, argued at the council meeting that Sutter was using earthquake safety as an excuse to consolidate services.

"They're saying, 'State law requires us to do this,' but that's not what it requires us to do," he said, contending in a phone interview last week that hospital administration should be flexible. For example, it could shut down the acute care hospital while maintaining Berkeley's emergency services, he said.
State Assemblyman Tony Thurmond is planning a regional meeting on the question with the community, city officials and Alta Bates' representatives in the next few months.

"We're still reeling from the loss of Doctors Hospital," he said. Having a local hospital is "literally important to the health of the community."

Neighborhoods adjacent to Alta Bates have unique concerns. They have struggled with the hospital for decades over questions of noise, traffic, litter and parking, according to Lucy Smallsreed, president of the Bateman Neighborhood Association.

Smallsreed said the neighborhood hasn't succeeded in getting Alta Bates to discuss future site plans.

"We all like having the hospital there," she said. "We just want them to be a good neighbor."

The Community Health Commission will discuss the issue at its meeting at 6:30 p.m. April 28 at the South Berkeley Senior Center, 2939 Ellis St.

The Disaster and Fire Safety Commission will discuss it at its meeting at 7 p.m. May 25, Fire Department Training Facility, 997 Cedar St.
This data represents all west county patient destinations. Under Contra Costa EMS destination Prehospital protocols patient destination is determined by a variety of factors. These include patient condition (critical or stable), the need for a specialty center destination, the need for pediatric care and/or medical care and/or insurance. Based on this data it cannot be determined how many patients would have normally gone to Doctors. Based on this data it cannot be determined how many patients would have normally gone to Doctors.
West County Transport Destinations
January 1, 2014 to April 30, 2016
44,159 Total Transports

Kaiser Richmond
Kaiser Vallejo
CCRMC
Other
Doctors San Pablo
Kaiser Oakland
Summit North
Childrens Oakland
Alta Bates
John Muir Walnut Creek
John Muir Concord

8/7/2014
DMC Closed ER to Ambulance Traffic at 7:00 AM

4/21/2015
DMC Closed ER at 7:00 AM
This data represents all west county patient destinations. Under Contra Costa EMS destination Prehospital protocols patient destination is determined by a variety of factors. These include patient condition (critical or stable), the need for a specialty center destination (STEMI, Stroke, Trauma, Pediatric, 5150, Behavioral), patient location to the closest appropriate facility, patient usual source of medical care and/or insurance. Based on this data it cannot be determined how many patients would have normally gone to Doctors.
DATE:       June 2, 2016

TO:         Local EMS Administrators
            EMS Medical Directors
            EMS Providers
            Other EMS System Stakeholders

FROM:       Howard Backer, MD, MPH, FACEP
            Director

SUBJECT:    EMSA Data Strategy Document

The purpose of this document is to share EMSA’s strategy on how we will collaborate
with the EMS community to improve the quality of data submitted to CEMSIS.

EMSA recognizes the benefit of standardized statewide EMS data collection to
successfully meet the increasing demand for quality data that describe EMS services;
however, EMSA also recognizes the challenges to this goal. It is EMSA’s vision to
utilize improved data quality to support the Triple Aim: improving patient health;
improving health outcomes; and reducing costs. This document states EMSA’s goals
that support this vision and that will position California to participate fully in national
efforts to develop meaningful performance measures and data quality.

In the near term, EMSA will work collaboratively with EMS partners to standardize data
and improve data quality based on electronic data systems, even without the benefit of
a single data system.

EMSA’s strategy embraces the recent legislative mandates toward electronic data
systems contained in AB 503, AB 1129, AB 1223, and SB 19 and supports technical
assistance for LEMSAs and providers.

Please contact either Tom McGinnis at Tom.mcginnis@emsa.ca.gov; 916-431-3695
or Kathleen Bissell at Kathy.bissell-benabides@emsa.ca.gov; 916-431-3687 with any
questions concerning this memo.

HB/kb
EMERGENCY MEDICAL SERVICES AUTHORITY (EMSA)
STRATEGY for DATA COLLECTION, EVALUATION, and QUALITY

Emergency Medical Services Authority
And the Executive Data Advisory Group

Updated: June 2, 2016 (Ver5)

BACKGROUND AND HISTORY
EMSA and LEMSAs are currently experiencing an unprecedented convergence of opportunity and demand involving the collection and meaningful use of Emergency Medical Services (EMS) and specialty care data. Drivers include health care reform, patient outcome focused performance improvement, current and new legislation, grant and funding requirements, community expectations for efficient EMS system design, and changes in the national policy and practice of collecting EMS data. Development of a cohesive statewide EMS data collection and meaningful use strategy is urgently needed in order to position EMS in California to optimize opportunities and meet the increasing demand. This includes development of a comprehensive and integrated statewide approach to how we collect, analyze, report and utilize data.

Currently the national healthcare system is undergoing a major change driven by the need for greater economy, quality of care, and population health—all demonstrated by data. EMS will be swept along in these changes and the resulting model for healthcare. Until recently, EMS has been largely excluded from the healthcare data revolution, but there is an emerging realization that EMS plays a key role in many critical and costly medical interventions such as trauma, stroke, STEMI, and overall emergency care. Additionally, as part of the Office of the National Coordinator for Health Information Technology strategy, there is an increased emphasis on interoperability and explicit calls on EMS to be fully integrated into the healthcare information technology infrastructure. In the future, EMS will not be simply a fee-for-service transportation service; rather, EMS will be a fully integrated component in the broader challenge of community healthcare as well as the chain of emergency care.

Data played a pivotal role in the early development of EMS in the United States. In 1966 The National Academies of Science published Accidental Death and Disability: The Neglected Disease of Modern Society, which would become known as “The White Paper” presented compelling data that was widely utilized by the National Transportation and Safety Administration (NHTSA) and early EMS leaders to successfully argue for organized EMS systems. The resulting shift to a systems based approach supported by an effective governance structure led to great improvements in EMS delivery and patient care throughout the country. By all accounts this was a major

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1 Members include: Bruce Barton, Ed Hill (former), Dave Magnino, Vicki Pinette (new), Joe Barger, Karl Sporer, Ken Miller, Mark Roberts; Tom McGinnis; Kathy Bissell; Howard Backer
turning point for EMS and healthcare in the United States that began with the collection, analysis and reporting of death and disability data.

Historically, EMS data collection efforts in California have been decentralized with the LEMSAs collecting, analyzing and reporting data based on local system needs. At the State level, without reliable and consistent data, EMSA has relied on the review and approval of EMS plans from local EMS agencies that provide descriptive system design and program information, current status, and planning goals, but limited system performance metrics.

Some LEMSAs have established sophisticated data collection systems; however, there is a lack of uniformity in data collection systems, varied analytic methodologies and limited success in the data reporting. This dynamic has resulted in data output variation that hamper EMSA and some LEMSA’s ability to meet their statutory mandate and key function to assess and validate the effectiveness of EMS systems in delivering care (Health and Safety Code 1797.102). This is demonstrated by the challenges faced by Core Measures reporting. Although the project is a national model for state EMS performance measurement, the completeness, comparability, and validity of the results are irregular due to the wide disparity of data systems, collection, and reporting.

As part of an EMS vision process in 2000, an EMS system stakeholder group recommended that a single data collection system be implemented statewide. However, the rapid growth of health information technology and the lack of accepted national EMS data standards made this recommendation unrealistic. The goals developed by that stakeholder group included:

1. Achieve statutory mandates at the local and State level;
2. Understand the effectiveness of EMS systems;
3. Improve the quantity and quality of pre-hospital EMS and trauma data submitted; and
4. Improve clinical care and engage in continuous quality improvement (CQI or QI) activities.

These goals are just as cogent today, but there is new opportunity to achieve them through development of a cohesive statewide EMS data collection and meaningful use strategy.

**Statutory Authority and Responsibility**

The legislative intent and goal described in the EMS Act is to have a coordinated EMS system in the state of California. The EMS Act mandates collection of data to evaluate the effectiveness of the current system, detect practices in patient care and trends in patient movement, and adjust EMS systems accordingly. LEMSAs and EMSA rely upon data and information to adequately assess and coordinate local EMS systems.

*The local EMS agency shall plan, implement, and evaluate an emergency medical services system*...(1797.204). Evaluation is one of the responsibilities specifically
assigned to the medical director: Every local EMS agency shall have a … medical director … to provide medical control and to assure medical accountability throughout the planning, implementation and evaluation of the EMS system. (1797.202)

Among the duties conferred on EMSA by statute (H&S code 1797.102) is to “…assess each EMS area or the system's service area for the purpose of determining the need for additional emergency medical services, coordination of emergency medical services, and the effectiveness of emergency medical services”. The statute states “shall assess”, indicating it is a mandatory duty and further instructs that it be performed “utilizing regional and local information”.

H&S Code 1797.103 assigns additional duties to EMSA beyond assessing each EMS area. EMSA “…shall develop planning and implementation guidelines for emergency medical services systems which address the following components:

(f) Data collection and evaluation.

In addition, EMSA is given the responsibility “for the coordination and integration of all state activities concerning emergency medical services”. (Section 1797.1)

EMSA, LEMSAs, and local EMS providers are all required by regulation to actively participate in a QI program. Additionally, local EMS agencies have a requirement to collect data in order to develop their local EMS plans.

Taken together, the statutes and regulations create a repeated mandate for system evaluation at the local and state levels, and the expectation that EMS providers and LEMSAs collect and submit data to EMSA to achieve the required objectives. The requirement for an evaluation of the system at the state level requires complete and reliable data from the all parts of the EMS system to provide a balanced and complete picture and to understand the diversity inherent in any statewide program in California.

CEMSIS and NEMSIS
Currently, the California EMS Information System (CEMSIS) is based on the version 2.2 application from the National Emergency Medical Services Information System (NEMSIS) and collects EMS data from 20/33 (60%) Local Emergency Medical Service Agencies (LEMSA), representing only about one-third of EMS transports of patients who activate the 911 system. As of 2015, approximately 70% of EMS providers document patient encounters in an electronic health record (ePCR), which is necessary for competent data.

The current EMS system is being replaced by NEMSIS version 3.4.4 which is expected to improve the available data for EMS. NEMSIS Version 3 will yield better information on patient care since it is compatible with Health Level 7 (HL7) and based on International Classification of Disease (ICD) 10. EMS data reported through a NEMSIS 3.X compliant system will be the only data accepted as of January 1, 2017, but is
already the standard for EMS data nationwide and the tool for data and quality evaluation by EMS providers and the Centers for Medicare and Medicaid Services (CMS).

**Other data sources and initiatives**
Several other sources of data are currently or soon will be integrated with the pre-hospital data.

- Currently, 73 of the 78 designated Trauma Centers report data either to the LEMSA or directly to EMSA. Trauma center registrars record patient care information on pre-defined trauma patients from the time of the hospital admission to discharge.
- On behalf of local EMS agencies, EMSA will collect and aggregate data on cardiac resuscitation (CARES) within CEMSIS; much of the data is found within the EMS record.
- EMSA is partnering with CDPH on a grant from CDC to create a statewide stroke registry, which will link hospital and outcome data with the EMS data. The data will be housed with CEMSIS data and linked to prehospital data for use in performance improvement initiatives.

**Performance improvement measures**
In an effort to meet performance improvement goals, EMSA requests EMS Core Measures (quality measures of specific system and clinical indicators of care) reported annually from local EMS agencies on 17 clinical measures. While these are the only statewide patient care data available, they are reported as aggregate data, reflect only a small portion of the available data, and reflect non-standardized data sets in each LEMSA.

As an indication of the importance of using data for performance improvement, a national initiative is underway to develop EMS performance measures using NEMSIS 3 data (COMPASS initiative).

**IMPETUS FOR CHANGE**

**Recent Legislation requiring EMS data collection and coordination**
Several bills pertaining to EMS data were signed into law in 2015 that presume or require a leadership role by EMSA to establish data standards consistent with the statutory role to coordinate and integrate all state activities concerning emergency medical services as part of the two tiered regulatory structure.

**AB 1129** (Burke) Emergency medical services: data and information system.
(Chaptered-9/30/2015)
This bill requires an emergency medical care provider, when collecting and submitting data to a local EMS agency, to use an electronic health record system that exports data in a format that is compliant with the most current version of CEMSIS and NEMSIS. The EMS provider must use an electronic health record system that can be integrated with the local EMS agency's data system.
This bill will assure the collection of electronic data at the provider level and transfer it to the local EMS agency. It will require EMSA to provide consistent definitions for NEMSIS compliance and establish standards for data collection to ensure reasonable data quality and the ability to aggregate the data at the local level. This will facilitate transmission to state and national EMS information systems and the use of data at these levels.

**AB 503** (Rodriguez) Emergency medical services. (Chaptered-9/30/2015)
This bill authorizes a health facility to release patient-identifiable medical information to a defined EMS provider, a local EMS agency, and the authority for quality assessment and improvement purposes. Hospital outcome data is an essential component for quality improvement, and this bill is intended to relieve one barrier to reporting outcomes to EMS agencies, which was lack of explicit permission in the California privacy act. The bill also authorizes the Authority to develop minimum standards for the implementation of this data collection.

**AB 1223** (O'Donnell) Emergency medical services: ambulance transportation. (Chaptered-9/30/2015)
This bill authorizes a local EMS agency to adopt policies and procedures relating to ambulance patient offload time. The bill requires the authority to develop a statewide standard methodology for the calculation and reporting by a local EMS agency of ambulance patient offload time, although reporting by LEMSAs is voluntary.

**SB 19** (Wolk) Physician Orders for Life Sustaining Treatment (POLST) information: electronic registry pilot. (Chapted-10/5/2015)
The bill requires the Emergency Medical Services Authority to establish a pilot project to operate an electronic registry system for the purpose of collecting and making available POLST information received from a physician or physician's designee. This project is dependent on use of electronic patient records by EMS personnel (as required in AB 1129), and transition to a NEMSIS 3 platform, to link those records to electronic medical records within health systems to send, receive, find, and use POLST information.

**Health Information Exchange (HIE)**
In addition to patient care data collection and aggregation, EMSA is engaged in increasing the use and value of data through the electronic movement of health information and data exchange. EMSA has received a grant from the Office of the National Coordinator to pilot HIE through two-way exchange of data between hospitals and EMS providers in the field. EMSA will also design a system to widely share patient data during a disaster between EMS personnel, other field care providers, and hospitals (Patient Unified Lookup System for Emergencies + EMS). The ePOLST registry and community paramedicine both require quality electronic data from EMS providers to exchange with other parts of the health care system.
Additional factors driving data development

- Increased emphasis on data and performance measures at the national level, including development of performance measures to justify ambulance transport reimbursement;
- Interest from the Office of Traffic Safety and the Statewide Highway Safety Program to increase funding to advance California data collection and create linkages with EMS data programs;
- Potential for one-time Federal grant funding for local assistance grants to implement NEMSIS 3 standards and NEMSIS reporting;
- Strong request from local EMS agencies for greater EMSA leadership in standardizing data requirements to improve data quality;
- EMSA’s desire to increase its capability and capacity to meet its statutory requirements to evaluate EMS system effectiveness.

Barriers and Challenges

Despite the requirements for data, significant challenges must be addressed. These are noted, but not elaborated here.

- **Data Submission**
  At the present time, many of the most populous LEMSAs do not provide data to the state for various reasons. Some provide only aggregate data and not patient level data that are needed for any analysis. Hospitals do not universally consent to share data, allegedly out of inappropriate privacy or legal concerns that either HIPAA or the California Medical Information Act prohibits data sharing. (AB 503 was written to alleviate that concern.)

  Some providers are still using paper records, and many fire agencies use a program that is primarily for fire data and secondarily for EMS (RMS software), so is not capable of submitting data in a compatible format. But, AB 1129 now requires providers to transition to NEMSIS compliant electronic patient care reports. Until regulations are in place to define CEMSIS and NEMSIS standards, there will be a lack of compliant systems and vendors.

- **Funding**
  There are no current State General Funds allocated specifically to prehospital EMS or trauma data collection and evaluation. EMSA relies solely on year-to-year federal funding that is insufficient to address the needs in this overall data strategy. Year-to-year funding discourages EMSA from implementing a long term strategy for prehospital and trauma data.

- **Capability and Capacity to Evaluate Data and Information**
  EMSA is currently caught in a difficult situation where the local EMS agencies do not see value from EMSA and are hesitant to submit data, because they do not know what EMSA will do with it. We have developed a boilerplate data use agreement that is available for LEMSAs who require or desire it; to date, none have used it.
order to demonstrate the value of data collection, it is critical that meaningful analytic results are returned to the local EMS agency and EMS providers. But poor data quality submitted to CEMSIS limit results of analyses. To the extent possible, any analytic results should be readily available, timely, easy to access, and pre-packaged for rapid consumption. The use of dashboards and other information tools would facilitate this and would demonstrate value from the data. This would allow them to benchmark their activities in reference to other California agencies. Currently, EMSA does only basic analysis of trauma data (our best clinical data) and develops and publishes a report on the EMS Core Measures based on the aggregate results provided by the local EMS agencies. EMSA is using available funding to improve analytic capability. Both analytic capability and data quality need to be addressed simultaneously to be successful.

- Long Term EMSA Data and Information Technology Strategy

Currently, the mechanism in place to allow for the aggregation of local data is through the Inland Counties EMS Agency (ICEMA). This is funded as a local pilot project using Office of Traffic Safety funding. Because it is structured as a local data collection effort, EMSA must address the potential implications of pre-hospital EMS and trauma evaluation in the near future and decide our strategy to sustain data collection. Any ongoing State solution related to EMS data will require a review by California Office of Technology. The entire 4-stage process of IT development requires significant sustained resources.

GOALS AND RECOMMENDATIONS

EMSA has made data development a priority over the past 5 years. Concurrent efforts are required to meet statutory mandates, satisfy stakeholders, and position EMSA to meet its mandate to evaluate quality of care and system effectiveness. EMSA recently formed the Executive Data Advisory Group consisting of three local EMS agency administrators and an equal number of medical directors to help determine a cooperative strategy for improving EMS data and its application. This group informed and supports these recommendations.

Overarching Goals and Value Proposition

There are real benefits to improving the completeness and quality of data collected for pre-hospital, trauma and specialty emergency care when used for analysis of patient care and system performance. These benefits are consistent with the Triple Aim of improving patient satisfaction, improving population health, and lowering the cost of health care.

1. Improved data collection is critical to California’s ability to provide meaningful data describing patient care outcomes and EMS systems.
2. Improved data collection is central to achieving the need of both LEMSAs and EMSA to assess the status and quality of their EMS system and the care that it provides.
3. State-level individual patient/run data are necessary to benchmark and compare values from local agencies and providers and to evaluate the need for additional
emergency medical services, coordination of emergency medical services, and the effectiveness of emergency medical services.

4. Quality improvement processes will help to achieve better clinical care for patients and improved population health.

5. Improved data collection and integration with HIEs will link EMS more fully to the full healthcare service spectrum.

6. Sharing critical patient information between EMS personnel in the field and the hospital through health information exchange (HIE) will allow better and more accurate care and transport to appropriate destinations with improved patient outcomes.

7. Standardization of data collection and definitions will ensure reasonable data quality.

Additional benefits include:
- Better service by EMSA to Local EMS agencies through data analysis and return of information to LEMSAs and EMS providers for comparison purposes, including the potential of a dashboard with real-time information;
- Creating a favorable infrastructure to implement Health Information Exchange (HIE) to link EMS more fully to the full healthcare service spectrum. In turn, this would improve transitions of care with hospitals, obtain patient outcomes for quality improvement, and evaluate system effectiveness.
- Improvement of existing electronic patient care reporting processes at the LEMSA and EMS provider level;
- Efficiencies to program operations at the EMS provider level through analysis of system data;
- The ability to describe and analyze the EMS systems across the state;
- A regional view of EMS systems and better coordination between local areas in support of improved patient care;
- Inclusion of all California data to NEMSIS so that we can evaluate California within the national context

RECOMMENDATIONS

1. Continue to rely on the Executive Data Advisory Group as a key source of consultation and expert advice, and as liaisons with EMSAAC and EMDAC.

2. Implement the other provision of AB 1129 that requires NEMSIS 3 compliant systems for all EMS providers.
   a. Note: The preference of the data group was to use a single ePCR for all EMS providers and for aggregation and analysis of data. However, AB 1129 expressly prohibited LEMSAs from mandating a particular ePCR for all providers.

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2 See EMSA Memo dated January 5, 2016, Subject: "New State EMS Data System Requirements". "AB 1129, effective January 1, 2016."
3. Continue to implement NEMSIS 3 and Health Information Exchange at the local level, including EMSA guidance to ensure CEMSIS and NEMSIS standards are maintained;
   a. Improve data consistency with NEMSIS 3 implementation through limiting data choice in several key fields, including primary and secondary impression, cause of injury, location type. Vendors will be required to implement these recommendations that will be drafted and approved by medical directors and the data advisory group.
   b. Per AB1129, all EMS providers must use an ePCR that is NEMSIS 3.4 compliant, a standard that is achieved only through testing by NEMSIS and cannot be achieved through data mapping from NEMSIS 2.X programs;
   c. LEMSAs must use a data platform that is also NEMSIS 3 compliant in order to aggregate and subsequently transmit data to CEMSIS.
   d. LEMSAs should consider linking Computer Automated Dispatch (CAD) systems for populating NEMSIS 3 compliant dispatch and call taking data into ePCR platforms. CAD input is accommodated by NEMSIS 3.X using digital push into ePCR.

4. Work toward our federal challenge goal of receiving 100% of data from 100% of EMS providers in California.

5. Link EMS records to electronic medical records within health systems to obtain patient outcome data.

6. Improve data quality through modification to selected values of certain data elements within NEMSIS 3, such as Primary Impression and Cause of Injury.

7. EMSA will work with federal partners to maximize funds in order to support data submission and aggregation through implementation of AB 1129 and NEMSIS 3. Funds obtained will be used primarily for local assistance.

8. Regulations: There are multiple issues that require further definition through regulations. This will be done through a stakeholder task force to revise existing quality improvement regulations.
   a. Recently chaptered legislation (AB 503 and AB 1129) obligate EMSA to define CEMSIS and NEMSIS standards to assure statewide consistency. These regulations will address methods to improve quality and narrow variation in systems through clarification of data standards.
   b. Develop statewide consistency for technical data specification to define and limit data elements and subsequent values for each element. (For example, standardize appropriate choices for Primary Provider Impression).
   c. Implement NEMSIS 3.4
   d. The Executive Data Advisory Group recommends a regulatory mandate for submission of all patient level data to CEMSIS; however, the approach endorsed will be to develop support for the current statutory mandates and utilize other incentives, including funding, if available.
9. Develop **analytic capability and capacity** within EMSA and expand the Annual Statewide and local agency reports, including efforts to develop regional data.

10. Address concerns over **data security, confidentiality, and sharing**, including through data use agreements. (These were developed, reviewed by OHII legal counsel and are currently available.)

11. **Performance improvement**: In addition to improving consistency and completeness of data to use for quality improvement at the local and state level, continue EMS Core Measure reporting to provide state level measures. As national measures become available, these specifications can be incorporated into the state reporting.

12. Examine a **long term EMS Data strategy**, considering the policy options listed above.

**CONCLUSION**

EMSA and LEMSAs have an unprecedented opportunity to collaboratively improve the quality and completeness of EMS data. This is driven by both long-standing and recent statutory mandates, funding opportunities, federal data changes and expectations, and health system changes that require consistent data to measure system effectiveness and clinical quality of care at all levels of our EMS system. Moreover, we now have an opportunity to better integrate specialty care data and link to electronic health records to facilitate outcome data. EMSA, EMSAAC and EMDAC are working together to determine the best strategy and use of available resources to accomplish these goals. Development of a cohesive statewide EMS data collection and meaningful use strategy is urgently needed in order to successfully meet the increasing demand for EMS services and to position EMS in California to optimize opportunities within the healthcare system.