EMERGENCY MEDICAL CARE COMMITTEE  
CONTRA COSTA COUNTY  

Wednesday, December 13, 2017  
4:00 p.m. – 5:30 p.m.  
Schools Insurance Group  
550 Ellinwood Way, Pleasant Hill, CA 94523  

Agenda  

4:00 p.m.   1.   Introduction of Members and Guests  
4:03    2.   Approval of Minutes from September 13, 2017  
4:05   3.   Chair’s Report  
Kacey Hansen, EMCC Chair  
4:07   4.   Comments from the Public  
Members of the public may speak up to 3 minutes each on matters either on or not on this agenda.  
4:10   5.   Members’ Reports  
- Presentation of new slate of officers for EMCC Executive Committee by Nominating Committee  
4:20   6.   EMCC Annual Report Action: Review/Approve for Submission to the Board of Supervisors  
Rachel Morris, Contra Costa EMS – Staff to EMCC  
4:25   7.   Sobering Center Update (I)  
Sue Crosby & Cynthia Belon  
4:38   8.   CommunityConnect Presentation (I)  
Emily Parmenter, Program Manager CCHS CommunityConnect  
Fire Executive Chief Representative  
4:55  10.   Quarterly Update on Alliance Ambulance Services  
Terence Carey, EMS Chief, Contra Costa County Fire Protection District  
5:00  11.   EMCC Legislative Update  
David Samuelson, ENA MCC Representative  
5:05  12.   EMS Medical Director’s Report  
David Goldstein, MD, Contra Costa EMS Medical Director  
5:12  13.   Finance Report Presentation for Measure H  
Pat Frost, Contra Costa County EMS Director  
5:20  14.   EMS Director’s Report including Survivors Reunion event recap  
Pat Frost, Contra Costa County EMS Director  
5:28  15.   Agenda Items for next meeting: March 14, 2018  
5:30  16.   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.
Vice Chair Napper called the meeting to order at 4:15 p.m.

1. **Introduction of Members and Guests**

2. **Approval of Minutes from July 12**
   - Vice Chair Napper motioned to approve the Minutes from July 12. Member Tobias moved to approve; Member Michaelson seconded; none opposed. Motion passed. July minutes are approved.

3. **Chair’s Report - Kacey Hansen, EMCC Chair**
   - No Report

4. **Comments from the Public**
   - No Comments

5. **Members’ Reports**
   - No Report

6. **Recognition:**
   - Member Frost presented a certificate and plaque of appreciation to Chief Stephen Healy of Moraga-Orinda Fire District who is retiring effective this month, September 2017.

7. **Fire Chiefs’ Report**
   - Member Krause reported on behalf of San Ramon Valley Fire Protection District (SRVFPD) Fire Chief Meyer – SRVFPD is looking forward to discussing the RFP. The District is committed to providing the same excellent service as it always has. Krause also...
discussed the issue of delays for fire EMS providers where crews are being kept at hospitals longer, which creates a ripple effect where they are off the street for longer periods of time. Krause was advised that this issue is already being addressed and CCCFPD Chief Carman had addressed extended wall times at the previous EMCC meeting. The LEMSA is committed to help find solutions and recommends that for all ambulance providers that have been experiencing delays more than 60 minutes - communicate to hospital staff that a problem is occurring and if no change, the medic should contact a supervisor who could contact nursing supervisor. Also, submit an EMS event to the LEMSA.

8. Quarterly Update on Alliance Ambulance Services
On behalf of Member Carey from Contra Costa County Fire Protection District, Chief Stephenson reported on 1. response times - overall response times are fantastic even with the amount of calls that are being run and the expectation is that will continue. 2. Regarding wall times, Chief Carey is also involved in the issue. 3. The Alliance model is still working really well - people all over the state are watching what is being done, e.g. recently met with representatives from the Santa Barbara area.

9. EMCC Officer Nominating Committee Discussion
Vice Chair Napper asked for volunteers to be on the three (3) member nominating committee for the new slate of EMCC officers. The nominating committee will consist of: Members Raskin, Pangelinan, and King. Staff Morris to schedule a conference call to create nominations. The nominating committee will present the slate to be voted on at the December meeting to go in effect immediately. Member Frost explained that the executive committee helps put together the agenda in preparation for meetings, chair meetings, and occasionally a workgroup may be needed to draft a letter to BOS, etc. It is a two year term.

10. EMS Medical Director’s Report - David Goldstein, MD, Contra Costa EMS Agency Medical Director
Member Goldstein reported there has been a long discussion in EMS on pediatric intubation and if it is beneficial or not. Was taken out of scope in this county previously in 2009, but it now looks that entire state is taking it out of scope - will no longer be available, most likely by June 2018.

11. EMS Director’s Report - Pat Frost, Contra Costa EMS Agency Director
- Legislative Update: EMCC Legislative Representative Samuelson was not present but he provided a handout. Member Fay discussed 1. AB 530 extension of emergency medical air transport act - as of yesterday now called AB 1410 and passed the Senate floor. Now includes a focus on hold care/pediatrics. 2. AB 263 requires private ground ambulance crews have radios off during breaks and lunch - may be an issue for ambulance providers in the future.
- Staffing: PHCC Craig Stroup is leaving the LEMSA as of September 28, 2017. We will be recruiting for a PHCC nurse or paramedic with strong EMS/Health Care data QI improvement background. We are currently recruiting for an Advanced Secretary to support the EP program.
- Survivor’s Reunion: November 8th. We are still seeking nominations for the event – handout available.
- OP Area Disaster Response - LEMSA accurately aware of disasters in Texas and Florida – Contra Costa County has deployed many people to help in the effort - will probably be a prolonged effort. Kelly Coleman deployed yesterday. It is the most significant disaster with the largest number of major hospital evacuations - nine in Florida, one or two in Texas, multiple SNFs and long term care facilities. It will most likely spur an increased focus in emergency preparedness within Contra Costa County.
- San Ramon RFP – the RFP is in draft form and the plan is to go to the Board of Supervisors on October 24. San Ramon has approached the LEMSA to petition for 201/224 rights. The Board of Supervisors will need to provide direction on how to move forward.
- Ambulance ordinance - happy to report that we met with County Counsel after submitting letter from EMCC - we have come to a consensus on an approach and are closer than we have ever been. There are a few more changes that may be needed.
- The main goal is ensuring patient safety. No clear time line with county counsel but hopeful for the end of the year.
- Local Concerns – APOT: handout report provided in packet; SF mutual aid: provided aid to SF for three days during the high heat. Ambulances sent all over the Bay Area. Proud of response from community - AMR, and non-emergency providers. No mutual aid drew down resources in our community; State Wide exercise planning - this year is a complex drill - 3 simultaneous events involving hospitals, fire, law, and SNFs; Public health is working on marijuana ordinance and LEMSA is participating; Annual report 2016 - it is available online; Wall time delays - referenced handout and provided statistics to illustrate that this is an ongoing problem that is getting worse as time progresses. Have been discussing/problem solving with the hospitals for past 4 years but not making major progress. We need to do something different and welcome executive support on trying to improve the current situation with the hope to make progress by the end of the year.

14. Proposed agenda items for December 13, 2017: EMCC Officer Nominations 2017-2019 term; include wall time chart

15. Adjournment at 5:43pm
Contra Costa County
EMERGENCY MEDICAL CARE COMMITTEE

Annual Report for 2017

Advisory Body Name: Emergency Medical Care Committee (EMCC)
Advisory Body Meeting Time/Location: 4:00 p.m. - 5:30 p.m. on the second Wednesday of March, June, September, and December, unless otherwise noted. Meetings are held at various locations in Contra Costa County.
Chair: Kacey Hansen (December 2015 – present)
Staff Person: Rachel Morris (January 2017 – Present), Health Services, Emergency Medical Services
Reporting Period: January 1, 2017 – December 31, 2017

I. Activities:
The EMCC, over four (4) regular meetings in the past year, was involved in or kept its membership informed about the following EMS System issues:

- Held 5150 psychological emergency summit in February of 2017 involving multiple stakeholders: County Health, Contra Costa Regional Medical Center, other hospitals, public and private transport providers, transport staff. 69 guests attended the event from multiple branches of the EMS system.
- New ambulance provider “Alliance” successfully transitioned to assume responsibilities for 92% of county emergency ambulance services effective January 1, 2016.
- Alliance leadership reporting to EMCC on implementation and system improvements established.
- EMS Agency consolidation of Systems of Care and MAC meetings to improve hospital and stakeholder engagement into periodic half day meetings. New meeting format convened in March 2016.
- EMS treatment protocols transitioned to visual algorithm format with full implementation effective January 2017.
- EMS establishes optional scope for use of epinephrine and narcan in first responder BLS protocols. Once established, the new protocols will create an opportunity for all BLS fire first responder agencies to use.
- EMCC informed on process to update the ambulance ordinance. Once County Counsel approves the draft, the ordinance will be made available to stakeholders and go to the BOS for approval. Updates in ordinance are focused on non-emergency ambulances services and to improve EMS Agency ability to assure public safety and improvements in coordination of medical transportation services throughout the EMS system between emergency and non-emergency transport providers.
- EMS Agency participation with CCHS Public Health Department on a county marijuana ordinance and anticipated impacts of legalization on EMS System.
- Online payment feature within ImageTrend online certification and licensing renewal platform implemented in October 2017.
- EMS System stakeholders advised of new EMSA ePCR (electronic patient care record) and HIE (health information exchange) requirements to support bi-directional exchange between EMS and hospitals. CCEMS EMS System advisory letter to hospitals and EMS providers to prepare for bi-directional exchange by January 2018.
- County Ambulance Patient Transfer of Care reports for Sutter Delta demonstrate significant improvement for East County EMS Services.
- The Board of Supervisors recognized May 21-27th 2017 as National EMS Week, and May 24th as EMS for Children Day.
- EMCC advised of marked reductions in Hospital Preparedness Program Grant funding and continued unfunded state regulations and mandates.
- EMCC informed of status of closure of Alta Bates Hospital, Alameda County and City of Berkeley workgroup, and concerns of impact to West County.
- EMS service in West County remains stable with Lifelong Urgent Care filling the gap for non-emergency care with support of CCHS nurse call lines, and high walk-in volume at Kaiser Richmond ED.
- EMS Agency HIE and EPIC workgroups and strategies to connect prehospital care records with emergency department patient records in the hospital using EPIC Care Everywhere. EMS implementing upgrades of FirstWatch data platform - to include enhanced analytics to improve medical oversight and utilization reporting.
- EMSA released a publication for strategy and data collection evaluation and quality: recent legislation requires EMS will be a conduit for registries, POLST, Stroke registry and others in terms of providing information to the state.
- West County transports consistent distribution of patients post DMC closure. Kaiser Richmond is seeing on a routine basis over 200 patients. ED bed capacity at Kaiser Richmond was increased in January from 15 to 25.
- POLST Program: Contra Costa EMS to pilot EMSA POLST registry with implementation in 2017 in collaboration with...
ACCMA.

- Contra Costa EMS System was selected to pilot improvements in California Stroke Registry and Stroke system as part of CMS grant with Stanford Health Services.
- On November 8th, EMS hosted the 2nd annual Contra Costa County Survivors Reunion Luncheon to show tangible continuum of care, and where survivors meet their rescuers. Report on reunion was presented in December 2017.
- Treatment guidelines and policies updated towards the end of a year are mostly finished for sending out for public comment. Implementation is January 1st, 2018.
- EMS Agency Measure H funds are supporting Fire Service EMS Medical Director and ePCR server to assure compliance with EMSA data requirements.
- Report on the Medication Take-Back Ordinance submitted by Public Health to the Board of Supervisors.
- Recognized Fire Chief Stephen Healy of the Moraga-Orinda Fire District for his many years of service to the Contra Costa County EMS system. Chief Healy retired in September of 2017.
- The EMS Agency along with other Contra Costa County divisions, stakeholders and outside agencies, all worked together during the October 2017 North Bay Fires event.

II. Accomplishments

- Approval of EMCC 2016 Annual Report.
- Supported 5150 psychological emergency summit in February of 2017 involving multiple stakeholders.
- On July 24, 2017, the EMCC Executive Committee sent a letter to the Board of Supervisors referencing a letter previously sent on July 6, 2016, and once again reinforcing the potential value of the Committee providing further input to the Board to assist them in evaluating the proposed updates to the ambulance ordinance.
- 2016 EMS System Plan has met all standards and criteria required by state EMS Authority as of (date).
- Contra Costa EMS has received the Mission Lifeline:Silver Award for their STEMI system, along with AMR Concord, CCCFPD, ECCFPD, El Cerrito Fire Department, MOFD, Pinole Fire Department, Richmond Fire Department, Rodeo-Hercules Fire District, SRVFPD.

III. Attendance/Representation

The EMCC is a multidisciplinary committee with membership consisting of representation of specific EMS stakeholder groups and organizations plus one (1) consumer member nominated by each Board of Supervisor member. There are twenty-one (21) filled member seats on the EMCC. Three (3) seats are unfilled. A quorum was achieved at four (4) of the four (4) EMCC meetings in 2017.

IV. Training/Certification

Each EMCC representative was given a copy of the Advisory Body Handbook and copies of the “The Brown Act and Better Government Ordinance - What you need to know as a Commission, Board or Committee Member” and “Ethics Orientation for County Officials” videotapes during their two (2) year term. Responsibilities of County Boards were discussed including the responsibility to view the videotapes and submit signed certifications. Certification forms have been received from twenty (20) of the twenty-one (21) representatives. The four (4) certificates received in 2017 are attached.

V. Proposed Work Plan/Objectives for Next Year

Report to the local EMS Agency and to the Board of Supervisors as appropriate its observations and recommendations relative to its review of:

- Alliance/EMS partnerships to implement efficiencies and workflows supporting EMS System improvement.
- Efforts to procure grant funding for EMS System data infrastructure enhancements to support bi-directional data exchange.
- Promote and sustain Medical Health Disaster Coalition preparedness and engagement throughout EMS System.
- Enhancements to Medical Reserve Corps’ capability for children and special needs populations.
- Update of County EMS for Children (EMSC) program and system of care enhancements.
- Continue to work with county counsel and stakeholders to update the county ambulance ordinance.
- Manage, update and submit to the State EMS Authority the 2016 EMS System Plan, Quality, Trauma, Stroke, STEMI and EMS for Children programs.
- Monitor and report on EMS System impacts due to changing economics and health care reform.
- Receive 2017 Annual EMS System performance report.
• Innovative models of EMS service delivery with hospital community.
• Update the County Multi-Casualty Incident (MCI) Plan in partnership with EMS System stakeholders.
• Support emergency ambulance provider and community hospitals efforts to reduce patient transfer of care extended delays that impact the availability of ambulances for the next 9-1-1 call.
• Support EMS System program (STEMI, Stroke, Cardiac Arrest, EMSC, Quality/Patient Safety and Trauma) initiatives.
• Continue to support and sustain community education and outreach, e.g. HeartSafe, Child Injury Prevention.
• Support appropriate use of 9-1-1, CPR Anytime, and Automatic External Defibrillator (AED) programs through partnerships with law enforcement, CERT, fire first responders and community coalitions.
• Update of county ambulance ordinance.
• Hold 3rd Annual Contra Costa Survivors Reunion.
• Explore future 5150 Summit events.
• Continue to monitor West County EMS System associated with closure of Doctors Medical Center and pending closure of Alta Bates Summit.
# 2017 Emergency Medical Services (EMS) System Plan

**SYSTEM PLAN SMART^2 OBJECTIVES**

Progress from Last Reporting Period

<table>
<thead>
<tr>
<th>No.</th>
<th>Standard</th>
<th>Meets State Standard</th>
<th>FY 2016–2017 Objectives</th>
<th>Progress to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.06</td>
<td>Annual system Plan Update</td>
<td>Yes</td>
<td>Annual EMS System Update to State EMS Authority (EMSA)</td>
<td><strong>Progress to Date: In Progress</strong> to be submitted EMSA</td>
</tr>
<tr>
<td>1.07</td>
<td>Trauma Planning</td>
<td>Yes</td>
<td>Annual Trauma System Status Report.</td>
<td><strong>Progress to Date: Met</strong> Update due annually.</td>
</tr>
<tr>
<td>1.08</td>
<td>ALS Planning</td>
<td>Yes</td>
<td>EMS system integration of emergency ambulance services</td>
<td><strong>Progress to Date: Met</strong> Update provided annually</td>
</tr>
<tr>
<td>1.10</td>
<td>Special Populations</td>
<td>Yes</td>
<td>Exploration of alternative delivery models to match patient need to resource.</td>
<td><strong>Progress to Date: In Progress</strong> 1-5 years. Engaged with local Health System partners to explore opportunities.</td>
</tr>
<tr>
<td>1.11</td>
<td>System Participants</td>
<td>Yes</td>
<td>Stakeholder participation in update, approval and implementation of new ambulance ordinance</td>
<td><strong>Progress to Date: In Progress</strong> Ordinance review by EMCC and BOS with implementation within next 12 months</td>
</tr>
<tr>
<td>1.13</td>
<td>Coordination</td>
<td>Yes</td>
<td>Exploration of coordination of EMS Dispatch Centers with Nurse Call centers to support appropriate use of 9-1-1 or specialty dispatch and triage call centers</td>
<td><strong>Progress to Date: Not started</strong> Engage stakeholders within 1-5 years</td>
</tr>
<tr>
<td>1.14</td>
<td>Policy and Procedure Manual</td>
<td>Yes</td>
<td>Annually update of prehospital care policies and procedures based on evidence-based care.</td>
<td><strong>Progress to Date: Ongoing</strong> Updated policies and protocols posted on EMS website at <a href="http://www.cccems.org">www.cccems.org</a>.</td>
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1 Approved by the EMCC on XXXX

2 SMART: Specific, Measurable, Achievable, Realistic and Timely
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1.16</td>
<td>System Finances</td>
<td>Yes</td>
<td>Annually review of costs and fees to support sustainable EMS System and EMS Agency oversight and operations.</td>
<td>Progress to Date: Ongoing  Monitor and manage current funding effectively to support sustainable programs and activities.</td>
</tr>
<tr>
<td>1.20</td>
<td>DNR (Do Not Resuscitate)</td>
<td>Yes</td>
<td>Pilot site for (POLST) registry with EMS System Stakeholders over 12 months.</td>
<td>Progress to date: Ongoing  Member of POLST Conversation Project within county. Pilot project site for POLST registry.</td>
</tr>
<tr>
<td>1.27</td>
<td>Pediatric Emergency Medical and Critical Care System</td>
<td>Yes</td>
<td>Pediatric EMS for Children (EMSC) System Program Plan update and regulation implementation within 1-5 years.</td>
<td>Progress to date: In progress.  State EMSC regulations not final. Active on EMSC Technically Advisory Committee. Complete update of EMSC Program within 24 months.</td>
</tr>
<tr>
<td>1.28</td>
<td>Exclusive Operating Area (EOA)</td>
<td>Yes</td>
<td>Update of county ambulance ordinance within 12-18 months. Review of EOA IV related to ambulance procurement.</td>
<td>Progress to date: In progress.  Update of ambulance response areas completed as part of ambulance EOA IV effective January 1, 2016. Ambulance ordinance update in progress.</td>
</tr>
<tr>
<td>2.01</td>
<td>Local EMS Agency Staffing and Assessment of Needs</td>
<td>Yes</td>
<td>EMS System Study and Modernization Project review of LEMSMA staffing needs and workflows to support statutory requirements within 1-2 years.</td>
<td>Progress to date: Ongoing.  Re-align LEMSA staffing in line with required statutory functions, quality and medical oversight.</td>
</tr>
<tr>
<td>2.04</td>
<td>Dispatch Training</td>
<td>Yes</td>
<td>Promote support high quality Emergency Medical Dispatch (EMD) dispatcher training and performance consistent for Center of Excellence Accreditation within 3-5 years.</td>
<td>Progress to date: In progress.  Dispatch medical oversight policies consistent with Center of Excellence national standards. EMS procurement supports unified and accredited dispatch.</td>
</tr>
<tr>
<td>2.06</td>
<td>Response</td>
<td>Yes</td>
<td>Contra Costa EMS (CCEMS) continues ongoing evaluation of sustainability of EMS System partners based on safety, funding and opportunities for health care reimbursement.</td>
<td>Progress to date: Ongoing  Monitoring coordinated response of ambulance and first responders. Continuing to evaluate impacts to EMS associated with hospital and fire station closures</td>
</tr>
<tr>
<td>2.12</td>
<td>Early Defibrillation</td>
<td>Yes</td>
<td>Continued expansion of public access Automated External Defibrillation (AED) and Law AED programs with integration into dispatch.</td>
<td>Progress to Date: Ongoing.  Continue to engage community first responders and citizen responders. Using CodeSTAT, CARES, AED registry, PAD and Public training.</td>
</tr>
<tr>
<td>No.</td>
<td>Standard</td>
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<tr>
<td>5.06</td>
<td>Hospital Evacuation Plan</td>
<td>Yes</td>
<td>Update medical surge and transportation plans for hospitals incorporating standardized training with HICS for all hospital facilities with opportunities for integration of first responders with hospital leadership and incident commanders.</td>
<td>Progress to date: In progress Plan updates within 1-3 years. Update of MCI plan and Pediatric Surge Toolkit.</td>
</tr>
<tr>
<td>5.10</td>
<td>Pediatric Emergency and Critical Care System</td>
<td>Yes</td>
<td>Continued networking with pediatric emergency care advocates throughout the local, regional and state EMS systems supporting pediatric emergency care best practices.</td>
<td>Progress to date: Ongoing CCEMS and Alameda County (ALCO) EMS have collaborative program of active advocacy for emergency preparedness for children.</td>
</tr>
<tr>
<td>5.13</td>
<td>Specialty System Design</td>
<td>Yes</td>
<td>Annual Stroke, STEMI, Trauma and Cardiac Arrest System Evaluation. Exploring partnerships with Contra Costa Health services to reduce 5150 and support appropriate use of sobering centers.</td>
<td>Progress to date: Ongoing Continuous CQI program &amp; participation in California Stroke Registry, Cardiac Arrest Registry for Enhanced Survival (CARES), Trauma Registry and California EMS Information System (CEMSIS).</td>
</tr>
<tr>
<td>5.14</td>
<td>Public Input</td>
<td>Yes</td>
<td>Active program of engagement with public including quarterly Emergency Medical Care Committee (EMCC) meetings. EMCC bylaw update.</td>
<td>Progress to date: Ongoing. Public and EMCC comment to be included as part of ambulance ordinance review and update process.</td>
</tr>
<tr>
<td>6.01</td>
<td>QA/QI Program</td>
<td>Yes</td>
<td>Bi-annual public reporting EMS Hospital transfer of care never event monitoring. Implementation of Quality Review Team (QRT) for review of event reports concerning clinical care concerns.</td>
<td>Progress to date: Ongoing Hospitals public reporting continues. QRT implemented and reviewing cases for trends.</td>
</tr>
<tr>
<td>7.01</td>
<td>Public Education</td>
<td>Yes</td>
<td>Expansion of HeartSafe Communities to include support for CPR, Public Access Defibrillation (PAD), Heart Attack, Stroke and Healthy Lifestyle.</td>
<td>Progress to date: Ongoing continue countywide expansion of outreach in progress.</td>
</tr>
<tr>
<td>7.03</td>
<td>Disaster Preparedness Promotion</td>
<td>Yes</td>
<td>Annual advocacy and implementation of regional pediatric medical surge planning. Develop policies and work with stakeholders for implementation and use of BLS providers to backup 911 system in surge.</td>
<td>Progress to date: Ongoing CCEMS participating in National, regional and statewide efforts supporting Med/Health Preparedness.</td>
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<tr>
<td>No.</td>
<td>Standard</td>
<td>Meets State Standard</td>
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<td>Progress to Date</td>
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<tr>
<td>8.13</td>
<td>Disaster Medical Response</td>
<td>Yes</td>
<td>Sustain Contra Costa Medical Reserve Corp and demonstrate effective deployment Medical Reserve Corps (MRC) for medical health response as needed.</td>
<td>Progress to date: Ongoing MRC coordinator in place to support training to enable effective deployment of MRC.</td>
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<tr>
<td>8.15</td>
<td>Interhospital Communications</td>
<td>Yes</td>
<td>Address ongoing gaps in emergency communications e.g. ReddiNet, evaluate emergency communication tools and apps. Identify and address gaps in East Bay Regional Communications System (EBRCS) hospital radio system.</td>
<td>Progress to date: Ongoing. Annually monitor, exercise support and upgrade as fiscally able inter-hospital communications</td>
</tr>
<tr>
<td>8.18</td>
<td>Enhanced Level: Specialty Care Systems</td>
<td>Yes</td>
<td>Update of new state regulations for specialty care systems e.g. Trauma, ST Elevation Myocardial Infarction (STEMI), Stroke, EMSC.</td>
<td>Progress to date: Ongoing. Annually involved in the development through EMSAAC</td>
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2018 TIMELINE & ACTIONS TO BE ADDRESSED

All State standards have been met. We plan to address or reassess the following SMART objectives.

<table>
<thead>
<tr>
<th>No.</th>
<th>Standard</th>
<th>Meets State Standard</th>
<th>2018 Objectives</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.06</td>
<td>Annual System Plan Update</td>
<td>Yes</td>
<td>Update Annually.</td>
<td>Annually</td>
</tr>
<tr>
<td>1.08</td>
<td>ALS Planning</td>
<td>Yes</td>
<td>Support successful ambulance provider transition and monitor for system gaps</td>
<td>Annually</td>
</tr>
<tr>
<td>1.10</td>
<td>Special Populations</td>
<td>Yes</td>
<td>Exploration of alternative delivery models to match patient need to resource.</td>
<td>Annually</td>
</tr>
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<td>1.11</td>
<td>System Participants</td>
<td>Yes</td>
<td>Stakeholder participation in implementation of ambulance ordinance.</td>
<td>1-2 years</td>
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<tr>
<td>1.13</td>
<td>Coordination</td>
<td>Yes</td>
<td>Exploration of EMS dispatch services, exploration of coordination with Nurse Call centers to support</td>
<td>1-5 years</td>
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<td></td>
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<td>appropriate utilization of 9-1-1 services.</td>
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<tr>
<td>1.14</td>
<td>Policy and Procedure Manual</td>
<td>Yes</td>
<td>Update of prehospital care policies and procedures based on prehospital evidence-based care.</td>
<td>Annually</td>
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<td>Implementation of new American Heart Association Guidelines for ALS.</td>
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<td>Continue to evaluate policies and standard operating procedures for patient benefit, delay in</td>
<td>Annually</td>
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<td>definite care and patient safety. Revise protocols to control cost while prioritizing patient safety.</td>
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</tr>
<tr>
<td>1.16</td>
<td>System Finances</td>
<td>Yes</td>
<td>Review of fees and costs to support sustainable delivery of EMS services.</td>
<td>Annually</td>
</tr>
<tr>
<td>1.20</td>
<td>Do Not Resuscitate (DNR)</td>
<td>Yes</td>
<td>Evaluate EMS Pilot of POLST registry project</td>
<td>Dec 2018</td>
</tr>
<tr>
<td>1.27</td>
<td>Pediatric Emergency Medical and Critical Care System</td>
<td>Yes</td>
<td>Update of Pediatric EMSC plan and future implementation of State Pediatric EMSC System of Care regulations.</td>
<td>3 years</td>
</tr>
<tr>
<td>1.28</td>
<td>Exclusive Operating Area</td>
<td>Yes</td>
<td>Re-evaluation EOA IV (San Ramon Fire Protection District) exclusivity</td>
<td>1 year</td>
</tr>
<tr>
<td>2.01</td>
<td>Local EMS Agency Staffing and Assessment of Needs</td>
<td>Yes</td>
<td>Annual review of EMS Staffing needs and workflows to support statutory requirements.</td>
<td>Annually</td>
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<tr>
<td>2.04</td>
<td>Dispatch Training</td>
<td>Yes</td>
<td>Support high quality EMD and dispatcher training for Center of Excellence Accreditation.</td>
<td>Annually</td>
</tr>
<tr>
<td>2.12</td>
<td>Early Defibrillation</td>
<td>Yes</td>
<td>Expand and enhance Public Access AED and Law AED programs within fiscal resources</td>
<td>Annually</td>
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<tr>
<td>5.06</td>
<td>Hospital Evacuation Plan</td>
<td>Yes</td>
<td>Update of medical surge and transportation plans for hospitals.</td>
<td>1-3 years</td>
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<tr>
<td>5.08</td>
<td>Trauma Planning</td>
<td>Yes</td>
<td>Update of trauma plan.</td>
<td>Annually</td>
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<td>5.10</td>
<td>Pediatric Emergency and Critical Care System</td>
<td>Yes</td>
<td>Continued networking with pediatric emergency care advocates throughout the local, regional and state EMS systems supporting pediatric emergency care best practices.</td>
<td>Annually</td>
</tr>
<tr>
<td>No.</td>
<td>Standard</td>
<td>Meets State Standard</td>
<td>2018 Objectives</td>
<td>Time Frame</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------</td>
<td>----------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>5.13</td>
<td>Specialty System Design</td>
<td>Yes</td>
<td>Stroke, STEMI, Cardiac Arrest, Trauma, EMS for Children System Program Evaluation.</td>
<td>Annually</td>
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<td>5.14</td>
<td>Public Input</td>
<td>Yes</td>
<td>Support EMCC engagement on EMS system issues</td>
<td>Annually</td>
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<td>6.01</td>
<td>Quality Assurance (QA) /Quality Improvement (QI) Program</td>
<td>Yes</td>
<td>Evaluate EMS-Hospital data system integration supporting patient safety and prehospital care. Develop Health Information Exchange between EMS ePCR and EPIC (hospital medical record platform)</td>
<td>1-4 years</td>
</tr>
<tr>
<td>7.01</td>
<td>Public Education</td>
<td>Yes</td>
<td>Sustain HeartSafe Communities to include support for CPR, PAD, Heart Attack, Stroke and Healthy Lifestyle.</td>
<td>Annually</td>
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<tr>
<td>7.03</td>
<td>Disaster Preparedness Promotion</td>
<td>Yes</td>
<td>Continued advocacy and implementation of regional pediatric medical surge planning. Participation on statewide Pediatric Surge Plan Workgroup</td>
<td>1-2 yrs</td>
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<tr>
<td>8.13</td>
<td>Disaster Medical Response</td>
<td>Yes</td>
<td>Sustain development and recruitment of Contra Costa Medical Reserve Corp volunteers. Effective MRC capability for medical health deployment as needed.</td>
<td>Annually</td>
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<tr>
<td>8.15</td>
<td>Interhospital Communications</td>
<td>Yes</td>
<td>Address ongoing gaps and improvement opportunities for ReddiNet platform to support reliable use by hospitals. Routinely exercise med/health emergency communications</td>
<td>Annually</td>
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<tr>
<td>8.18</td>
<td>Enhanced Level: Specialty Care Systems</td>
<td>Yes</td>
<td>Evaluate new regulations for specialty care system implementation when complete e.g. STEMI, Stroke, EMS for Children.</td>
<td>1-2 years</td>
</tr>
</tbody>
</table>
DATE: October 5, 2017

TO: FINANCE COMMITTEE
Supervisor Karen Mitchoff, District IV, Chair
Supervisor John Gioia, District I, Vice Chair

FROM: Patricia Frost, Director, Emergency Medical Services

SUBJECT: Community Service Area EM-1 (Measure H) Update

Information

Referral History:
On May 23, 2017, The Board of Supervisors requested an update on Measure H and funding for Emergency Medical Services (EMS) be presented to the Finance Committee to review if Measure H funding could be increased.

County Service Area (CSA) EM-1 was established by the Board of Supervisors in 1989, pursuant to the CSA law in effect at that time. That law enabled a Board of Supervisors to establish a CSA in the unincorporated area for the purpose of collecting parcel fees to support the provision of EMS. The law also enabled the Board to extend the CSA to include the territory of any incorporated city upon a city council resolution requesting annexation to the CSA. All Contra Costa cities did adopt such a resolution prior to the formation of the CSA, and therefore, CSA EM-1 was established countywide.

The impetus for establishing the CSA was the passage in a November 1988 advisory ballot measure – ‘Measure H’ – calling for a countywide benefit assessment to fund enhancements to the County’s EMS system. The maximum to be charged a single-family residence would not exceed $10.00 annually. Maximum charges were also established for other parcel categories with charges on heavy industrial parcels up to $5,000. In 1988, ‘Measure H’ received a 71.6% affirmative vote countywide.

Expanded paramedic services, one of the EMS enhancements to be funded under CSA EM-1, were already in place in the areas served by San Ramon Valley Fire Protection District. Since these services were funded through existing revenue sources, the Board of Supervisors proposed establishing a separate CSA EM-1 zone with lower charges covering the San Ramon Valley primary response area. Currently, CSA EM-1 charges in the San Ramon Valley primary response area (Zone A) are $3.94 per single-family residence or benefit unit. Charges in the rest of the county (Zone B) are $10.00 per single-family residence or benefit unit.
In 1996, Proposition 218 was passed amending the State constitution and making significant changes to local government financing. Under Proposition 218, parcel charges such as those imposed by CSA EM-1 must be supported by engineering reports and by an affirmative mailed-in vote of property owners representing a majority of the assessed valuation of the affected parcels. Proposition 218 eliminated all existing benefit assessments except, under a grandfather clause contained in the proposition, those that had been established by voter approval. By consensus among the parties supporting Proposition 218, assessments that had been subject to an advisory election were considered to be covered by the grandfathering clause so long as the governing body had demonstrated adherence to all terms of the advisory measure. Thus, the CSA EM-1 charges cannot be increased without a vote of the property owners.

**Conclusion:** CSA EM-1 (Measure H) provides high value limited funding for enhancement of the EMS system throughout Contra Costa County. The funds have no cost-of-living adjustments (COLA) attached and cannot be adjusted or increased. If the tax measure had included a COLA based on consumer price index (CPI) increases for Medical Care All Urban; Zone B charges would total $20.70/benefit unit and Zone A charges would total $8.17 resulting in a total of $9,692,236 of funding for EMS System Enhancement.

**Language of the Measure H Advisory**

*Passed November 8, 1988 with 71.6% voter support.*

"Shall a Countywide Emergency Medical Services benefit assessment be established to finance improvements in emergency medical and trauma care system including expanded countywide paramedic coverage; improved medical communications and medical dispatcher training; and medical equipment and supplies and training for firefighter first responders, including training and equipment for fire services electing to undertake a specialized program of advanced cardiac care (defibrillation)."

**Background of Measure H Funding for EMS System Enhancement:**

Initially, the Board of Supervisors used these funds to subsidize 9-1-1 private paramedic ambulance services expanding the availability of paramedic staffed ambulance services countywide. However, on May 18, 2004, the 9-1-1 private paramedic ambulance subsidy ended as part of the new ambulance contract with American Medical Response (AMR). Those funds were then reallocated by the Board of Supervisors creating a Fire First Responder Paramedic Fund. Fire First Responder Paramedic funding was restricted to “paramedic” first responder fire districts/departments only. From 2004 – 2008, qualifying Fire paramedic provider agencies received $30,000 per each “24-hour paramedic engine in service.”. In 2009, fire station closures with the countywide economic downturn created unintended reductions in fire first responder paramedic funding.

On May 14th, 2013, the EMS Agency recommended and the Board of Supervisors subsequently approved an alternative population based allocation formula to reallocate the Fire First Responder Fund of $2,331,133 to preserving fire first medical response. Under this new allocation formula both BLS and ALS fire districts in Zone B benefitted. The new formula provides a 25% differential for fire paramedic service level agencies. Funds are approved by the Board of Supervisors once a year in Jan/Feb and distributed as illustrated in the chart below.
In 2016, Measure H assessments raised 4.7 million dollars providing approximately 4.5 million dollars for EMS system enhancements after taxes and levies (6%) are deducted.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Effective FY 2015-16 Population Based Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richmond (BLS)</td>
<td>$ 223,022</td>
</tr>
<tr>
<td>El Cerrito/Kensington (ALS)</td>
<td>$ 111,012</td>
</tr>
<tr>
<td>Pinole (ALS)</td>
<td>$ 49,437</td>
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<td>Rodeo Hercules (ALS)</td>
<td>$ 88,004</td>
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<tr>
<td>Crockett-Garquinez (BLS/volunteer)</td>
<td>$ 7,068</td>
</tr>
<tr>
<td>Moraga Orinda (ALS/Transport)</td>
<td>$ 92,748</td>
</tr>
<tr>
<td>East Contra Costa (BLS)</td>
<td>$ 226,125</td>
</tr>
<tr>
<td>Contra Costa Fire (ALS)</td>
<td>$ 1,633,722</td>
</tr>
</tbody>
</table>

Program Elements Funded by Measure H

1. **Paramedic Ambulance Service Medical/Quality Oversight and Operational Area Emergency Ambulance Service Oversight**: Under Title 22 paramedic and EMT services are regulated by the local EMS Agency for medical control and quality improvement as part of a coordinated EMS System. Prehospital providers must abide to a myriad of state and local regulations, policies and procedures associated with providing 9-1-1 dispatch, EMT and paramedic first responder and ambulance services. The Contra Costa Health Services EMS Division serves as the Board of Supervisors designated local regulatory authority in compliance with the EMS Act.

2. **Fire First Responder BLS and ALS Support**: Currently 55% of all Measure H funds directly benefit Fire Agency first responder EMT and paramedic services countywide. Each fire district is responsible for utilizing their Measure H funds for qualified “enhancement” expenditures as defined in the Guidelines for Measure H available at [http://cchealth.org/ems/pdf/Measure-H-Guidelines.pdf](http://cchealth.org/ems/pdf/Measure-H-Guidelines.pdf). The EMS Agency has received feedback from all fire agencies that Measure H funds do not cover the full cost of the services provided.
3. **First Responder Fire and Law Medical Supplies, Equipment, Training:** Over the years Measure H allocations have provided enhancements through one-time funding for specialized medical supplies, equipment and training including sustaining and upgrading technology. Funding has supported advanced airway training, training manikins, Automated CPR devices (Auto-Pulse), specialized vascular access devices (EZIO), spinal immobilization equipment, mass casualty caches, oxygen concentrator equipment, cardiac/respiratory monitors, pediatric specialty equipment and narcotic control systems. Since moving to the population based funding methodology approved by the Board of Supervisors in 2013 each fire district/department is responsible for using their Measure H allocation to support and sustain these devices and training.

4. **Communications Sheriff’s Dispatch:** Measure H provides an annual subsidy of $250,000 a year to support coordination of emergency operational area communications including dispatch services for tracking and coordinating ambulance communications during mass casualty events and disaster events. There is a written agreement in place with Sheriff’s dispatch that caps the funding at $250,000 a year as there is no COLA provision available associated with Measure H.

5. **First Responder Fire, Law, and School Defibrillation Programs, Public Access Defibrillation and Heart-Safe Community Initiatives:** Measure H funds have periodically equipped fire and law response units countywide with automated electronic defibrillators AEDs. Measure H has also provided seed money to support AEDs in schools and Community CPR bystander training including EMS System/EMS Agency programs to coordinate volunteers and stakeholders.

Since January 1, 2012, the EMS Agency HeartSafe Community partners have trained over 29,425 citizens in CPR. Since moving to the fire district population based funding model approved by the Board of Supervisors in 2013; the EMS Agency relies primarily on the County Emergency Ambulance Contract (now served by the Alliance) to support services. This countywide program could be greatly enhanced through more reliable funding. There are gaps in the availability of Public Access Defibrillation, School Defibrillation Programs and Law Enforcement AEDs

**Contra Costa AED Locations**

6. **Fire-EMS and Disaster Emergency Communication Networks:** Over the years Measure H funding established, upgraded and sustained a variety of critical radio, dispatch and emergency situational status management platforms. Today these tools are essential to coordinated emergency response between dispatch, first responders, law, emergency and non-emergency ambulance providers, hospitals, skilled nursing facilities and ambulatory care centers in mass casualty and disaster. Examples of communication upgrades include ReddiNet, First Watch, EBRCS intra-operable radios, ATRUS (AED registry) and PulsePoint (CPR bystander app). While Measure H provided early seed money for these critical emergency communication tools, platforms and networks there is insufficient Measure H funding to support upgrade and enhancement. This results in a heavy reliance on the shrinking availability of state and federal competitive grants to upgrade critical communication infrastructure leaving the EMS System less resilient in emergencies and disasters.

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ReddiNet Emergency Communication Network
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7. **Prehospital Electronic Medical Health Record Platforms and Data Management Systems:**

All prehospital first responders, ambulance providers and air medical providers are now required under statute to use an electronic patient care data system and submit data to the local EMS Agency and State to comply with statewide data submission requirements. Over the years statutory mandates have increased, associated with prehospital data management and reporting. The EMS Agency’s statutory responsibilities for quality and medical oversight of all patient care delivered in the field requires all Fire, Ambulance and Hospital providers to participate.

Recent legislation also requires EMS system providers to ready their pre-hospital electronic patient care systems for bi-directional health information exchange with hospitals. Current medical information technology known to improve patient outcome such as Code Stat, Physio-Control 12 lead transmission system and First Pass (Prehospital Quality Improvement Clinical Performance Management System) are supported with funding from Measure H. At present there are no sources of funding to meet the goal of bi-directional exchange by 2018.

The EMS Agency actively sought grant funding for bi-directional health information exchange in 2015. Our application was praised by representatives of the Office of the National Coordinator, but the grant went to the San Diego County BEACON project. It is estimated that funding bi-directional health information exchange for the Contra Costa EMS System County-wide may require $750,000 to $1.5 million dollars of investment to achieve. The EMS Agency intends to apply for a new competitive grant from CMS sometime in 2018. Without funding, the goal of countywide prehospital and hospital bi-directional health information exchange will not be achieved.

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1 All prehospital EHRs must be compliant with new state EMS Data system requirements as specified in the January 5, 2016 California EMSA letter at: http://www.emsa.ca.gov/Media/Default/PDF/EMS%20Data%20System%20Requirements%202016%20.pdf
8. **EMS Systems of Care**: Measure H most important fiscal contribution over the years has been in providing seed funding to support the design, development and optimization of Contra Costa County’s well-respected systems of care. In 2004, Contra Costa County had only one system of care: Trauma. As of 2017, the Contra Costa EMS System has four highly respected Systems of Care in addition to Trauma: STEMI (high risk heart attack); Stroke, Cardiac Arrest; and EMS for Children. EMS Systems of Care represent bystander, dispatch, pre-hospital first responder, transport, emergency department and specialty intervention workflows known to improve patient outcomes. The quality of our systems of care supports participation in the CDC Cardiac Arrest Registry for Enhanced Survival (CARES), American Heart Association (AHA) Mission Lifeline Program, California Department of Public Health (CDPH) State Registry and partnerships with CMS focused on improving patient outcomes.
   b. STEMI System of Care: [http://cchealth.org/ems/stemi.php](http://cchealth.org/ems/stemi.php)
   e. Cardiac Arrest: [http://cchealth.org/ems/cardiac-arrest.php](http://cchealth.org/ems/cardiac-arrest.php)

   The EMS Agency is responsible for the State and Federal regulatory compliance associated with systems of care medical and quality oversight. The EMS Agency uses hospital designation fees to fund the hospital oversight portion supporting coordinated service delivery between the hospital and prehospital providers.

9. **Medical Health EMS System Disaster Preparedness**: Contra Costa Health Services Public Health and EMS Agency has been the EMS and health system leads supporting EMS medical health emergency and disaster preparedness. While this program has been primarily supported through state grants for public health and medical preparedness program (PHEP) and the Hospital Preparedness Program (HPP) funding has steadily declined associated with the HPP program supporting EMS. Initially EMS Agency staff supported the Regional Medical Health Coordinator (RDMHC) and Specialist (RDMHS) for Region II functions. In 2009 Region II coordination responsibilities transitioned to Alameda County EMS. Grant funding associated with the HPP and RDHMS program declined from a high of $1,823,612 in 2009 to less than $ 400,000 for the present HPP program in 2017. HPP funding is anticipated to further decline and possibly disappear as federal requirements for preparedness require local communities to build “resiliency”.

10. **EMS Agency Personnel and Support**: Initially Measure H provided the primary source of funding for the EMS Agency to meet state requirements associated with establishing an EMS System under the EMS Act. Over time, EMS Agency statutory driven responsibilities required the need for more professional staff in response to service driven population growth and numerous federal and state mandates associated with the EMS System and prehospital care. Today, the EMS Agency is not only responsible for EMT and Paramedic medical and quality and systems of care oversight; recent regulatory requirements mandate the following programs:
   a. POLST (Physicians Orders for Life Sustaining Treatment)
   b. Prehospital continuing education provider and training program authorization and oversight
   c. Medical Health Operating Area Coordinator (MHOAC) Program
   d. Medical Reserve Corps (MRC) Program
   e. Emergency Department Pediatric Readiness Program
   f. Prehospital Health Information Exchange (HIE)
   g. Law Enforcement (LE) Naloxone (Narcan) Programs
   h. First Aid/CPR Provider Programs
i. CMS Emergency Preparedness Program engagement required under the new CMS EP rule as part of their condition of participation in MediCaid/MediCAL.

j. Expanded EMT and Paramedic investigation and discipline to comply with EMSA State Model Disciplinary Guidelines

k. Medical and Quality oversight of the Emergency Medical Dispatch System,

l. Designation of local hospitals as Stroke, STEMI, Trauma, Cardiac Arrest and Pediatric centers.

As the discipline of EMS has become increasingly sophisticated the EMS Agency role to support stakeholders has become more complex in response to unfunded state and federal mandates. Less than 25% of Measure H supports EMS Agency activities. The remaining costs are supported through fee recovery associated with ambulance permitting, EMT and Paramedic certification and hospital designation fees. The Health Services department is currently subsidizing a significant portion of Fire-EMS Provider regulatory costs associated with enhancements in EMS professional services and regulation. Additional funding to support these services is needed.

The Contra Costa EMS System has heavily relied on grant and state funding to support EMS System enhancement, particularly in the area of disaster preparedness and emergency communications. Dramatic reductions in available state and federal grant funding has occurred over the last five years and become increasingly “competitive”. Other sources of funding such as SB12 (a.k.a. Maddy/Richie Funds) have been threatened. These funds support critical funding to sustain countywide EMS, Trauma and Emergency Care services. Alternative funding sources are needed to enhance of the Countywide Contra Costa EMS System.
Summary:

Measure H has provided a legacy of high value EMS System enhancement; however, critical funding gaps exist and need to be addressed. Current EMS funding gaps exist in the area of sustaining and upgrading data systems, dispatch, medical health and disaster preparedness to support bi-directional health information exchange with hospitals; Systems of Care support to improve Cardiac Arrest, EMS for Children, STEMI, Stroke and Trauma; and upgrades in disaster communications (e.g. EBRCs, WebEOC, Satellite, Telemedicine). While EMS stakeholders have options to charge and adjust first responder and ambulance patient care services delivered and qualify for programs such as GEMT the EMS Agency relies primarily on Measure H, periodic grant funding and Maddy funds to support the cost recovery associated with EMS System operations.

EMS System unfunded mandates, reduced reimbursement for services in addition to population driven demand increase costs: Today Prehospital care is both sophisticated and complex. With enhanced sophistication and complexity comes the obligation to fulfill additional unfunded mandates on both the federal and state level. The EMS Agency performs key functions essential supporting stakeholders in their compliance with state and federal regulatory mandates and it is not unusual for both EMS system stakeholders and the EMS Agency to be challenged by unfunded mandates driving the cost of EMS System compliance.
## CSA EM-1 (Measure H) Revenue History

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>EMS Responses</th>
<th>EMS Transports</th>
<th>Zone A Assessment Rate</th>
<th>Zone B Assessment Rate</th>
<th>Zone A Assessment Revenue</th>
<th>Zone B Assessment Revenue</th>
<th>Total Measure H (Zone A and Zone B) Revenue</th>
<th>Levy and Use Code Fees</th>
<th>Available Funds</th>
<th>CPI Increases Medical Care All Urban</th>
<th>CPI All Urban Bay Area</th>
</tr>
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<tbody>
<tr>
<td>1990-1991</td>
<td>NA</td>
<td>NA</td>
<td>$1.64</td>
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<td>NA</td>
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<tr>
<td>1991-1992</td>
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<td>29,057</td>
<td>$1.64</td>
<td>$5.48</td>
<td>$68,887</td>
<td>$2,389,217</td>
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<td>29,774</td>
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<td>$3.94</td>
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<td>$3,801,300</td>
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<td>$4,334,861</td>
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<td>2007-2008</td>
<td>75,209</td>
<td>58,213</td>
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<td>2008-2009</td>
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<td>54,692</td>
<td>$3.94</td>
<td>$10.00</td>
<td>$214,182</td>
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<td>2009-2010</td>
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<td>2010-2011</td>
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<td>$10.00</td>
<td>$217,739</td>
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<td>2011-2012</td>
<td>79,833</td>
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<td>$3.94</td>
<td>$10.00</td>
<td>$219,404</td>
<td>$4,478,438</td>
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<td>2012-2013</td>
<td>86,134</td>
<td>64,527</td>
<td>$3.94</td>
<td>$10.00</td>
<td>$220,490</td>
<td>$4,495,897</td>
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<td>NA</td>
<td>3.7</td>
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<td>2013-2014</td>
<td>85,034</td>
<td>64,133</td>
<td>$3.94</td>
<td>$10.00</td>
<td>$226,086</td>
<td>$4,498,377</td>
<td>$4,724,405</td>
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<td>NA</td>
<td>2.5</td>
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<td>2014-2015</td>
<td>87,974</td>
<td>64,870</td>
<td>$3.94</td>
<td>$10.00</td>
<td>$227,644</td>
<td>$4,476,987</td>
<td>$4,704,631</td>
<td>NA</td>
<td>NA</td>
<td>2.4</td>
<td>2.8</td>
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<td>2015-2016</td>
<td>94,278</td>
<td>73,381</td>
<td>$3.94</td>
<td>$10.00</td>
<td>$228,924</td>
<td>$4,468,326</td>
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<td>2016-2017</td>
<td>98,769</td>
<td>75,987</td>
<td>$3.94</td>
<td>$10.00</td>
<td>$230,573</td>
<td>$4,483,856</td>
<td>$4,714,429</td>
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<td>NA</td>
<td>3.8</td>
<td>3.0</td>
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<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$5,063,772</td>
<td></td>
<td></td>
<td>107.0</td>
<td>71.2</td>
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### Measure H EMS System Investment by Population

Remarkable High Value Benefit to Contra Costa Citizens

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>CoCo Population</th>
<th>Total Measure H Revenue</th>
<th>Annual Measure H Investment Per Person</th>
<th>Daily Measure H Investment PerPerson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-1991</td>
<td>803,732</td>
<td>$2,432,688</td>
<td>$3.06</td>
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<tr>
<td>1992-1993</td>
<td>803,732</td>
<td>$4,587,497</td>
<td>$5.71</td>
<td>$0.02</td>
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<td>1999-2000</td>
<td>948,816</td>
<td>$4,313,888</td>
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<td>2010-2011</td>
<td>1,024,809</td>
<td>$4,668,534</td>
<td>$4.58</td>
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<td>2016-2017</td>
<td>1,135,127</td>
<td>$4,714,429</td>
<td>$4.15</td>
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<tr>
<td>County Wide Emergency Department Capacity and Utilization 2015 thru 2017 Jan-June</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED stations</td>
<td>2015 ED Volume</td>
<td>2016 ED volume</td>
<td>ED vol/station 2016</td>
<td>ED 2017 Jan-June</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Contra Costa Regional Medical Center [Excludes PES] (1)</td>
<td>18</td>
<td>49,941</td>
<td>47,786</td>
<td>2,655</td>
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<tr>
<td>John Muir-CONCORD</td>
<td>32</td>
<td>52,538</td>
<td>52,425</td>
<td>1,638</td>
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<tr>
<td>John Muir-WALNUT CREEK</td>
<td>44</td>
<td>38,978</td>
<td>41,223</td>
<td>937</td>
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<tr>
<td>KAISER ANTI OCH</td>
<td>37</td>
<td>49,341</td>
<td>52,713</td>
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<td>KAISER RICHMOND</td>
<td>28</td>
<td>105,134</td>
<td>64,860</td>
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<td>52</td>
<td>51,325</td>
<td>53,657</td>
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<td>SAN RAMON REGIONAL</td>
<td>12</td>
<td>15,218</td>
<td>15,627</td>
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<td>SUTTER DELTA</td>
<td>32</td>
<td>53,219</td>
<td>53,500</td>
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<td>COUNTYWIDE TOTAL</td>
<td>255</td>
<td>415,694</td>
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(1) 6 pending

<table>
<thead>
<tr>
<th>Alameda County</th>
<th>ED stations</th>
<th>2015</th>
<th>2016</th>
<th>ED vol/station 2016</th>
<th>ED 2017 Jan-June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alta Bates Berkley Campus</td>
<td>25</td>
<td>53,507</td>
<td>45,900</td>
<td>1,836</td>
<td>18,875</td>
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<tr>
<td>Alta Bates Summit Campus</td>
<td>31</td>
<td>46,719</td>
<td>47,399</td>
<td>1,529</td>
<td>18,961</td>
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<tr>
<td>Kaiser Oakland/Richmond (2)</td>
<td>48</td>
<td>57,832</td>
<td>61,881</td>
<td>1,289</td>
<td>25,509</td>
</tr>
</tbody>
</table>

(2) 10 reserved as observation beds

updated 11/20/2017
‘The Moment We’ve Been Waiting For’: Anthem to Compensate EMS Care Without Transport

The quest of American EMS providers for more sensible reimbursement will reach a key threshold on January 1, 2018, when Anthem BlueCross BlueShield begins paying for treatment without transport for patients in states where it offers commercial coverage.

The major insurer’s new policy marks a vital step toward the goal of sustaining community paramedicine and mobile integrated healthcare programs that have sometimes struggled to find ongoing financial footing.

“We spend a lot of money in this country on healthcare, and our quality outcomes are not as good as other industrialized countries that spend less,” says Jay Moore, MD, senior clinical director for Anthem in Missouri. “We need to figure out a way to get a handle on that. We want to be able to provide healthcare in a way that’s affordable for people and sustainable for the future, and I think the only way to do that is to involve people at all levels of healthcare. Whether it’s physicians, nurses, paramedics, EMTs, whomever it might be, it’s something all of us are going to have to work together to solve. In my view this is definitely a step in the right direction.”

The reimbursement will be offered for HCPCS A0998-coded 9-1-1 responses in California, Colorado, Connecticut, Georgia, Indiana, Kentucky, Maine, Missouri, Nevada, New Hampshire, New York, Ohio, Virginia and Wisconsin. The company hopes to include its Medicare and Medicaid plans as well, though there are varying state requirements to navigate first. Due to those differences, not all 14 states will begin January 1, though most will.

While similar efforts have been piloted here and there, Anthem is the first major insurer to take such a global approach to compensating care that doesn’t culminate at the ED.

“For the first time we have a major private payer who’s looking to give reimbursement to EMS for services we normally don’t get paid for,” says Chris Cebollero, a veteran EMS leader and consultant who worked with the company on developing the plan. “This is really major in the EMS world and for the transformation of EMS into its new environment. This is the moment we’ve been waiting for.”

The new policy grew from a collaboration between Cebollero and Moore that began when they both worked for hospitals in the St. Louis area. Moore noticed high numbers of low-acuity patients coming through his ER at SSM Health DePaul Hospital. Questioning it, he discovered carriers didn’t commonly compensate for calls under A0998,
for ambulance response and treatment without transport; that forced EMS to bring patients to hospitals to get paid.

As head of Christian Hospital’s EMS division, Cebollero was well aware of that as he worked to launch a community paramedic program. “I wanted to collaborate not only with our ED, but with other hospitals too,” he says. “If the frequent flyers we stopped taking to our emergency department started showing up at other emergency departments, we wanted to stop that too. We didn’t want to just shift high utilizers from one ED to the other.”

Moore’s 2014 move to Anthem BlueCross BlueShield provided the opportunity for a bigger approach. He wanted to invest in community paramedicine; Cebollero was a consultant in building such programs. Moore initially sought Cebollero’s collaboration in developing CP programs for certain hotspot areas—then they realized they could aim higher. “We started looking,” Moore says, “at how we might be able to implement this in all our Anthem states across the country.” And he found Anthem’s leadership open to trying alternative approaches: “We’re interested and willing across the company,” he adds, “to engage with progressive providers who are interested in doing things besides the traditional fee-for-service model.”

In the future that might involve things like non-9-1-1 home visits, medication checks and more, but for now the hope is a modest reduction in unnecessary ED transports, which Moore hopes to trim by 5%.

Continue Reading

Meanwhile, for EMS, a long-sought opportunity is finally at hand. Now the onus moves back to us to take advantage of it.

“We have to be able to step to the table and use the code so Anthem can see the value and want to invest in the next pieces as well,” says Cebollero. “Community paramedicine has been going on for some time, and there have been a lot of great programs that failed because of financial sustainability. We have to be able to end our dependence on CMS and look more globally. We have to be proactive and engage the payers, the hospital systems, the ACOs, and say, ‘Look what we can do for you, but more important, what we can do for our patients.’ Even though this is a small component of our reimbursement model right now, the dominoes are all set up, and the finger is ready to flick. If you have a CP program, it’s time to put it into the next gear.”

For more on this story, see the December 2017 issue of EMS World.
Study: Nearly 50% of US medical care occurs in EDs

Written by Brian Zimmerman | October 17, 2017 | Print | Email

Emergency departments delivered 47.7 percent of all medical care in the United States between 1996 and 2010, according to a study published in the *International Journal of Health Services*.

For the study, researchers examined the number of inpatient, outpatient and ED visits compiled in the National Ambulatory Medical Care Survey and National Hospital Discharge Survey databases from 1996 through 2010.

Nearly 130 million ED visits, 101 million outpatient visits and 39 million inpatient visits occurred in 2010. Additionally, the number of ED visits increased by almost 44 percent over the 14-year study period.

"I was stunned by the results," said David Marcozzi, MD, an associate professor in the department of emergency medicine at the University of Maryland School of Medicine in Baltimore. "This research underscores the fact that emergency departments are critical to our nation's healthcare delivery system. Patients seek care in emergency departments for many reasons. The data might suggest that emergency care provides the type of care that individuals actually want or need, 24 hours a day."

More articles on EDs:

- MidHudson Regional Hospital ED nurses receive government recognition
- Mississippi hospital will charge $200 upfront fee for nonurgent ED visits
- Physician starts petition calling for LifePoint to renovate Virginia hospital's ED

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To receive the latest hospital and health system business and legal news and analysis from *Becker's Hospital Review*, sign-up for the free *Becker's Hospital Review E-weekly* by clicking here.
Emergency rooms are the best option in cases where conditions are life-threatening and may require advanced treatment, such as immediate surgery. These medical facilities offer quick access to a range of specialists. Because of the life-threatening conditions seen in the emergency room, less severe cases can take longer to be treated.

Emergency Rooms are best for treating:
- Chest pain
- Seizures
- Stroke
- Sudden or severe pain
- Head, neck, or eye injuries
- Severe vomiting, diarrhea
- Heart attack
- Uncontrolled bleeding
- Fainting, dizziness, weakness
- Broken bones
- Problems breathing

Urgent care facilities are best for treating:
- Migraines or headaches
- Cuts that need stitches
- Infections
- Sprains or strains
- Back pain
- Animal bites
- Cold or flu
- Sore and strep throat
- Minor burns
- Minor allergic reactions
- Cuts or scrapes
- Bronchitis
- Minor injuries or pain

This is for informational purposes only and does not constitute medical advice. When in doubt, or when facing a life-threatening condition, please contact 9-1-1 for emergency care.

My Local Urgent Care Facility:

Address ___________________________ Phone number ___________________________

OurHealthCalifornia.org
DATE: November 21, 2017

TO: Local EMS Administrators

FROM: Howard Backer, MD, MPH, FACEP
      Director

SUBJECT: Health Information Exchange for EMS Funding Opportunity Status

This memo will update you on the current status of the HIE for EMS Medi-Cal 90/10 funding opportunity. It is important to begin preparations now to be ready when the funding opportunity is available in the first quarter of 2018 (estimated).

The State of California Emergency Medical Services Authority (EMSA) intends to establish connections for health information exchange (HIE) between EMS providers (ground and air) and hospitals throughout California. The electronic movement of patient information will result in improved transitions of care from the prehospital to the hospital setting. Information exchange can support better clinical care and provide and outcome measures for emergency medical services (EMS) and trauma.

Funding to emergency medical services for the development of health information exchange and interoperability is now available via Medi-Cal (Medicaid) using a 90/10 match formula through a process established by the California Department of Health Care Services (DHCS). EMSA is working to develop a statewide approach to implement health information exchange (HIE) for emergency medical services (EMS) to improve quality of care through better patient information and outcome measurements. Funding would be used to complete HIE on-boarding and to design and implement HIE architecture.

Of special note, the unique nature of this project allows non-Federal funds to leverage contribution for HIE implementation for emergency medical care through Medi-Cal 90/10 matching funds. As an example of this opportunity, a $4 million non-federal fund match would leverage an additional $36 million of Federal funds to implement this statewide project to improve the quality of care (or $40 million total). This project is proposed to continue through September 30, 2021, which coincides with the Medi-Cal 90/10 funding cycle.

This project focuses on the development and statewide implementation of four integrated use cases that incorporate interoperable health information technology tools and services to transmit electronic health information between EMS providers and hospitals:

- The first use case, +EMS, allows hospitals and eligible professionals to achieve meaningful use objectives, such as transitions of care from ground and air EMS providers, alerting of trauma, stroke and heart attack teams, and medication
reconciliation. In particular, EMS would include health information technology to support Search, Alert, File, and Reconcile (SAFR) functionality for EMS providers. The information flow will result in the opportunity for EMS analytics and incorporate EMS outcome measures in the future.

- The second use case would specifically allow Community Paramedics to receive electronic information about patients that they are treating in a non-emergency situation. Community Paramedic programs are designed to reduce hospital readmissions, assist frequent users of the emergency and trauma system who have social service needs, such as mental health, alcohol or substance abuse, or to transport patients to alternative destinations.

- The third use case allows the implementation of a specialized registry for end-of-life orders and decisions through the POLST eRegistry.

- The fourth use case allows for onboarding to the Patient Unified Look-up System for Emergencies (PULSE) for use by healthcare professionals during a disaster while treating patients in an alternate care facility, medical shelter, or mobile field hospital.

The promise of improved care in both the pre-hospital and hospital setting through better information continues to be both a State and National priority. As health information technology advances, emergency medical services providers, both ground and air, are positioned to connect with interoperable systems. With the passage of AB1129 in 2015, EMS providers are now required to have electronic health records in the pre-hospital setting to allow for “real-time” movement of electronic patient information. The logical next step is the usage of the existing or emerging infrastructure to form interoperable communication linkages. As part of the two-tiered regulatory system for EMS in California, EMSA and the local EMS agencies are well positioned to take a leadership role in arranging interoperable pathways for the secure movement of electronic patient information to improve transitions of care from the pre-hospital to the hospital setting by integrating EMS into the broader healthcare system.

With funding for health information exchange, EMSA, local EMS agencies, and our partner organizations could:

1) Create stronger and more resilient infrastructure to deliver vital patient information to healthcare providers so that they can execute timely and informed emergency treatment.

2) Implement Health Information Exchange between EMS providers (ground and air) and hospitals in all 33 local EMS agencies throughout California;

3) Increase the information available to Community Paramedics when treating patients with chronic conditions or frequent users of the EMS system in a local community;

4) Expand emergency access to information from the Physicians Order for Life-Sustaining Treatment (POLST) specialized registry to allow EMS to honor patient’s end of life decisions;
5) Increase the connections, and resultant patient information, to the PULSE system for use during a disaster;
6) Convene leaders and stakeholders to collaborate and provide advice on implementing the secure movement of electronic patient information;
7) Provide education and knowledge transfer to local EMS providers about the benefits and operation of “real-time” health information exchange programs; and
8) Collect and analyze health data across pre-hospital and hospital settings to examine the quality of care provided and patient outcomes.

WHAT IS THE CURRENT STATUS OF THE HIE FOR EMS EFFORT?
Three developments are noteworthy at this time. First, the information necessary (i.e., Goals, objectives, budget detail) to complete the Advance Planning Document (APD) to leverage HITECH funding has been submitted to DHCS. Also, in preliminary discussions with DHCS and CMS, we are strongly optimistic that the APD will be approved. And, second, DHCS has already received State budget approval approximately $5 million of expenditure authority for the current fiscal year (through June 30, 2018).

Third, the receipt of non-federal matching funds is the logical next step in the process. EMSA is actively working to solicit non-federal funding from charitable foundations. Maddy EMS Funds can also be used as match.

There are specific requirements through the Department of Health Care Services (DHCS) and State of California budgetary processes to receive, transfer and expend money. The following sequential steps would be required to achieve the necessary funding match and fund the project:

<table>
<thead>
<tr>
<th>STEP</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A cash match (Non-Federal funds) from multiple sources would be sought.</td>
</tr>
</tbody>
</table>
| 2    | “Matching” funds from non-profit Foundations, Maddy EMS Funds, or other sources*, would be obtained and transferred to EMSA.  
*Note: EMSA is statutorily allowed to accept funds from charitable organizations (Health and Safety Code 1797.111). |
| 3    | EMSA would enter into an Interagency Agreement with DHCS to allow for an Intergovernmental Transfer (IGT) to DHCS. |
| 4    | DHCS would approve and match with Federal Medicaid funding and make available to EMSA. |
| 5    | EMSA would provide funding to local entities submitting a proposal, and entering into an agreement, for Interoperability and HIE planning for EMS. |
| 6    | Reimbursement occurs upon milestone completion and invoice. |
| 7    | EMSA would maintain HIE and EMS coordination, operations and statewide HIE compliance for EMS objectives. |
WHAT SHOULD A LEMSA BE DOING TO PREPARE FOR THIS OPPORTUNITY?

There are three things that EMSA would ask for you to initiate at this time.

1. **Identify funding opportunities**
   - Consider providing non-federal matching funds (i.e. Maddy EMS Fund) to EMSA to serve as a partial match. EMSA can consult on use and return of funds.
   - Identify local charitable foundations or other sources of non-federal matching dollars.

2. **Gather Preliminary Cost Estimates for full local EMS system participation**
   - Begin collecting cost estimates for designing, developing, and implementing health information exchange for EMS within LEMSA. EMSA plans to fund LEMSAs for local assistance for implementation.
   - Work with stakeholders now to formulate plans and develop estimates. The information necessary for preliminary planning estimates is noted below.

---

**Project Scope**

Identify project scope of the local project with Goals, objectives, and deliverables/evaluation measurement.

Identify specific elements necessary in your local system to “Design, Develop, and Implement” systems for bi-directional electronic patient information sharing with hospitals and/or HIO/HIEs. Specific topics may include, but are not limited to:

- EMS Daily use of Search, Alert, File, Reconcile (SAFR) model functionality
- Enhanced information for Community Paramedic programs
- POLST eRegistry on-boarding and delivery

Projects may be multi-year through September 30, 2021.

**Deliverables**

Identify the specific EMS providers and hospitals that will be on-boarded (as noted in the tables below).

Create a proposed Project Schedule through September 30, 2021.

**Project Costs**

Identify Project Costs for the local project in collaboration with EMS providers and hospitals, using HIO/HIEs as necessary to achieve exchange and interoperability. Some of the costs may include, but not be limited to:

- Identify LEMSA Admin Costs
  - Project coordination and oversight, developing agreements
  - Stakeholder Meetings

- Identify Training and Outreach Costs
  - EMS Provider Training
  - Hospital Staff Training
Health Information Exchange for EMS Funding Opportunity Status
November 21, 2017
Page 5

- Identify Data and Analytics Costs
  - Project evaluation and verification
  - Patient quality and outcome measurement
- Identify On-Boarding Costs
  - EMS Providers
  - Hospitals
  - HIO/HIEs
  - EMS Hub Costs

EMS Providers to be On-Boarded

<table>
<thead>
<tr>
<th># EMS Providers in LEMSA</th>
<th># Providers by Category</th>
<th>Total # EMS Calls/year</th>
<th>Estimated Cost to On-Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS Provider</td>
<td>Description (9-1-1 Ambulance, Ambulance, ALS Non-Transport, BLS Non-Transport)</td>
<td>Number of EMS Calls/year</td>
<td>Estimated Cost to On-Board</td>
</tr>
</tbody>
</table>

Hospitals to be On-Boarded

<table>
<thead>
<tr>
<th># EMS Receiving Hospitals in LEMSA</th>
<th># Hospitals by Category</th>
<th>Total # EMS Transports to Hospital/year</th>
<th>Estimated Cost to On-Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>Description (ED, Trauma, STEMI, Stroke, Ped)</td>
<td>Total # EMS Transports to Hospital/year</td>
<td>Estimated Cost to On-Board</td>
</tr>
</tbody>
</table>

3. Send EMSA Letters of Support to assist us in seeking Grant funding

As EMSA proceeds with seeking qualifying matching dollars, we would ask that LEMSAs write support letters. Additionally, you may wish to consider also seeking letters of support from EMS providers and hospitals. A sample letter for your individual use and modification is below:
Howard Backer, MD, MPH, FACEP
Director
State of California
Emergency Medical Services Authority
10901 Gold Center Drive, 4th Floor
Rancho Cordova, CA 95670

To Whom It May Concern:

I am writing this letter to support the California Emergency Medical Services Authority's application for grant funding to initiate the Health Information Exchange project for Emergency Medical Services. I believe that this project will improve transitions of care from the pre-hospital setting to the hospital emergency department. Uniquely, grant funding will also facilitate a 90/10 matching of Federal Medicaid dollars that will build the infrastructure for the secure, movement of patient information and allow for better measurement of quality patient care and outcomes.

The California Emergency Medical Services Authority has already demonstrated significant progress as part of the successful Patient Unified Look-up System for Emergencies and the +EMS pilot project. The opportunity to continue funding will allow more local EMS agencies to coordinate the design, development, and implementation of health information systems to improve patient care by connecting emergency medical services (EMS) providers with hospitals for bi-directional patient information exchange.

Our local EMS agency is highly supportive and would like to participate in this project which will build greater capability to treat patients. The statewide nature of this project is ambitious but achievable. The use of health information exchange for EMS providers, on a daily basis or by health care professionals during a disaster, will benefit patients and the EMS system as a whole.

I would like to offer my support to help achieve funding for this important statewide project.

Sincerely,
You have been sent this copy of the 2013 Contra Costa Child Death Report. 86% of the deaths were deemed preventable and that knowledge is one of the goals of child fatality review. Ultimately the goal is to prevent death and injury and several modalities are discussed toward this end.

October was SIDS Awareness month as well as Suicide Prevention month. November is Child Injury Prevention month. I have included my Executive Summary as well as Interventions and Next Steps for those of you intimidated by 61 page reports and wanting to get to the findings and recommendations right away.

2013 might sound like old news but the reviews are comprehensive and findings are similar to previous years with regard to why children die and what we can do to prevent these unnecessary fatalities. We have included data from the 2008-2012 report to show persistent trends. For example, 38 out of 40 sleep-related deaths in infants over this 6 year period occurred in unsafe sleeping environments and probably could have been prevented.

Please share this information so more become aware of simple modalities such as active supervision and safe sleeping practices to prevent tragic injuries and death. Preventing teen homicides and suicides is more complex but possible. The report is available in digital form at www.capc-coco.org as well as http://cchealth.org/medicalcenter/pdf/child-death-report.pdf.

It is our hope that these children did not die in vain and that we can learn from their tragedies and act to prevent future injury and death.

Jim Carpenter MD, MPH, FAAP
Chair, Contra Costa Child Death Review Team
Contra Costa Health Services
EXECUTIVE SUMMARY

This report is based upon the multidisciplinary reviews of 21 child deaths by the Contra Costa County (CCC) Child Death Review Team (CDRT) covering the year 2013.

The reviews are limited to CCC coroner cases of people less than 18 years of age. The report does not include many natural deaths where the child had been under medical care for cancer or other known health conditions. Coronor cases are classified as accidents, homicides, suicides, natural or undetermined. Reviewed deaths represent about one quarter (27%) of all child deaths in CCC over the study period. The total number of child deaths in CCC in 2013 was 78. Of these, 43 (55%) occurred in neonates in the first month of life and seven (9%) occurred in infants after the first month of life.

The primary goal of child death review is to understand why children die and to take action to prevent other death or injury. The main conclusions from this review are below.

1. PREVENTABILITY: The Contra Costa County CDRT determined that 18 of 21 (86%) of the deaths reviewed were probably preventable. Interventions such as active supervision, safe sleeping practices, safer driving and further limiting access to firearms would have prevented many of these deaths. From 2008 to 2013, 118 of 176 deaths investigated by the CDRT (67%) were deemed preventable.

2. ETHNICITY: There were higher death rates among African-Americans compared to whites and Hispanics. Asian-Pacific Islanders had the lowest death rates.

3. AGE: The age distribution of deaths was highest in infants and in teens aged 15 to 17. Infants tended to die in unsafe sleeping environments, whereas teens died in accidents, homicides or suicides.

4. GENDER: Females represented 17 of 21 (81%) of the reviewed deaths in 2013, compared to previous years during which there was a preponderance of males.

5. CLASSIFICATION OF DEATH: Accidents or preventable injuries accounted for 11 of 21 (52%) of deaths reviewed, and were all considered preventable. Suicide and Undetermined deaths accounted for 3 of 21 (14%) of the deaths reviewed. Homicide and Natural deaths accounted for 2 of 21 (10%) of the deaths reviewed.

6. ACCIDENTAL DEATHS: These deaths were primarily from motor vehicle collision (7 of 11 or 64%), followed by accidental asphyxia (2 of 11 or 18%), followed by a drug overdose and a drowning (1 of 11 each, or 9%). Teens, males and African Americans were overrepresented in these deaths. All of these deaths were considered preventable:
   • Motor vehicle-related deaths can be prevented by safer driving and appropriate use of restraints.
   • Sleep-related asphyxia can be prevented by following safe sleeping practices.
   • Drowning can be prevented by active supervision, use of personal flotation devices, working barriers or alarms for pools and less adolescent risk-taking behaviors.
   • Drug overdose deaths can be prevented by a number of modalities including safety caps, addiction treatment, access to Narcan, CUREs registry and others.

7. HOMICIDES: These deaths were both male and involved the use of a firearm. Over the 6 year 2008–2013 period, 2013 was the only year there were no African American child homicides. The CDRT considers gun-related deaths preventable.
8. **SUICIDES:** These deaths occurred in three teens in 2013, all male. The method of death in two cases was hanging and by BART train in one case. All three cases had histories of depression, with one using medication. Two of the cases left suggestive posts on social media. Suicide is deemed probably preventable by the CDRT and the Contra Costa Crisis Center.

9. **NATURAL CAUSE OF DEATH:** These deaths were due to medical conditions or Sudden Infant Death Syndrome (SIDS). Most natural deaths are not reviewed by the CDRT because they are not coroner’s cases. In 2013, we reviewed two deaths in which the autopsies identified infections (croup and viral myocarditis). The CDRT could not determine the preventability of these cases due to lack of information regarding whether more timely medical treatment might have made a difference.

10. **UNDETERMINED CAUSE OF DEATH:** These deaths included two sleep-related deaths and one probable infection. Sleep-related deaths, or Sudden Unexpected Infant Deaths (SUIDs), are categorized as “undetermined” when the autopsy cannot discriminate between accidental asphyxia and SIDS. Both of these deaths were African American infants in unsafe sleeping environments and were deemed preventable.

11. **CHILD ABUSE OR NEGLECT-RELATED DEATHS:** There were no deaths in 2013 directly attributed to child abuse, but there were four deaths identified with child abuse or neglect as a potential contributor. Child abuse is a preventable trauma with lifelong and generational consequences if not addressed.

12. **SLEEP-RELATED DEATHS:** These deaths occurred in three infants in 2013, all in unsafe sleep environments and therefore all preventable. Two of the three were African Americans, consistent with our past findings and a national trend of disproportionate sleep-related deaths in African Americans associated with unsafe sleep practices. Since 2008, there have been 40 sleep-related infant deaths in Contra Costa County, with all but two in unsafe sleep environments. From 2008 to 2013, 95% of Contra Costa’s sleep-related infant deaths could have been prevented with adoption of safe sleeping practices.

13. **FIREARM-RELATED DEATHS:** These deaths occurred in two teen homicides. Prevention of firearm-related death is multi-modal, beginning with limiting easy access to firearms.

14. **RECOMMENDATIONS FOR PREVENTION OF CHILDHOOD DEATH AND INJURY IN CCC:**
   - Begin a countywide Safe to Sleep Campaign targeting all birthing hospitals, medical providers, home visitors, childcare providers and the public.
   - Promote active supervision.
   - Employ safe storage of firearms, buyback programs and trigger lock giveaways, support California’s assault weapon ban, and encourage research into the public health aspects of firearm injury.
   - Promote child abuse prevention, including home visitation, parenting classes and mandated-reporter trainings.
   - Promote truancy prevention programs, after-school programs, alternative education, bullying prevention programs, teen recreation programs, mentor programs and others.
   - Promote access to healthcare, including mental healthcare and substance abuse treatment.

Jim Carpenter MD, MPH, FAAP
Chair, CCC Child Death Review Team
INTERVENTIONS & CONCLUSION
The death of a child is a tragedy. A preventable death of a child is an unacceptable tragedy. Most of the 21 deaths reviewed by the CDRT in 2013 were preventable, often by means no more complicated than the adequate supervision of children or provision of a safe sleep environment.

The reasons children die in Contra Costa are, for the most part, the same reasons that children die in the rest of the USA.

Which brings us to asking who is responsible for preventing unnecessary child fatalities in Contra Costa County? The answer is simple: All of us.

Parents are the first and foremost protectors of children. Active supervision includes noticing someone else's child about to step in the street or the pool. Preventing injury includes using proper restraints in cars on your children and yourself, and driving safely and defensively. It includes practicing safe sleeping in the first year of life, even if you shared a bed with your first child without a problem. It includes checking your smoke detectors annually and having a carbon monoxide detector. It includes using personal flotation devices on boats, even if it is unlikely that you or your children will fall out. It includes always checking the car seat for a sleeping infant, even if you have errands and appointments to get to. Prevention of injuries includes checking in with your teen and recognizing distress or risk-taking behaviors. Prevention includes safe storage of a firearm if you have to have a firearm at all.

 Teens die from three primary manners of death:
1) accidents (better called preventable injuries) with motor vehicle crashes being the single most common cause of death,
2) homicides (with 90% involving firearms), and
3) suicides.

In the first year of life, the most likely cause of death is related to an unsafe sleeping environment resulting in SUIDs, SIDS or accidental asphyxia. This is found by CDRTs across the country. This has led to a national movement encouraging safe-sleeping practices to be taught, practiced and reinforced from prenatal care, birth and the perinatal period, through the first year of life.

Adequate and active supervision of children can prevent deaths from fire, drowning or being left in a car.

 Teens have a shared responsibility in being aware of their influence on each other and the lack of foresight they may demonstrate in many decisions. Suicides, homicides and MVCs are fatal consequences of the above.

Law enforcement has the responsibility of enforcing laws and also often coming to the rescue when injuries occur. We salute our Emergency Medical Services that have consistently gotten first responders to injuries in a timely fashion. We would like to decrease their calls by the 65% of potentially, preventable fatalities they have to respond to.

The media has a role in injury prevention by provision of child safety public service announcements and stories that educate but do not sensationalize child fatality.
Legislators have a role in child injury prevention and have clear successes in the laws regarding child car restraints and the graduated driver’s license. Many extant laws such as regarding smoke detectors in rental units and barriers around pools tend not to be enforced until a tragedy occurs.

It is hoped that this report will elucidate the preventability of childhood injury and fatality so that these 21 children did not die in vain.

NEXT STEPS
It is hoped that the people of Contra Costa County will agree that prevention of child injury and death is a priority and reachable goal.

The following are some steps to consider for our community:

- **SAFE TO SLEEP COUNTYWIDE PROJECT.** Trainings have already taken place at Contra Costa Regional Medical Center (CCRMC) for perinatal nurses and pediatricians. Nursing protocol is in process to both practice and model safe sleep practices for all newborns at CCRMC. A survey of all delivering hospitals regarding the delivery of the Safe to Sleep message to parents is in process with all hospitals being offered trainings. It has been estimated that 1,000 infants will survive each year in the U.S. if safe-sleeping practices are more universally practiced.

Los Angeles County did a countywide Safe to Sleep campaign several years ago, funded by First 5 California, and has already seen a decline in sleep-related deaths in infants. Alameda County has launched a Safe to Sleep campaign including billboards and signage in public transit.

- **TREAT FIREARM-RELATED INJURY AND DEATH AS A PUBLIC HEALTH PROBLEM.** Blocking research funds for the CDC serves no function other than allowing the continuation of gun-related violence and death. Safe storage of firearms should be part of child safety discussions in the doctor’s office and not made illegal, as it was in the state of Florida. The firearm is a consumer product and should be made safer and monitored by the Consumer Product Safety Commission (CPSC).

- **SUICIDE PREVENTION CAN ONLY OCCUR IF WE LOOK OUT FOR EACH OTHER AND PROVIDE ADEQUATE MENTAL HEALTH SERVICES.** The majority of teen suicides occur as impulsive acts in response to the myriad stressors of adolescence colliding with parents, peers and schools. A growing trend is social media-induced stress and bullying. Parents need to maintain communication with their teens. Teens need to be aware of their influence on each other. Schools need to serve both as places of education and providers of counseling and conflict resolution. The Crisis Center is to be applauded for its decades of service to the people in crisis of Contra Costa County.

- **HOMICIDE PREVENTION REQUIRES MORE THAN PREVENTING EASY ACCESS TO FIREARMS.** Mentor programs, teen recreation programs, summer jobs for teens, bullying prevention, after school programs, school drop-out prevention and others should be created, supported and nurtured.
CHILD FATALITY REVIEW TEAMS ALSO NEED TO BE SUPPORTED AND NURTURED. All members of the CDRT are volunteers from agencies and programs in the county and squeeze in their case reviews with many other duties. The reason there have not been annual reports as suggested by statute has to do with the lack of funding. This report is possible only due to the dedication of staff of CCHS and CAPC.

It is hoped that subsequent reports will be both funded and be more frequent. It is also hoped that agencies that participate in CDRT will continue to support provision of personnel and time to this endeavor.
Community paramedicine, also known as mobile integrated health (MIH-CP) is an innovative model of care that seeks to improve the effectiveness and efficiency of health care delivery by using specially trained paramedics in partnership with other health care providers to address the needs of local health care systems. In November 2014, the California Office of Statewide Health Planning and Development approved an application from the California Emergency Medical Services Authority to establish a Health Workforce Pilot Project that encompasses 14 projects in 11 areas of the state that are testing seven different community paramedicine concepts. The Philip R. Lee Institute for Health Policy Studies and the Healthforce Center (formerly the Center for the Health Professions) at the University of California, San Francisco, are conducting an evaluation of these projects. This report updates findings from the evaluation presented in a report issued in January 2017. It covers the time period from the launch of each of the 14 projects through June 30, 2017. The evaluators conclude that Californians benefit from these innovative models of health care that leverage an existing workforce that operates at all times under medical control — either directly or by protocols developed by physicians experienced in EMS and emergency care. The projects have improved coordination among providers of medical, behavioral health, and social services; reduced preventable ambulance transports, emergency department visits, and hospital readmissions; and have not resulted in any adverse outcomes for patients.
Acknowledgements

The authors thank the pilot sites, project participants, the California Emergency Medical Services Authority, and the California Office of Statewide Health Planning and Development for their assistance in carrying out this evaluation. They also thank the California Health Care Foundation for funding the evaluation.
The mission of the Healthforce Center is to equip health care organizations with the workforce knowledge and leadership skills to effect positive change.
Key Findings

Community paramedicine, also known as mobile integrated health (MIH-CP) is an innovative model of care that seeks to improve the effectiveness and efficiency of health care delivery by using specially trained paramedics in partnership with other health care providers to address the needs of local health care systems. On November 14, 2014, the California Office of Statewide Health Planning and Development approved an application from the California Emergency Medical Services Authority to establish a Health Workforce Pilot Project (HWPP) to test multiple community paramedicine concepts. OSHPD has since been renewed the HWPP for one-year periods in 2015, 2016, and 2017. The HWPP encompasses 14 projects in 11 areas of the state that are testing seven different CP concepts.

The HWPP regulations require organizations that sponsor pilot projects to retain an independent evaluator to assess trainee performance, patient acceptance, and cost effectiveness. The Philip R. Lee Institute for Health Policy Studies and the Healthforce Center (formerly the Center for the Health Professions) at the University of California, San Francisco, are conducting the evaluation funded by the California Health Care Foundation. This report updates findings from a report issued in January 2017, which summarized the evaluators' findings regarding implementation from June 2015, the month in which projects began enrolling patients, through September 2016. This update presents findings from the evaluation through June 2017. A subsequent update will present findings through September 2017.

Key findings are as follows.

General

- Thirteen pilot projects were launched from June through October of 2015.
- A new project, San Francisco’s alternate destination – sobering center project, began enrolling patients in February 2017.
- Two projects, the UCLA Center for Pre-Hospital Care’s post-discharge project and the UCLA Center for Pre-Hospital Care’s alternate destination – urgent care project, have closed due to lack of resources and low enrollment, respectively.
- Between September 30, 2016, and June 30, 2017, enrollment in the community paramedicine pilot projects increased by 33%, from 1,462 to 2,185 persons.

Post-Discharge

- Enrollment in the five post-discharge projects increased from 922 to 1,327 patients from September 30, 2016, through June 30, 2017. Butte had the largest enrollment (748 patients) and Alameda had the smallest (102 patients).
- The post-discharge projects are improving patient safety by performing home visits within several days of a patient’s hospital discharge to ensure that patients are taking medications as prescribed, have sufficient refills to manage their conditions, have scheduled follow-up visits with their physicians, and are adhering to any dietary restrictions pertinent to management of their condition.
- All five post-discharge projects have reduced the all-cause 30-day readmission rate for persons with one or more of the chronic conditions they target. The only project that did not achieve 30-day readmission rates for all chronic conditions targeted that was as good or better than the partner hospital’s historical average did not provide home visits to all patients, which may have limited the project’s impact on readmissions.
The five post-discharge projects generated approximately $1.4 million in potential savings, the majority of which (60%) accrued to Medicare.

**Frequent EMS User**

- Enrollment in the two frequent EMS user projects increased from 77 persons to 95 persons between September 30, 2016, and June 30, 2017.

- Since December 2016, San Diego’s frequent EMS user project have found it challenging to meet patients’ needs because two community paramedics working on the project were reassigned to traditional 911 response crews.

- The frequent EMS user projects have achieved large reductions in the number of times enrolled patients called 911 and were transported to an emergency department (ED).

- Frequent EMS user projects also linked patients to organizations that provide primary care, mental health services, substance abuse treatment, food, housing assistance, transportation assistance and other services that can address their needs more effectively than the EMS system.

- From October 2015 through June 2017, San Diego’s frequent EMS user projects generated approximately $543,400 in savings for payers. It also reduced the amount of uncompensated care provided by ambulance services and hospitals because 46% of the patients enrolled in the project were uninsured.

- From July 2015 through September 2016, Alameda’s frequent EMS user project generated approximately $100,048 in savings for payers.

**Directly Observed Therapy for Tuberculosis**

- Enrollment in the directly observed therapy for tuberculosis (TB) project increased from 29 persons to 37 persons between September 30, 2016, and June 30, 2017.

- Most persons are enrolled for multiple months because treatment for TB typically spans six to nine months.

- Community paramedics dispensed appropriate doses of TB medications and their TB patients did not experience side effects any more frequently than typically associated with TB treatment.

- Ten patients were admitted to a hospital but only patient was hospitalized for TB. This patient needed intravenous medication to treat TB meningitis, which was diagnosed prior to enrollment in the program.

- People with TB who received directly observed therapy from community paramedics were more likely to receive all doses of TB medication prescribed by the TB clinic physician than people who received directly observed therapy from the TB clinic’s staff because community paramedics were available 24 hours per day, 7 days per week.
Hospice

- Enrollment in the hospice project increased from 137 persons to 225 persons between September 30, 2016, and June 30, 2017.
- The hospice project reduced harm by reducing the likelihood that patients who did not want to go to an ED would be transported and risk losing their hospice benefits. However, patients were not denied transport to an ED where it was indicated and consistent with the patient’s preference.
- The percentage of 911 calls for hospice patients enrolled in the project that resulted in transport to an ED decreased from 80% to 31%.
- The hospice project achieved an estimated $165,990 in savings by reducing ambulance transports and ED visits.

Alternate Destination – Mental Health

- Enrollment in the alternate destination – mental health project increased from 169 persons to 227 persons between September 30, 2016, and June 30, 2017.
- The pace of enrollment slowed in 2017 because several community paramedics left the agency or were promoted to other positions. Additional community paramedics have been trained and the project’s leaders expect that enrollment will increase because there will be more capacity to screen persons who are potentially eligible.
- Twenty-five percent of persons screened by the community paramedics were transported to the mental health crisis center and more could have been transported to the crisis center if the county had more inpatient psychiatric beds or if the crisis center accepted persons with private health insurance or Medicare. (Some persons the community paramedics screened were not eligible for transport to the mental health crisis center because they had a medical need, were intoxicated, or were violent.)
- In addition to responding to 911 calls regarding mental health emergencies, the community paramedics screen people who come to the mental health crisis center for care to determine whether they have any medical conditions that might necessitate transport to an ED instead of admission to the crisis center.
- Only 4% of patients enrolled in the project (n = 9) were transferred from the mental health crisis center to an ED within six hours of admission. None of the transfers involved a life threatening condition and none of the patients transferred to an ED were admitted for inpatient medical care.
- The project also improved public safety because in cases in which law enforcement responded to a 911 call involving a person with mental health needs, community paramedics could take responsibility for the person. This allowed law enforcement officers to return to law enforcement duties instead of transporting the person to an ED and waiting to transfer responsibility for the patient to clinicians in the ED.
- The project saved an estimated $238,700 by reducing the number of 911 calls that resulted in an ED visit and transport of a patient from an ED to an inpatient psychiatric facility.
Alternate Destination – Urgent Care

- Enrollment in the three alternate destination – urgent care projects increased from 39 persons to 48 persons between September 30, 2016, and June 30, 2017.

- Most patients enrolled had a laceration or an isolated closed extremity injury.

- Enrollment in these projects has been substantially lower than anticipated because all three projects had fewer 911 calls that involved people who met the inclusion criteria than expected and because many 911 calls occurred at times of the day during which urgent care centers are closed. In addition, clinicians at urgent care centers were reluctant to treat some conditions, such as a dislocated shoulder, that could be treated safely and effectively in that setting.

- Two patients (4%) were transferred from an urgent care center to an ED within six hours of arrival at the urgent care center. Nine patients (19%) were transported to an urgent care center and then rerouted to an ED because clinicians at the urgent care center declined to treat the patient.

Alternate Destination – Sobering Center

- The alternate destination - sobering center project enrolled 226 persons of which 27 (12%) were repeat users of the sobering center.

- Ninety-seven percent of patients enrolled in the alternate destination – sobering project were treated safely and effectively at the sobering center. Only five patients (2%) were transferred to an ED within six hours of admission to the sobering center and only one (1%) was rerouted from the sobering center to an ED. None of these patients were admitted to a hospital for inpatient care.

- In addition, community paramedics participating in the project provided feedback to paramedics on 911 crews on how to screen acutely intoxicated persons to determine if they are candidates for transfer to the sobering center. They are also collaborating with homeless outreach workers to encourage people who use the sobering center frequently to seek treatment for chronic alcoholism, housing, and other services.

- During its first five months of operation, the project generated an estimated $142,780 in savings. The majority of savings accrued to Medi-Cal because the majority of patients enrolled in the project are Medi-Cal beneficiaries.

Conclusion

The community paramedicine pilot projects have demonstrated that specially trained paramedics can provide services beyond their traditional and current statutory scope of practice in California. No adverse outcome is attributable to any of these pilot projects. The projects are enhancing patients' well-being by improving the coordination of medical, behavioral health, and social services, and are decreasing health care costs by reducing ambulance transports, ED visits, and hospital readmissions. The majority of savings achieved by these pilot projects accrue to Medicare and hospitals serving Medicare patients because Medicare beneficiaries accounted for the largest share of persons enrolled in the pilot projects. Savings also accrue to the Medi-Cal program and providers that serve Medi-Cal beneficiaries because Medi-Cal beneficiaries constitute a substantial percentage of enrollees.
These pilot projects integrate with existing health care resources and utilize the unique skills of paramedics and their availability 24 hours per day, 7 days per week. The community paramedics operate at all times under medical control, either directly or by protocols developed by physicians experienced in EMS and emergency care. The pilot projects have not displaced any other health professionals. Instead, they have demonstrated that community paramedics can collaborate with physicians, nurses, behavioral health professionals, and social workers to fill gaps in the health and social services safety net.

Research conducted to date indicates that community paramedicine programs are improving the efficiency and effectiveness of the health care system. Findings from this research also suggest that the benefits of community paramedicine programs grow as they mature, solidify partnerships, and find their optimal structure and niche within a community. The evaluation of HWPP #173 yields consistent findings for six of the seven community paramedicine concepts tested. All of the post-discharge, frequent 911 users, DOT for TB, hospice, alternate destination – mental health projects have been in operation for 21 or more months and have improved patients’ well-being and, in most cases, have yielded savings for payers and other parts of the health care system. Preliminary findings regarding the sixth concept, alternate destination – sobering center, suggest that this project is also benefitting patients and the health care system. The seventh concept, alternate destination – urgent care, shows potential but further research involving a larger volume of patients is needed to draw definitive conclusions.

If community paramedicine is enabled on a broader scale, California’s current EMS system design is well-suited to utilize the results of these pilot programs to optimize the design and implementation of proposed programs and assure patient safety. The two-tiered system of local control with state oversight and regulation enables cities and counties to tailor community paramedicine programs to meet local needs while both local and state oversight and regulation ensure patient safety.
Introduction

Community paramedicine (CP), also known as mobile integrated health (MIH-CP) is an innovative model of care that seeks to improve the effectiveness and efficiency of health care delivery by using specially trained paramedics in partnership with other health care providers to address identified patient needs in local health care systems. Community paramedics receive additional training beyond that required for licensure and provide care beyond their traditional role, which in California is restricted to responding to 911 calls, treating patients at the scene of an emergency, transporting patients to EDs, and inter-facility transfers.1 They are supervised by physicians and nurses who work for the EMS agencies that employ them and by staff of the health care and community service agencies with which their EMS agencies partner. According to a survey conducted by the National Association of Emergency Medical Technicians, by 2014 more than 100 EMS agencies 33 states and the District of Columbia had implemented one or more MIH-CP initiatives.2

On December 19, 2013, the California Emergency Medical Services Authority (EMSA) submitted an application to the California Office of Statewide Health Planning and Development (OSHPD) for a Health Workforce Pilot Project (HWPP) to evaluate community paramedicine. California established the HWPP program (HSC §§ 128125-128195), which was originally called the Health Manpower Pilot Projects program, in 1972 to enable health care organizations to test and evaluate innovative models of care that utilize health professionals in new roles. A HWPP is necessary to establish community paramedicine initiatives in California because the sections of the Health and Safety Code that govern paramedic scope of practice (HSC §§ 1797.52, 1797.218) specify the limited emergency settings where paramedics can provide services and the settings to which they can transport patients. OSHPD approved HWPP #173 on November 14, 2014, for one year and renewed approval for additional one-year periods in 2015, 2016, and 2017.

The HWPP regulations require organizations that sponsor pilot projects to retain an independent evaluator to assess trainee performance, patient acceptance, and cost effectiveness. A team of evaluators at the Philip R. Lee Institute for Health Policy Studies and the Healthforce Center (formerly the Center for the Health Professions) at the University of California, San Francisco, serves as the independent evaluator for HWPP #173. This report updates a report issued in January 2017, which summarized the evaluators’ findings regarding implementation from June 2015, the month in which projects began enrolling patients, through September 2016.3 This update includes findings from the evaluation through June 2017. It also includes findings regarding a new project that was launched in San Francisco in February 2017 under which eligible patients are screened and offered transport to a sobering center if sobering is their only need. The California Health Care Foundation is funding the evaluation.

Overview of California Community Paramedicine Pilot Projects

Fourteen community paramedicine projects have been launched in 11 geographic areas across California under the auspices of HWPP #173. Thirteen projects began enrolling patients in 2015. A fourteenth project began enrolling patients in 2017. A map that displays the projects’ locations can be found in Appendix A.

These projects are testing seven different concepts for the practice of community paramedicine.

The seven concepts are:

1. **Post-Discharge, Short-term Follow-Up:** Provide short-term, home-based follow-up care to people recently discharged from a hospital due to a chronic condition (e.g., heart failure) to reduce their risk of readmission and improve their ability to manage their condition.

2. **Frequent EMS Users:** Provide case management services to people who are frequent 911 callers and frequent visitors to EDs to identify needs that could be met more effectively outside of an ED and assist
patients in accessing primary care and obtaining services to address non-medical needs, such as food, housing, and substance use disorder treatment.

3. **Directly Observed Therapy for Tuberculosis:** Provide directly observed therapy (DOT) to people with tuberculosis (i.e., dispense medications and observe patients taking them) to assure effective treatment of tuberculosis and prevent its spread.

4. **Hospice:** In response to 911 calls made by or on behalf of hospice patients, collaborate with hospice agency nurses, patients, and family members to treat patients in their homes according to their wishes instead of transporting them to an ED.

5. **Alternate Destination – Mental Health:** In response to 911 calls, offer people who have mental health needs, but no emergent medical needs, transport directly to a mental health crisis center instead of to an ED with subsequent transfer to a mental health facility.

6. **Alternate Destination – Urgent Care:** In response to 911 calls, offer people with low-acuity medical conditions transport to an urgent care center for evaluation by a physician, instead of to an ED.

7. **Alternate Destination – Sobering Center:** In response to 911 calls, offer people who are acutely intoxicated but do not have an acute medical or mental health need transport to directly to a Sobering Center for treatment instead of to an ED.

All sites obtained approval from an institutional review board (IRB) and enrolled patients following consent procedures stipulated by the IRB. Additional information about each concept is contained in the original evaluation report.

**Training of Community Paramedics**

Paramedics were eligible to be trained to perform new roles as community paramedics if they had at least four years of experience, volunteered to participate in the pilot, and were sponsored by their local Emergency Medical Services (EMS) authority. The State of California Community Paramedic Educational Taskforce developed a core curriculum that OSHPD reviewed and approved. The curriculum was adapted from the Paramedic Foundation’s National Community Paramedic Curriculum to better align with the standards and requirements of practice in California. The curriculum included 48 hours of didactic, classroom-based instruction and 48 hours of clinical, hands-on training, for a total of 96 hours of instruction. Community paramedic trainees were additionally required to complete 56 hours of study outside the classroom, which included required readings and other assignments.

Only the site supervisors from Alternate Destination – Urgent Care projects and paramedics recruited to coordinate the Alternate Destination – Sobering project were required to complete the core curriculum because these concepts focus on clinical decision-making in the field regarding where to transport a patient. This is routine practice for paramedics, who must identify which patients to take to specialty care centers, such as stroke centers, that may not be the closest ED. At these pilot sites all other paramedics in the system received training focused on (1) screening patients according to a protocol to determine if they would be eligible to enroll in the pilot, and (2) the procedures for enrolling patients who agree to be transported to an urgent care center or a sobering center.

The first cohort of community paramedics, which consisted of 79 paramedics, were enrolled in the core curriculum and site-specific coursework during the first quarter of 2015. Two of the 79 paramedics were unable to complete the training for nonacademic reasons. All of the 77 paramedics who completed the core curriculum passed a written final examination, a simulated patient scenario examination, and an oral examination by the pilot site’s medical director. Since then, three sites (Solano, Stanislaus, and Ventura) have trained 12 additional community
paramedics to expand their programs or replace paramedics who have left their agencies or been promoted to other positions. San Francisco trained 10 community paramedics prior to the launch of its pilot project in February 2017.

**Patient Safety**

Multiple procedures to ensure patient safety are incorporated into all levels of the pilot projects. Every project has a project manager, a medical director who is an emergency medicine physician, and a quality assurance officer who is most often a registered nurse with specialty in emergency medicine. Community paramedics have real-time access to physicians and registered nurses for consultation. Each project conducts a retrospective review of all patient encounters. In addition, each project has a local steering committee that approves protocols and reviews data on project outcomes. A statewide steering committee has oversight over all the projects and reviews quarterly reports from the sites. Sites are also required to report unusual occurrences to EMSA’s project manager. The independent evaluator reviews data provided by sites for the evaluation and raises any concerns about patient safety that emerge from the data reported. Finally, OSHPD staff review the protocols and performance of the pilot sites and raise any patient safety issues they identify.
Methods

Information presented in this report was obtained from multiple sources. Each of the pilot sites used a standardized, online data collection tool to report data to the independent evaluator on a quarterly basis. Metrics for which data were collected included numbers of people enrolled, characteristics of enrollees, and outcomes of community paramedic services. Sites also reported information about people who were eligible for their projects but not enrolled. Estimates of savings were derived from data that each site reported on the cost of EMS transports, and from existing sources of data on the cost of ED visits and inpatient hospital admissions.

The safety and performance of the projects was assessed by both quantitative and qualitative means. Sites reported data to the independent evaluator on multiple metrics. In addition, EMSA’s project manager notified the evaluation team if a site reported an “unusual occurrence” and provided the evaluation team with all documentation regarding the event.

Evaluation team members conducted site visits at all project sites, where they interviewed EMS agency leaders, project managers, community paramedics, and representatives of hospitals and other partner agencies. The purpose of the site visits was to obtain a better understanding of how the projects operated and to hear the perspectives of multiple stakeholders. The site visits were augmented with conference calls with EMSA’s project manager and the site-level project managers. The evaluation team also reviewed minutes of local steering committee meetings.
Results

The results section begins with a summary of major findings that concern all seven community paramedicine concepts. The summary is followed by a discussion of major findings regarding key metrics relevant to individual community paramedicine concepts.

General

Table 1 lists the lead agencies for each pilot project operated under the auspices of HWPP #173, the concept tested, the date on which the project began enrolling patients, and the total number of patients enrolled from the time each project began through June 30, 2017. The longest running projects, Alameda’s post-discharge project and Ventura’s tuberculosis project, began enrolling patients in June 2015. The newest project, San Francisco’s alternate destination – sobering center project, began enrolling patients in February 2017. Collectively, the projects enrolled 2,185 people from June 2015 through June 2017. The number of people enrolled per project ranged from two for the City of Carlsbad’s Alternate Destination – Urgent Care project to 748 for Butte County’s Post-discharge --project.

Consistent with findings from the original evaluation report, the distribution of patients by health insurance status varied substantially across the 14 projects, in large part due to differences in the characteristics of the patients served. Medicare beneficiaries accounted for most of the patients enrolled by two of the five post-discharge projects (UCLA – Glendale and Butte). For two of the post-discharge projects, Medi-Cal beneficiaries constituted the largest share of enrollees (45%) and Medicare beneficiaries accounted for the second largest share (San Bernardino and Solano). These projects are located in communities with high rates of methamphetamine use, which is associated with early onset of heart failure. The majority of patients enrolled in Ventura’s tuberculosis project, San Diego’s frequent EMS user project, Stanislaus’ alternate destination – mental health project, and San Francisco’s alternate destination – sobering center project were Medi-Cal beneficiaries or were uninsured. Many of the people these projects serve have mental illness, substance use disorders, or other conditions that limit their access to employer-sponsored health insurance. Persons who are dually eligible for Medicare and Medi-Cal are classified as Medicare beneficiaries because Medicare is responsible for paying the majority of costs associated with their hospitalizations, ED visits, and office visits.
Table 1. Pilot Sites, Community Paramedicine Concepts, and Enrollment, Second Quarter, 2017

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Lead Agency</th>
<th>Community Paramedicine Concept</th>
<th>Date Implemented</th>
<th>Total Patients Enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP001*</td>
<td>UCLA Center for Prehospital Care</td>
<td>Alternate Destination – Urgent Care</td>
<td>September 8, 2015</td>
<td>12</td>
</tr>
<tr>
<td>CP002**</td>
<td>UCLA Center for Prehospital Care</td>
<td>Post-Discharge</td>
<td>September 1, 2015</td>
<td>154</td>
</tr>
<tr>
<td>CP003</td>
<td>Orange County</td>
<td>Alternate Destination – Urgent Care</td>
<td>September 14, 2015</td>
<td>34</td>
</tr>
<tr>
<td>CP004</td>
<td>Butte County EMS</td>
<td>Post-Discharge</td>
<td>July 1, 2015</td>
<td>748</td>
</tr>
<tr>
<td>CP005</td>
<td>Ventura County EMS</td>
<td>Tuberculosis</td>
<td>June 1, 2015</td>
<td>37</td>
</tr>
<tr>
<td>CP006</td>
<td>Ventura County EMS</td>
<td>Hospice</td>
<td>August 1, 2015</td>
<td>225</td>
</tr>
<tr>
<td>CP007A</td>
<td>Alameda City EMS</td>
<td>Frequent EMS User</td>
<td>July 1, 2015</td>
<td>49</td>
</tr>
<tr>
<td>CP007B</td>
<td>Alameda City EMS</td>
<td>Post-Discharge</td>
<td>June 1, 2015</td>
<td>102</td>
</tr>
<tr>
<td>CP008</td>
<td>San Bernardino County and Rialto Fire Deps.</td>
<td>Post-Discharge</td>
<td>August 13, 2015</td>
<td>188</td>
</tr>
<tr>
<td>CP009</td>
<td>Carlsbad Fire Dept.</td>
<td>Alternate Destination – Urgent Care</td>
<td>October 9, 2015</td>
<td>2</td>
</tr>
<tr>
<td>CP010</td>
<td>San Diego County</td>
<td>Frequent EMS User</td>
<td>October 12, 2015</td>
<td>46</td>
</tr>
<tr>
<td>CP012</td>
<td>AMR Stanislaus</td>
<td>Alternate Destination – Mental Health</td>
<td>September 25, 2015</td>
<td>227</td>
</tr>
<tr>
<td>CP013</td>
<td>Medic Ambulance Solano</td>
<td>Post-Discharge</td>
<td>September 15, 2015</td>
<td>135</td>
</tr>
<tr>
<td>CP014</td>
<td>San Francisco Fire Dept.</td>
<td>Alternate Destination – Sobering</td>
<td>February 1, 2017</td>
<td>226</td>
</tr>
<tr>
<td>All Projects</td>
<td></td>
<td></td>
<td></td>
<td>2,185</td>
</tr>
</tbody>
</table>

* Ceased enrolling patients on May 31, 2017.
** Ceased enrolling patients on August 31, 2017.

Table 2. Health Insurance Status of Enrolled Patients (Average Percent per Month)

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Community Paramedicine Concept</th>
<th>% Private/Commercial Insurance</th>
<th>% Medicare</th>
<th>% Medicaid</th>
<th>% Uninsured or Pay Out of Pocket</th>
<th>% Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP001</td>
<td>Alternate Destination – Urgent Care</td>
<td>0%</td>
<td>8%</td>
<td>0%</td>
<td>0%</td>
<td>92%</td>
</tr>
<tr>
<td>CP002</td>
<td>Post-Discharge</td>
<td>7%</td>
<td>81%</td>
<td>11%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>CP003</td>
<td>Alternate Destination – Urgent Care</td>
<td>15%</td>
<td>32%</td>
<td>6%</td>
<td>15%</td>
<td>32%</td>
</tr>
<tr>
<td>CP004</td>
<td>Post-Discharge</td>
<td>15%</td>
<td>66%</td>
<td>18%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>CP005</td>
<td>Tuberculosis</td>
<td>17%</td>
<td>6%</td>
<td>46%</td>
<td>30%</td>
<td>0%</td>
</tr>
<tr>
<td>CP006</td>
<td>Hospice</td>
<td>14%</td>
<td>52%</td>
<td>2%</td>
<td>32%</td>
<td>0%</td>
</tr>
<tr>
<td>CP007A</td>
<td>Frequent EMS User</td>
<td>16%</td>
<td>59%</td>
<td>21%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>CP007B</td>
<td>Post-Discharge</td>
<td>14%</td>
<td>50%</td>
<td>26%</td>
<td>9%</td>
<td>0%</td>
</tr>
<tr>
<td>CP008</td>
<td>Post-Discharge</td>
<td>8%</td>
<td>39%</td>
<td>45%</td>
<td>8%</td>
<td>0%</td>
</tr>
<tr>
<td>CP009</td>
<td>Alternate Destination – Urgent Care</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>CP010</td>
<td>Frequent EMS User</td>
<td>16%</td>
<td>13%</td>
<td>26%</td>
<td>46%</td>
<td>0%</td>
</tr>
<tr>
<td>CP012</td>
<td>Alternate Destination – Mental Health</td>
<td>0%</td>
<td>0%</td>
<td>85%</td>
<td>15%</td>
<td>0%</td>
</tr>
<tr>
<td>CP013</td>
<td>Post-Discharge</td>
<td>8%</td>
<td>44%</td>
<td>45%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>CP014</td>
<td>Alternate Destination – Sobering</td>
<td>7%</td>
<td>24%</td>
<td>60%</td>
<td>8%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Post-Discharge

<table>
<thead>
<tr>
<th>Post-Discharge Projects: Developments since September 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Enrollment in the post-discharge projects increased by 31% between September 2016 and June 2017, rising from 922 to 1,327 persons.</td>
</tr>
<tr>
<td>• One of the post-discharge projects closed in August 2016 because the partner fire department was unwilling to continue funding the project.</td>
</tr>
<tr>
<td>• All of the post-discharge projects reduced the rate of 30-day admission for any cause for at least one of the diagnoses targeted.</td>
</tr>
<tr>
<td>• Post-discharge projects that provided at least one home visit to all patients continued to outperform the project that relied primarily on telephone calls.</td>
</tr>
<tr>
<td>• Community paramedics identified an additional 62 patients who needed instruction on how to use their medications correctly.</td>
</tr>
</tbody>
</table>

Description

The goal of the five post-discharge projects is to reduce hospital readmissions for people discharged from a hospital for treatment of a chronic condition. A major impetus for the post-discharge projects is the Medicare Readmission Reduction Program, under which Medicare reduces payments to hospitals if they have rates of readmission that are deemed excessive. The projects aim to give patients the tools to manage their conditions more effectively so that they can avoid readmission. In collaboration with its partner hospital, each project identified one or more chronic conditions to address. Once a project enrolls a patient, a telephone call or home visit with a community paramedic is scheduled. During the call or visit, the community paramedic performs a clinical assessment and reviews the patient’s discharge instructions per the site’s protocols. Some projects also provide home safety inspections during home visits.

The post-discharge projects worked with their partner hospitals to determine which conditions to target. UCLA – Glendale and San Bernardino-Rialto only enroll people with heart failure. Butte enrolls people with heart failure or myocardial infarction, and Solano enrolls people with heart failure or chronic obstructive pulmonary disease. Alameda enrolls people with heart failure, acute myocardial infarction, chronic obstructive pulmonary disease, diabetes, pneumonia, or sepsis.

The post-discharge projects provide short-term assistance and do not to replace home health care or any other services available to patients. The sites protocols call for community paramedics to complete phone calls or visits within the first several days of hospital discharge. Some partner hospitals focus on enrolling uninsured persons and Medi-Cal beneficiaries in the pilot projects because these persons do not have insurance coverage for home health. In other cases, community paramedics served a stop-gap role by providing calls or home visits while patients waited to obtain home health services. Interviewees at partner hospitals consistently indicated that home health agencies in their communities often cannot schedule a home visit until at least one week after a patient is discharged from the hospital. Having contact with a health professional during the first week after discharge is important because many readmissions occur during this time period. Where community paramedics learns that a patient had home health services, they coordinate with home health agency staff.

Two projects have full-time community paramedics (Alameda and UCLA-Glendale) and three projects have part-time paramedics (Butte, San Bernardino-Rialto, and Solano). Alameda San Bernardino-Rialto, Solano, and UCLA provide at least one home visit to all patients. Butte paramedics perform an initial assessment by telephone for all patients and use an algorithm to determine whether the patient needs additional assistance. If a Butte community paramedic determines that a patient would benefit from a home visit, the community paramedic will request the patient’s permission to do so.
Findings

Enrollment in the post-discharge projects increased from 922 to 1,327 patients between September 30, 2016, and June 30, 2017. Butte had the largest enrollment (748 patients) and Alameda had the smallest (102 patients).

Safety

The evaluation team found no evidence of any harm to patients enrolled in the post-discharge projects. On the contrary, there is substantial evidence that the projects reduced the risk of harm. The most compelling evidence of reduced harm concerns prescription medications. Community paramedics performed medication reconciliation for all patients, which involved examining all prescription drugs in a patient’s possession and reconciling them with the instructions given to the patient when he or she was discharged from the hospital. The community paramedics identified 216 instances in which a patient needed additional instructions about how to take their medications as directed. Some patients had multiple prescriptions for the same medication and assumed they were supposed to take all of them. Other patients were discharged from the hospital with only a 30-day supply of medication and did not understand that they needed to obtain refills to control their condition. If a patient had a personal physician, the community paramedic worked with the patient to contact the physician to obtain refills. If a patient did not have a physician, the community paramedic helped the patient find one.

Effectiveness

The post-discharge pilot projects achieved their primary goal of reducing inpatient readmissions within 30 days of discharge. Table 3 shows the historical 30-day readmission rates at the projects’ partner hospitals and the 30-day readmission rates for patients enrolled in the post-discharge projects who had heart failure, myocardial infarction, congestive heart failure, or pneumonia. Patients with diabetes or sepsis are not included because historical data on readmission rates for persons with these diseases were not available.

Patients enrolled by all sites had lower rates of 30-day readmission than historical rates for their partner hospitals for one or more diagnoses except Butte’s heart failure patients and Alameda’s chronic obstructive pulmonary disease patients. A notable difference from the original evaluation report is that the 30-day readmission rate for persons with chronic obstructive pulmonary disease who are enrolled in Alameda’s post-discharge project is no longer lower than the partner hospital’s historical average. Butte’s heart failure patients were the only group whose 30-day readmission rate was not at or below the partner hospital’s historical rate. This difference may be due to a difference between Butte’s protocol and those of the other post-discharge projects. Under Butte’s protocol, community paramedics initially contact patients by telephone and conduct home visits only if the telephone conversation suggests a home visit is warranted. It is possible that patients who talk to Butte’s community paramedics on the telephone underestimate the severity of any symptoms they are experiencing and overstate their understanding of how to manage their conditions.
Table 3. Readmissions within 30 Days for Post-Discharge Project Enrollees versus Partner Hospitals’ 30-Day Readmission Rates, 2012–2015 (Cumulative)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Project Number</th>
<th>Sponsoring Agency</th>
<th>Number of Patients Enrolled</th>
<th>Number Readmitted</th>
<th>Historical 30-day Readmission Rate*</th>
<th>% Enrollees Readmitted*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Failure</td>
<td>CP002</td>
<td>UCLA</td>
<td>154</td>
<td>10</td>
<td>24.4%</td>
<td>6.5%**</td>
</tr>
<tr>
<td></td>
<td>CP004</td>
<td>Butte</td>
<td>418</td>
<td>114</td>
<td>22.2%</td>
<td>7.5%**</td>
</tr>
<tr>
<td></td>
<td>CP007B</td>
<td>Alameda</td>
<td>23</td>
<td>3</td>
<td>23.1%</td>
<td>17.4%**</td>
</tr>
<tr>
<td></td>
<td>CP008</td>
<td>San Bernardino and Rialto</td>
<td>188</td>
<td>17</td>
<td>23.1%</td>
<td>9.8%**</td>
</tr>
<tr>
<td></td>
<td>C013</td>
<td>Solano</td>
<td>67</td>
<td>6</td>
<td>22.1%</td>
<td>9.0%**</td>
</tr>
<tr>
<td>Acute Myocardial Infarction</td>
<td>CP004</td>
<td>Butte</td>
<td>330</td>
<td>35</td>
<td>17.2%</td>
<td>10.6%**</td>
</tr>
<tr>
<td></td>
<td>CP007B</td>
<td>Alameda</td>
<td>7</td>
<td>0</td>
<td>16.8%</td>
<td>0%**</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>CP007B</td>
<td>Alameda</td>
<td>27</td>
<td>5</td>
<td>19.4%</td>
<td>18.5%</td>
</tr>
<tr>
<td></td>
<td>C013</td>
<td>Solano</td>
<td>68</td>
<td>6</td>
<td>18.9%</td>
<td>7.4%**</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>CP007B</td>
<td>Alameda</td>
<td>23</td>
<td>3</td>
<td>20.1%</td>
<td>13.0%**</td>
</tr>
</tbody>
</table>

* Includes readmissions for any reason.

** 30-day readmission rate for enrolled patients was lower than the historical 30-day readmission rate.

*** 30-day readmission rate for enrolled patients was higher than the historical 30-day readmission rate.

Another important indicator of the effectiveness of post-discharge projects is referral of patients to providers of other services to improve the patients’ well-being. Through June 30, 2017, community paramedics made at least 179 referrals to a wide range of service providers, using manuals of local resources that they had prepared as part of their training. These services included primary care physicians, specialist physicians, pharmacists, mental health services, public health departments, home health providers, drug and alcohol treatment programs, senior home safety equipment programs, food assistance agencies, housing assistance providers, transportation assistance providers, and domestic violence resources. At least one community paramedic helped a patient enroll in Covered California to obtain health insurance. If a community paramedic perceived the need as urgent and was concerned that a patient might not follow through on their own, they assisted the patient in obtaining these services.

**Savings**

All of the post-discharge projects have generated savings for insurers by reducing 30-day all cause readmissions among the patients they enrolled. Estimates of savings were based on differences between rates of readmission among enrolled patients and historical rates obtained from Medicare Hospital Compare and on estimates of the cost of admissions for targeted diagnoses derived from OSHPD’s public hospital inpatient discharge dataset. The evaluators estimate that the five post-discharge projects generated total savings of approximately $1.4 million through June 30, 2017. The amount of savings ranged from a low of $70,351 for Alameda’s project to $397,189.
for UCLA – Glendale’s project. Differences in savings across sites reflect the total number of 30-day readmissions avoided and the cost of readmissions. Butte’s project generated savings despite having an all 30-day readmission rate for heart failure that is higher than the partner hospital's historical rate, because it reduced 30-day readmissions for acute myocardial infarction, a diagnosis with a much higher average cost than heart failure ($26,621 vs. $14,403). Actual savings generated by Alameda’s project may have been greater because savings associated with reductions in admissions for diabetes and sepsis could not be estimated because Medicare Hospital Compare does not report data on historical rates of readmission for these conditions.

The majority of savings from the post-discharge projects accrued to Medicare because 60% of patients enrolled are Medicare beneficiaries. Medi-Cal is also realizing savings because 24% of enrollees are Medi-Cal beneficiaries. Partner hospitals also benefitted if reductions in readmissions were sufficient to lower the risk that they would be penalized by Medicare for excessive readmissions.

**Table 4. Savings for Post-discharge Projects**

<table>
<thead>
<tr>
<th></th>
<th>CP002 – UCLA - Glendale</th>
<th>CP004 – Butte</th>
<th>CP007B – Alameda*</th>
<th>CP008 – San Bernardino and Rialto</th>
<th>CP013 - Solano</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Enrollment</strong></td>
<td>154</td>
<td>748</td>
<td>102</td>
<td>188</td>
<td>135</td>
</tr>
<tr>
<td><strong>Difference in Readmission Rates (percentage points)</strong></td>
<td>-18</td>
<td>-0.2</td>
<td>-5</td>
<td>-13</td>
<td>-12</td>
</tr>
<tr>
<td><strong>Number of Readmissions Avoided</strong></td>
<td>Heart failure = 28</td>
<td>Heart failure = -20</td>
<td>Heart failure = 2</td>
<td>Heart failure = 26</td>
<td>Heart failure = 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AMI = 22</td>
<td>AMI = 1</td>
<td>COPD = 0</td>
<td>COPD = 8</td>
</tr>
<tr>
<td><strong>Average Cost of Readmission</strong></td>
<td>Heart failure = $14,403</td>
<td>Heart failure = $14,403</td>
<td>Heart failure = $14,403</td>
<td>Heart failure = $14,403</td>
<td>Heart failure = $14,403</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AMI = $26,621</td>
<td>AMI = $26,621</td>
<td>COPD = $11,562</td>
<td>COPD = $11,562</td>
</tr>
<tr>
<td><strong>Total Savings from Readmissions Avoided</strong></td>
<td>$403,284</td>
<td>$292,265</td>
<td>$85,273</td>
<td>$374,478</td>
<td>$222,123</td>
</tr>
<tr>
<td><strong>Savings per Enrollee</strong></td>
<td>$2,619</td>
<td>$391</td>
<td>$836</td>
<td>$1,992</td>
<td>$1,645</td>
</tr>
</tbody>
</table>

* Does not include Alameda patients with diabetes or sepsis because Medicare Hospital Compare does not report data.

**Conclusion**

The post-discharge projects have demonstrated capability to reduce hospital readmissions within 30 days among persons with the chronic conditions they target. The projects also increased the likelihood that patients will take medications for these conditions as directed, by reconciling their prescriptions, reviewing the instructions for taking the medications, and assisting patients with medication refills, if needed. Moreover, community paramedics have referred patients to providers of other services that can improve their ability to manage their conditions and their overall well-being. The projects have generated savings, primarily for the Medicare and Medi-Cal programs.
Frequent EMS User

The two frequent EMS user projects enroll people who call 911 and/or who have ED visits frequently and whose use of emergency services is not routinely warranted by their medical condition. The goal of these projects is to reduce frequent EMS users’ dependence on EMS agencies and EDs for care. Community paramedics assess patients’ physical, psychological, and social needs and provide individualized case management to link them with nonemergency services. Patients remain enrolled in the projects until community paramedics believe that the patients no longer need the project's services. Criteria for determining that a patient no longer needs services emphasize reaching important individual milestones, such as obtaining housing or maintaining sobriety.

Findings

The two Frequent EMS User projects enrolled 95 patients through June 30, 2017. The two projects enroll different populations of frequent EMS users. San Diego’s project primarily enrolls persons with 20 or more ED visits per year. Alameda’s project, which serve a city whose population is much smaller than San Diego’s (79,227 vs. 1,391,676), is open to all persons identified by staff of the EMS agency or the partner hospital as frequent 911 or ED users. San Diego’s enrollees are younger than Alameda’s enrollees and are more likely to be uninsured or enrolled in Medi-Cal.

San Diego’s project has encountered challenges have constrained its ability to meet patients’ needs. In December 2016, the two community paramedics working on San Diego’s project were reassigned to traditional 911 response crews. The project manager and an emergency medicine fellow have operated the program to the best of their ability but they have not been able to manage clients as intensively as the two community paramedics had. One consequence has been that ED use did not decrease among enrollees who need more than referrals to providers of other services. Concerned about this situation, the project manager has shifted her time to focus exclusively on reducing ED usage among persons enrolled in the program who have the largest numbers of ED visits.

Safety

The evaluation team found no evidence of any harm to patients enrolled in the frequent EMS user projects. On the contrary, there is substantial evidence that patients benefitted from the projects. The community paramedics visited patients multiple times to assess their physical, psychological, and social needs and assist them in obtaining nonemergency services to meet their needs, as discussed below in the section on effectiveness.

Effectiveness

The frequent EMS user projects achieved large reductions in the number of 911 calls and ED visits among enrolled patients. Reductions in 911 calls were highly correlated with reductions in ED visits because most 911 calls for these persons result in transport to an ED. Data on 911 calls and ED visits by persons enrolled in San Diego’s frequent EMS user project were available from the time the project began in October 2015 through June 2017. Among persons enrolled in San Diego’s frequent EMS user project for whom data are available for 12
months prior to enrollment and 12 months following enrollment (n = 35) the total number of 911 calls decreased from 581 to 906, a decrease of 36%. The average number of 911 calls per person decreased from 26 per year to 17 per year and some enrollees experienced larger than average decreases in 911 calls.

Data on 911 calls and ED visits by persons enrolled in Alameda’s frequent EMS user project were available from the time the project began in July 2015 through September 2016. Among these persons (n = 33), the number of 911 calls decreased from 198 to 124, a decrease of 37%. The average number of 911 calls per person decreased from six per year to four per year.

The frequent EMS user projects also succeeded in linking patients to services that address the needs that are leading them to make frequent ED visits. During their first visits with patients, community paramedics in Alameda and San Diego reported making 54 referrals to medical care providers, mental health providers, drug and alcohol treatment programs, food assistance programs, housing assistance programs, transportation assistance programs, domestic violence resources, and other social services. They may have made additional referrals during subsequent visits because some patients were not interested in referrals initially. In addition, community paramedics transported patients to these types of providers on 47 occasions to ensure that they obtained services. In some cases, community paramedics collaborated with staff of multiple service providers to go beyond routine care to meet patients’ complex needs.5

Providing assistance with housing is an important component of frequent EMS user projects because many frequent EMS users are homeless. Among the 46 patients enrolled in San Diego’s frequent EMS user project from November 2015 through June 2017, 33 patients (72%) were homeless. Community paramedics are uniquely positioned to assist homeless persons because the paramedics are mobile, familiar with the sites at which homeless persons congregate, and can meet patients at any location.

**Savings**

Among persons enrolled in San Diego’s project through June 2017 for whom 12 months of data on 911 calls pre- and post-enrollment were available, the project reduced the number of 911 calls and ED visits by 325, generating an estimated $543,400 in savings. (See Table 5.) A substantial percentage of savings from the reduction in ED visits accrued to ambulance transport providers and hospitals because 46% of San Diego’s enrollees were uninsured. Reducing EMS transports and ED visits among these enrollees decreased the amount of uncompensated care furnished by transport providers and hospitals.

From July 2015 through September 2016, Alameda’s frequent EMS user project generated $100,048 in savings. The majority of the savings generated by Alameda’s project accrued to Medicare because the majority of its patients are Medicare beneficiaries.
Table 5. Savings for Frequent EMS User Projects

<table>
<thead>
<tr>
<th>Variable</th>
<th>CP007A – Alameda (through Sept. 2016)</th>
<th>CP010 – San Diego (through June 2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Enrollment</td>
<td>33</td>
<td>46</td>
</tr>
<tr>
<td>Number of Enrollees with 12 Months of Data on 911 Calls Pre and Post Enrollment</td>
<td>33</td>
<td>35</td>
</tr>
<tr>
<td>Number of Transports and ED Visits Avoided</td>
<td>74</td>
<td>326</td>
</tr>
<tr>
<td>Average Cost of Ambulance Transport</td>
<td>$603</td>
<td>$923</td>
</tr>
<tr>
<td>Average Cost of ED Visit</td>
<td>$749</td>
<td>$749</td>
</tr>
<tr>
<td>Savings from Ambulance Transports Avoided (patients with 12 months pre-post data)</td>
<td>$44,622</td>
<td>$299,975</td>
</tr>
<tr>
<td>Savings from ED Visits Avoided (patients with 12 months pre-post data)</td>
<td>$55,426</td>
<td>$243,425</td>
</tr>
<tr>
<td>Total Savings (patients with 12 months pre-post data)</td>
<td>$100,048</td>
<td>$543,400</td>
</tr>
<tr>
<td>Savings per Patient Enrolled (patients with 12 months pre-post data)</td>
<td>$3,032</td>
<td>$15,526</td>
</tr>
</tbody>
</table>

**Conclusion**

The frequent 911 user projects have achieved substantial reductions in 911 calls, transports, and ED visits among the patients they have enrolled, often by linking patients with primary care, behavioral health, food, housing, and social services. These reductions in 911 calls, transports, and ED visits yielded substantial savings for public health insurance programs (i.e., Medicare and Medi-Cal) and health care providers.

**Directly Observed Therapy for Tuberculosis**

- The directly observed therapy for tuberculosis project enrolled eight additional patients, increasing enrollment from 29 to 37 persons.
- The community paramedics dispenses all doses of TB medications prescribed by the TB clinic’s physician.
- One patient was hospitalized twice for intravenous treatment of TB meningitis that was diagnosed prior to enrollment in the pilot project.

**Description**

Tuberculosis (TB) is a highly contagious disease that is treated with special antibiotic medications. The number of medications and frequency of dosing are determined by a physician with expertise in TB treatment. People with TB must take their medication as directed, because stopping treatment too soon or missing doses of medication could lead to development of a drug-resistant strain of TB, which poses a major public health risk to a community. To ensure that people with TB take their medication as directed, TB treatment clinics often provide directly observed therapy (DOT). Under DOT, a health care worker gives a patient medication, observes the patient taking the medication, and monitors the patient for side effects.
In Ventura County, public health officials asked the county's EMS provider to collaborate with the TB clinic to provide DOT, because the TB clinic does not have sufficient staff to provide DOT to all TB patients in the county. Ventura covers a large geographic area and it is not feasible for some patients to travel to the TB clinic for DOT. The TB clinic utilizes community health workers (CHWs) to administer DOT at remote locations, but the CHWs only work Mondays through Fridays and thus do not provide DOT on weekends. In addition, the CHWs are based in Oxnard, where the TB clinic is located, and have to drive as long as 60 minutes to reach some patients. In contrast, the community paramedics are available 24 hours per day seven days per week and are stationed throughout the county, so they usually can reach patients within 15 minutes.

Findings

Ventura's TB project enrolled 37 patients through June 30, 2017. Because the management of tuberculosis often spans six to nine months, the community paramedics usually carry a caseload of patients whom they treat for multiple months. Over the course of the pilot project, the community paramedics' caseload averaged seven patients per month.

TB clinic leaders indicated that there were conscious decisions to assign patients to either community paramedics or CHWs based on the likelihood that patients would comply with treatment. TB clinic leaders often assigned community paramedics patients who resist treatment or who were verbally abusive or sexually inappropriate because paramedics have more experience and training than the CHWs in managing persons with challenging behavior. They were also more likely to be assigned homeless persons and other patients who are difficult to locate.

Safety

The evaluation team found no evidence that the TB project harmed patients. Community paramedics dispensed appropriate doses of TB medications, and their TB patients did not experience any greater frequency of side effects or symptoms beyond those typically associated with taking TB medications.

Ten patients enrolled in the pilot project have been hospitalized. One patient was hospitalized twice for TB meningitis, which had been diagnosed prior to enrollment in the program. In both instances, the TB clinic physician admitted the patient to the hospital for intravenous treatment based in part on information provided by the community paramedics who provided the patient's DOT treatments. The other nine patients were hospitalized one time for a reason other than their TB diagnosis; one hospitalization was for a scheduled surgical procedure.

Effectiveness

People with TB who received DOT from community paramedics were more likely to receive all doses of TB medication prescribed by the TB clinic physician than people who received DOT from the TB clinic's CHWs. Since the project was launched in June 2015, the community paramedics were unable to dispense only two (0.07%) DOT treatments prescribed by the TB clinic physician as Table 6 indicates. In contrast, the CHWs were unable to dispense 667 (6.8%) prescribed DOT treatments. This difference is due primarily to the availability of community paramedics on nights and weekends. Availability on weekends ensures that patients have DOT seven days per week if needed, and availability in evenings improves compliance among patients who travel outside of Ventura County for work during business hours. Taking all recommended doses of TB medications as prescribed increases the likelihood that a patient will be cured and will not spread TB to others due to lack of treatment. It also decreases the risk that the patient could develop a drug-resistant strain of TB that would be much harder to treat and to control in the community.
Community paramedics also helped patients address health care needs other than TB. For example, some TB patients also have diabetes, which is associated with worse outcomes of TB treatment, especially if it is not well controlled. One TB patient treated by community paramedics had severely impaired vision and had difficulty filling syringes with the prescribed amount of insulin. The community paramedics found a local pharmacy that would prefill syringes for the patient to ensure that he would receive the correct dose.

Table 6. Instances of Non-Completion of Directly Observed Therapy among Patients Treated by Community Paramedics (Cumulative)

<table>
<thead>
<tr>
<th>Number of Times Community Paramedic Could Not Complete Scheduled DOT</th>
<th>Community Paramedic Patients</th>
<th>TB Clinic Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>One patient went out of town without making prior arrangements for the DOT. The other was not home at the scheduled time and did not respond to phone calls in a timely manner.</td>
<td>2 (0.07%)</td>
<td>667 (6.8%)</td>
</tr>
<tr>
<td>Reasons Why Patient Did Not Complete Treatment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Savings**

There was a small increase in adherence to the prescribed TB medication schedule when community paramedics administered DOT instead of CHWs, but we cannot estimate the effect of increased adherence in this range in the United States. If the project substantially increased adherence among hard-to-reach patients, the project may have increased the number of patients in Ventura treated successfully for TB and, thus, reduced medical and public health expenditures associated with public health investigation of close contacts and treating additional people infected by a patient who did not complete treatment. The project also reducing the need for CHWs to travel long distances to provide DOT, increasing their availability to complete other tasks.

**Conclusion**

Community paramedics can safely administer DOT for TB and monitor patients for side effects, under the direction of a physician who specializes in treatment of TB. Due to their unique schedule and mobility, they can achieve a very high rate of adherence to TB treatment, which reduces the risk that patients will develop a drug-resistant strain of TB and transmit it to other persons. They can also assist with patients’ other social and medical needs that might create barriers to TB treatment.
Hospice

Hospice Project:
Developments since September 2016

- The hospice project enrolled 88 additional patients between September 30, 2016, and June 30, 2017, increasing enrollment from 137 to 225 persons.
- Community paramedics continued to collaborate successfully with nurses on the staffs of partner hospices to provide care consistent with patients’ wishes.
- The percentage of patients of partner hospices transported to an ED decreased from 36% to 31%.

The goal of hospice care is to provide medical, psychological, and spiritual support to persons dying from a terminal illness in a patient’s home, a residential care facility, a nursing home, or an inpatient hospice facility. Hospice staff members tell hospice patients, their family members, and other caregivers to contact the hospice instead of 911 if they believe there is a medical need or if they become concerned about the patient’s comfort. Despite this instruction, some hospice patients and their families call 911 instead of the hospice.

The standard response to a 911 call made on behalf of a hospice patient is to transport the patient to an ED, which may be upsetting and uncomfortable for hospice patients. In addition, clinicians in EDs may perform medical interventions that the hospice patient would prefer not to receive and may admit the hospice patient for inpatient care. Moreover, insurers may revoke hospice benefits if the patient receives treatment or hospitalization for their terminal illness that is incompatible with the hospice approach of comfort care.

Ventura County’s hospice project seeks to prevent unnecessary transport of hospice patients to an ED. If a 911 dispatcher or a first responder on scene determines that a person is under the care of a hospice agency, a community paramedic is dispatched to the patient’s home, which may be in a private residence, residential care or skilled nursing facility. The community paramedics are supervisors who can respond to hospice calls while other paramedics respond to different 911 calls.

Once on scene, the community paramedic assesses the patient, talks with family members and caregivers, and contacts a registered nurse employed by the hospice agency. The hospice nurse directs the community paramedic regarding what care to provide. Depending on the circumstances, the hospice nurse may ask the community paramedic to wait with the patient and family members and/or caregivers until the nurse can arrive on scene. The hospice nurse may also ask the community paramedic to administer pain medications to the patient that the hospice has provided in a “comfort care” pack. No hospice patient who requests transport to an ED is denied transportation. The purpose of the project is to prevent transports that are not consistent with the patient’s wishes. This is especially important for hospice patients who reside in a residential care or skilled nursing facility. In those facilities, staff may call 911 without discussing the decision with the patient or family members.

Findings

Ventura’s hospice pilot project responded to 225 calls made on behalf of patients of hospice agencies that partnered with Ventura County’s EMS provider. Hospice patients, family members, or staff of residential or skilled nursing facilities in which hospice patients resided initiated most 911 calls, but hospice nurses made some 911 calls during visits with patients. The reasons for 911 calls to which Ventura’s community paramedics responded varied and included altered level of consciousness, cardiac arrest, constipation, fall, seizure, shortness of breath, syncope, lift assistance, and family concern about hospice care.
Safety

The evaluation found no evidence that the hospice project harmed patients. After an assessment to determine that the patient could remain at home under hospice care, the paramedics’ work consisted primarily of providing emotional support to hospice patients and their families and administering medications in patients’ “comfort care” packs as directed by a hospice nurse until the hospice nurse could arrive and further evaluate the situation with the paramedic.

The hospice project reduced harm by honoring patients’ wishes and reducing the likelihood that they would experience an undesired and uncomfortable trip to the ED and potentially lose hospice benefits. Community paramedics worked with patients, families, and hospice nurses to avoid ED transports, unless a patient requested transport or had a medical need that could not be met in the patient’s home, such as a fracture. No patient was denied ED care where it was indicated and consistent with his or her wishes.

Effectiveness

The project achieved its goal of honoring patients’ wishes to remain in their homes by integrating EMS and hospice protocols. Figure 2 shows the impact of the pilot project on the percentage of 911 calls for hospice patients that resulted in transport of the patient to an ED. Prior to the launch of the pilot project, 80% of 911 calls for hospice patients resulted in the transport of a patient to an ED. Among patients of partner hospices, the percentage of patients transported decreased to 31% after the pilot project was implemented. Although data on hospice revocation rates prior to the pilot project are not available, it is very likely that the large reduction in ED transports also led to a reduction in the percentage of patients of partner hospices whose benefits were revoked.

Community paramedics also alerted hospices and family members to patients’ unmet needs for additional assistance. For example, the project’s very first hospice call involved a patient who had fallen during the night while walking to the bathroom. With the patient’s permission, the community paramedic who responded to the call contacted a family member who arranged for the patient to have a caregiver at night as well as during the day to assist her with toileting and other needs.7

Figure 1. Percentage of 911 Calls for Hospice Patients That Result in Transport to an ED (Cumulative)
Savings

As indicated in Table 7, the hospice project achieved an estimated $165,990 in savings ($738 per patient enrolled) because the percentage of patients transported decreased from 80% to 31%. Actual savings are higher than these estimates because some hospice patients who were transported to an ED were admitted to a hospital for inpatient care. Savings associated with inpatient admissions could not be estimated because the pilot project was unable to obtain data from hospitals in Ventura County on the number of enrolled patients who were transported to their EDs that were subsequently admitted to their hospitals. Similarly, data were not available to estimate the impact of the hospice pilot project on revocation of hospice benefits but it is likely that the project reduced costs to hospices that are associated with hospice revocations.

Table 7. Savings Associated with the Hospice Community Paramedicine Project

<table>
<thead>
<tr>
<th>Variable</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Patients Enrolled</td>
<td>225</td>
</tr>
<tr>
<td>Total Number of ED Visits Avoided</td>
<td>110</td>
</tr>
<tr>
<td>Average Cost of ED Transport Avoided</td>
<td>$520</td>
</tr>
<tr>
<td>Average Cost of ED Visit Avoided</td>
<td>$989</td>
</tr>
<tr>
<td>Savings from ED Transports Avoided</td>
<td>$57,200</td>
</tr>
<tr>
<td>Savings from ED Visits Avoided</td>
<td>$108,790</td>
</tr>
<tr>
<td><strong>Total Savings</strong></td>
<td><strong>$165,990</strong></td>
</tr>
<tr>
<td><strong>Savings per Patient Enrolled</strong></td>
<td><strong>$738</strong></td>
</tr>
</tbody>
</table>

Conclusion

The hospice project demonstrates that community paramedics can partner with hospice nurses to safely reduce the number of hospice patients unnecessarily transported to an ED. Reducing ED transports increases the health care system’s ability to honor the wishes of hospice patients, reduces the risk that they will lose their hospice benefits, and reduces health care costs.
Alternate Destination – Mental Health

### Alternate Destination – Mental Health Project: Developments since September 2016

- The alternate destination – mental health project enrolled 58 additional patients between September 30, 2016, and June 30, 2017, increasing enrollment from 169 to 227 persons.

- Only one person was transferred to an ED within six hours of transport to the mental health crisis center.

- In addition to 911 calls involving patients with mental health needs, the community paramedics have begun performing medical screening examinations for persons who come to the mental health crisis center for care.

### Description

Many EDs in California are overcrowded, and some of the people they serve can be treated safely and effectively in other settings, including some who arrive at EDs via ambulance. Alternate destination pilot projects focus on transporting such patients to settings in which they can obtain appropriate care more efficiently. In California, the need for alternatives is particularly critical for people with mental health needs. Since 1995, the number of beds in inpatient psychiatric facilities in California has decreased by nearly 30%. Patients with mental health needs routinely spend hours in an ED waiting for medical clearance. In some cases, they spend days in an ED waiting for a bed to become available in an inpatient psychiatric facility, without getting definitive mental health care. Nationwide, the mean length of ED visits is longer for psychiatric patients than medical patients (194 minutes vs. 138 minutes), and psychiatric patients are more likely to have stays in an ED lasting greater than 24 hours.

The Stanislaus County pilot project provides medical clearance for people with mental health needs and transports them directly to a county-operated mental health crisis center. Community paramedics are dispatched in response to 911 calls that a dispatcher believes involve a mental health emergency, or when another paramedic or a law enforcement officer identifies a patient as having mental health needs. The community paramedics respond to these calls as needed in addition to responding to traditional 911 calls.

Once on scene, a community paramedic assesses the patient to determine whether he or she has any medical needs or is intoxicated due to alcohol or drug consumption. If the patient has no emergent medical needs, is not intoxicated, and is not violent, the community paramedic contacts the mental health crisis center to determine whether the county inpatient psychiatric facility located next door to the crisis center has beds available. If the inpatient psychiatric facility has the capacity to accept the patient through the crisis center, the community paramedic gives the patient the option of being transported by ambulance to the mental health crisis center instead of an ED. After a patient arrives at the crisis center, mental health professionals on the crisis center staff evaluate the patient further to determine what mental health services he or she needs. Eligibility for the pilot project is limited to adults who are uninsured or enrolled in Medi-Cal because the county inpatient psychiatric facility does not accept patients with other types of health insurance.

In recent months, the mental health crisis center staff have asked community paramedics to assist them with “walk in” clients (i.e., persons who are not transported by ambulance). These persons need to screened to determine if they have any medical needs before they can be admitted to the crisis center. In the past, the crisis center had relatively few walk-in clients and these clients were sent to a nearby ED for medical clearance. When the volume of walk-in clients increased, the mental health crisis center staff requested that the community paramedics come to the crisis center to screen clients. This has enabled clients to obtain medical screening more quickly and begin mental health treatment more quickly if they do not have any acute medical needs.
Findings

Stanislaus’s alternate destination – mental health project enrolled 227 persons through June 30, 2017. The pace of enrollment slowed in 2017 because several community paramedics left the agency or were promoted to other positions. Most patients enrolled in recent months are “walk in” clients who come to the mental health crisis center for care and need to be screened for acute medical needs before the crisis center can admit them. The project’s leadership expect that enrollment will increase in the near future because the project recently trained additional community paramedics.

Safety

The evaluation team found no evidence of patient harm caused by the alternate destination – mental health project. The community paramedics accurately screened patients to determine which of them could be safely transported directly to the mental health crisis center. Only nine of patients enrolled in the project (4%) were transferred to an ED within six hours of arrival at the crisis center. Seven of the nine patients who were transferred to an ED within six hours were subsequently transferred to an inpatient psychiatric facility. The other two patients were discharged from an ED without transfer.

Table 8 lists the reasons why the ten patients were transferred to an ED. None of the transfers to an ED involved life-threatening conditions and none of the patients transferred was admitted for inpatient medical care. Nine of the ten transfers occurred during the project’s first six months of operation. (See Figure 3.) The sharp decrease in transfers reflects the efforts of the project’s medical director to develop protocols and screening methods that maximized the likelihood that the mental health crisis center would accept patients who were offered transport to the crisis center.

Table 8. Reasons for Transfer to an ED within Six Hours of Admission to Mental Health Crisis Center (9 of 227 Patients)

<table>
<thead>
<tr>
<th>Reason for Transfer to an ED</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure above the mental health crisis center’s threshold</td>
<td>2</td>
</tr>
<tr>
<td>Agitation</td>
<td>2</td>
</tr>
<tr>
<td>Urinary incontinence</td>
<td>2</td>
</tr>
<tr>
<td>Patient had sleep apnea, and the county inpatient psychiatric facility did not have a continuous positive airway pressure (CPAP) machine</td>
<td>1</td>
</tr>
<tr>
<td>Change in patient condition</td>
<td>1</td>
</tr>
<tr>
<td>No capacity at psychiatric hospital</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>

The alternate destination – behavioral health project has also improved public safety. Law enforcement officers interviewed by the evaluation team stated that having community paramedics available enhanced their ability to respond effectively to persons with behavioral health needs because community paramedics are better trained to address mental health needs and can arrange ambulance transports for mental health patients. This allows law enforcement officers to perform law enforcement duties instead of transporting patients to an ED in their squad cars and waiting in the ED to transfer responsibility for the patient to a clinician.
Effectiveness

The pilot project substantially reduced the rate at which 911 calls involving patients with mental health needs resulted in a transport to an ED for medical screening. After the pilot project was implemented, 25% of behavioral health patients (n = 227) were transported to the mental health crisis center instead of an ED. An additional 27% (n = 239) met the eligibility criteria and could have been transported to the crisis center if additional beds were available in the county’s inpatient psychiatric facility or if the crisis center accepted patients who have a form of health insurance other than Medi-Cal. The community paramedics also assessed 362 people (41% of people assessed) who were not eligible for transport to the mental health crisis center because they had a medical need, were intoxicated, violent, agitated, or over age 65 years. Five percent (n = 47) met the medical criteria for admission to the mental health crisis center but were not admitted due to a history of disruptive behavior during previous admissions to the crisis center. Only two percent of eligible patients (n = 20) did not consent to be transported to the mental health crisis center.

The pilot project also reduced the time to treatment by a mental health professional, which improved patients’ well-being. A mental health professional assessed people transported directly to the mental health crisis center within minutes of arriving at the center. In contrast, people transported to an ED had to wait for a medical professional to determine whether they had any medical needs and were then transported to an inpatient psychiatric facility to be assessed by a mental health professional.

Savings

As indicated in Table 9, the alternate destination – mental health project achieved an estimated $239,800 in savings ($1,052 per patient) because transporting a mental health patient to the crisis center avoids an ED visit and a secondary transport of the patient from an ED to an inpatient mental health facility. Most of these savings benefitted the Medi-Cal program because 85% of patients enrolled in the project were Medi-Cal beneficiaries.

Table 9. Savings Associated with the Alternate Destination – Mental Health Project

<table>
<thead>
<tr>
<th>Variable</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Patients Enrolled</td>
<td>227</td>
</tr>
<tr>
<td>Total Number of ED Visits Avoided</td>
<td>218</td>
</tr>
<tr>
<td>Average Cost of ED Transport Avoided</td>
<td>$554</td>
</tr>
<tr>
<td>Average Cost of ED Visit Avoided</td>
<td>$546</td>
</tr>
<tr>
<td>Savings from ED Transports Avoided</td>
<td>$120,772</td>
</tr>
<tr>
<td>Savings from ED Visits Avoided</td>
<td>$119,028</td>
</tr>
<tr>
<td><strong>Total Savings</strong></td>
<td><strong>$239,800</strong></td>
</tr>
<tr>
<td><strong>Savings per Patient Enrolled</strong></td>
<td><strong>$1,057</strong></td>
</tr>
</tbody>
</table>

Conclusion

The alternate destination – mental health project demonstrates that community paramedics can perform medical screening on persons with mental health needs and determine which of them can be transported directly to a mental health crisis center. Transporting these persons directly to a crisis center enables them to obtain mental health services more quickly, which is likely to improve their well-being. The project also reduces health care
costs by reducing the numbers of persons transported to and assessed in an ED. Most of these savings accrue to Medi-Cal because most persons participating in this project are Medi-Cal beneficiaries.

Alternate Destination – Urgent Care

All three alternate destination – urgent care projects enroll patients who have any of the following five conditions: isolated closed extremity injury, laceration with controlled bleeding, soft tissue injury, isolated fever or cough, and other minor injury. One site, Carlsbad, also enrolls patients who have generalized weakness. Patients are screened by paramedics on 911 response crews who have received training on a screening protocol that was developed by emergency physicians to determine whether transport to an urgent care center is an appropriate option. The protocols excludes patients with medical conditions that are emergent, complex, or inappropriate for transport to an urgent care center.

If the paramedics conclude that a patient could be treated safely at an urgent care center, the paramedics offer transport to an urgent care center approved by the jurisdiction’s local emergency medical services agency (LEMSA). Urgent care centers approved by the LEMSAs are required to provide respiratory therapy treatments, x-rays, and point of care laboratory testing for blood and urine and to have an automated external defibrillator. *Patients who decline to be transported to an urgent care center are transported to an ED.* After transporting a patient to an urgent care center, paramedics are available to reroute the patient to an ED if a clinician at the urgent care center determines that the urgent care center cannot treat the patient safely and appropriately. *It is important to note that these projects do not involve evaluation and release of patients by paramedics. All patients were transported to a facility where they are evaluated by a physician.*

Findings

Forty-eight persons were enrolled in the three alternate destination – urgent care projects through June 30, 2017. Orange County’s project had the largest enrollment (34 patients) and Carlsbad’s project had the smallest enrollment (2 patients). Only nine additional patients were enrolled since September 30, 2016, the end date for the time period covered by the initial public report on the community paramedicine pilot project. There are multiple reasons why enrollment in the alternate destination – urgent care projects is substantially lower than

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**Alternate Destination – Urgent Care Projects: Developments since September 2016**

- One of the three alternate destination – urgent care projects enrolled nine additional patients between September 30, 2016 and June 30, 2017, increasing total enrollment in the three projects from 39 to 48 persons.
- One of the alternate destination – urgent care projects closed in May 2017 due to low enrollment.
- No patients were rerouted to an ED or transferred from an urgent care center to an ED within six hours of admission.

Description

Three pilot projects offer patients who have minor injuries or minor medical conditions the option to be transported to an urgent care center instead of to an ED for evaluation by a physician. Urgent care centers are walk-in clinics that treat persons with illnesses or injuries that can be safely evaluated and treated without the full range of resources available in an ED. California does not license urgent care centers as a distinct category of health care provider; they operate under the licenses of hospitals or of the physicians who operate them. This means that there are no requirements regarding operating hours, equipment, or the types of medical services provided.
anticipated. All three sites had fewer patients than expected who met all of the criteria for inclusion in the pilot project. In addition, many 911 calls occur at times of the day during which urgent care centers are closed. In the case of Carlsbad’s project, enrollment was limited to non-elderly adults who have insurance coverage through a single health plan.

Most of the patients for whom information on type of injury or illness was reported had a laceration or an isolated closed extremity injury, such as a dislocation, sprain, or fracture, as indicated in Table 10.

Table 10. Number of Enrollees in Alternate Destination – Urgent Care Projects by Condition (Cumulative)

<table>
<thead>
<tr>
<th>Lead Agency</th>
<th>Total Enrollees</th>
<th>Closed Extremity</th>
<th>Laceration</th>
<th>Soft Tissue</th>
<th>Fever or Cough</th>
<th>Other Minor Injury</th>
<th>Generalized Weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP002 – UCLA – Glendale and Santa Monica</td>
<td>12</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>CP003 – Orange</td>
<td>34</td>
<td>17</td>
<td>15</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>CP009 - Carlsbad</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>22</td>
<td>15</td>
<td>0</td>
<td>1</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

Safety

The alternate destination – urgent care projects did not harm patients. Among the 48 patients enrolled in the alternate destination – urgent care projects, two patients (4%) were subsequently transferred to an ED within six hours of arrival at an urgent care center. In addition, nine patients (19%) were transported to an urgent care center and then rerouted to an ED because clinicians at the urgent care center staff declined to treat the patient. None of these patients had life-threatening conditions and there were no adverse outcomes. The reasons for transport from an urgent care center to an ED are listed in the table below. Additional detail about the two secondary transfers can be found in the initial public report on the community paramedicine pilot projects.3

Table 11. Reasons for Transfer or Rerouting to an ED within Six Hours of Admission to an Urgent Care Center (11 of 48 Patients)

<table>
<thead>
<tr>
<th>Reason for Transfer to an ED</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Secondary Transfers</strong></td>
<td></td>
</tr>
<tr>
<td>Patient experienced shortness of breath and heart rate slowed after transport to an urgent care center for treatment of nausea without abdominal pain</td>
<td>1</td>
</tr>
<tr>
<td>Patient required surgery for injury</td>
<td>1</td>
</tr>
<tr>
<td><strong>Rerouted Transfers (aka Continuous Transfers)</strong></td>
<td></td>
</tr>
<tr>
<td>Patient requested opioid pain medication</td>
<td>3</td>
</tr>
<tr>
<td>Diagnostic equipment broken or unavailable</td>
<td>2</td>
</tr>
<tr>
<td>Urgent care physician believed shoulder injury needed further evaluation</td>
<td>2</td>
</tr>
<tr>
<td>Urgent care center physician believed patient needed to be examined by an orthopedist</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
</tr>
</tbody>
</table>
Effectiveness

While paramedics participating in the pilot projects are able to triage patients according to protocol effectively, it has been challenging for the paramedics and project leaders to determine which patients the urgent care centers would accept. Urgent care centers have sometimes rejected patients who have minor conditions that are often safely treated outside an ED, such as a dislocated shoulder. Interviews with project managers and paramedics suggest that urgent care centers may be hesitant to accept patients transported by an ambulance since that is a new practice for them. In addition, the range of services offered by urgent care centers varies substantially. For example, some urgent care centers do not have the capacity to administer intravenous fluids, which limits their ability to treat persons with dehydration and other conditions that could be treated safely outside of an ED.

Savings

Table 12 displays estimates of the savings associated with two of the three alternate destination – medical care projects. Data for the third site are not included because it had only enrolled two patients as of June 30, 2017. These projects saved $3,640. The estimates of savings are based on estimates of the difference between the amounts insurers pay for treatment of the same condition in an ED and an urgent care center. Costs for ambulance transports were not reduced because no transports were avoided.

Table 12. Savings Associated with the Alternate Destination – Urgent Care Projects

<table>
<thead>
<tr>
<th>Variable</th>
<th>Amount</th>
<th>CP002 – UCLA – Glendale and Santa Monica</th>
<th>CP003 - Orange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Enrollment</td>
<td>12</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Total Patients Treated in an Urgent Care Center and Released</td>
<td>6</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Estimated Savings per ED Visit Avoided</td>
<td>$104</td>
<td>$104</td>
<td></td>
</tr>
<tr>
<td>Total Savings</td>
<td>$624</td>
<td>$3,016</td>
<td></td>
</tr>
<tr>
<td>Savings per Patient Enrolled</td>
<td>$52</td>
<td>$89</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion

More data are needed to draw firm conclusions about the alternate destination – urgent care model. Paramedics participating in the alternate destination – urgent care projects have demonstrated capacity to evaluate patients according to triage protocols to determine whether they are candidates for treatment at an urgent care center. No patients experienced adverse outcomes. However, only 48 patients were enrolled across the three sites over 21 months, in large part because many people with eligible conditions called 911 at times at which urgent care centers were not open. The only concept for which fewer people were enrolled – Directly Observed Therapy for Tuberculosis – is being tested at only one site and involves people who have a rare condition. In addition, two of the 48 patients enrolled were transferred to an ED following admission to an urgent care center and nine were rerouted to an ED because the urgent care center declined to accept the patient. These findings suggest that for alternate destination – urgent care projects to offer a viable alternative to EDs, screening protocols will need to be more closely aligned with the capabilities of urgent care centers and the illnesses and injuries they are willing to treat. The savings generated were modest due to the low enrollment and the design of the project, which only changed the location to which patients were transported and did not reduce the number of transports.
Alternate Destination – Sobering Center

Description

Acutely intoxicated persons are another population for whom alternatives to transports to an ED are needed. Nationwide an estimated 9.7% of ED visits are due to inebriation. In busy EDs, clinicians have little time to assist intoxicated patients unless they also have an acute medical need. They may not provide them counseling about their drinking or information about detoxification programs, case management, or other resources.

Cities around the US have established sobering centers to care for these patients. Sobering centers are much less expensive to operate than EDs and their staff are able to focus on the needs of intoxicated persons. In February 2017, the City and County of San Francisco began a pilot project under which eligible patients are transported by paramedics directly to its sobering center. The sobering center has cared for over 14,000 persons since it opened in 2003. It serves people who are acutely intoxicated but do not have other urgent health care needs. The sobering center is open 24 hours per day, 7 days per week and staffed by registered nurses who monitor patients throughout their stay. There are also social workers on its staff who help patients obtain treatment for alcoholism, housing, Medi-Cal, Supplemental Social Security, and General Assistance. Most patients stay for 4 to 12 hours. Approximately 33% of patients are treated at the sobering center multiple times per year and approximately 90% of patients are homeless at the time that services are provided.

San Francisco has trained all paramedics on 911 response crews to screen intoxicated patients to determine if they are eligible to enroll in the pilot project. Patients are deemed eligible for transport to the sobering center if they have acute alcohol intoxication but do not have any medical or mental health needs and are not intoxicated due to consuming a substance other than alcohol. If a patient meets all eligibility criteria, the paramedics offer the patient a choice of transport to the sobering center or an ED. If a patient requests to be transported to an ED instead of the sobering center, he or she is transported to an ED. Patients who do not meet all eligibility criteria are transported directly to an ED.

Ten experienced paramedics who have completed the full community paramedic training augment the paramedics on 911 response crews. The community paramedics work with the sobering center’s staff to perform quality assurance reviews for patients transported to the sobering center. They are also available to paramedics by telephone or in person if they are unsure whether a patient is eligible for transport to the sobering center. In addition, the community paramedics collaborate with San Francisco’s Homeless Outreach Team (HOT) outreach workers to engage sobering center patients who are high utilizers of county health care services. Community paramedics and HOT team outreach workers travel as teams of two in an SUV equipped with advanced life support equipment to visit high utilizers and to encourage them accept treatment for their alcohol use disorder, housing, and other services.

Findings

The alternate destination – sobering project enrolled 226 patients during its first five months of operation (February 1, 2017 through June 30, 2017). Enrollment has fluctuated during this time period, rising from six patients in February to 2017 to 81 in April 2017 and then falling to 34 in June 2017. Twenty-six of the 226 patients (12%) enrolled in the project have visited the sobering center more than once. Most patients are white, non-Hispanic males.
**Safety**

The community paramedics and the staff of the sobering center review the records of all patients transported to the sobering center by ambulance. Cases that involve a secondary transport of a patient to an ED are also reviewed by a committee that consists of the sobering center’s deputy director, the San Francisco Emergency Medical Services agency’s medical director, and the San Francisco Fire Department’s Medical Director.

The most common risk to sobering center patients is an unforeseen need for medical detoxification. Among chronic alcoholics, the need for medical detoxification is sometimes difficult to predict initially. A patient may also have taken another drug that the paramedic cannot detect when he or she examines the patient in the field.

Among the 226 patients enrolled in the alternate destination – sobering project, five patients (2%) were transferred to an ED within six hours of admission to the sobering center. These secondary transfers were due to agitation with chest pain, alcohol withdrawal, confusion, tachypnea (i.e., rapid shallow breathing), and a suspected suicide attempt. (See Table 13.) In four cases, the transfer to the ED could not have been avoided because the need for transfer was not evident when the paramedics assessed the patient in the field. When the community paramedics reviewed records for the patient with tachypnea, they concluded that the patient’s respiration rate in the field had been outside the range for admission to the sobering center and that the paramedics on the 911 crew that transported the patient to the sobering center had not relayed this information to the registered nurse on duty. The community paramedics coached the 911 response crew and their supervisor on how to use a patient’s respiration rate in the field to determine if a patient is eligible for transport to the sobering center. One patient (1%) was rerouted from the sobering center to an ED due to hypothermia and bradycardia; his temperature was below the threshold for admission to the sobering center and he could not be rewarmed within 15 minutes. Among the six patients transferred or rerouted to an ED, three were treated and released. Two patients were medically cleared in the ED and transferred to a psychiatric ED. One left an ED’s waiting room without being seen.

<table>
<thead>
<tr>
<th>Reason for Transfer to an ED</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Secondary Transfers</strong></td>
<td></td>
</tr>
<tr>
<td>Agitation with chest pain</td>
<td>1</td>
</tr>
<tr>
<td>Alcohol withdrawal</td>
<td>1</td>
</tr>
<tr>
<td>Confusion</td>
<td>1</td>
</tr>
<tr>
<td>Suspected suicide attempt</td>
<td>1</td>
</tr>
<tr>
<td>Tachypnea</td>
<td>1</td>
</tr>
<tr>
<td><strong>Rerouted Transfers (aka Continuous Transfers)</strong></td>
<td></td>
</tr>
<tr>
<td>Hypothermic/bradycardia</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6</td>
</tr>
</tbody>
</table>
Effectiveness

The alternate destination – sobering center project has reduced the number of intoxicated persons transported to an ED. Interviews with project leaders indicate that one of the greatest benefits of treating these patients in the sobering center is that the sobering center staff have greater ability to connect patients with medical detoxification, social work, and case management services. EDs have social workers but they are not able to focus exclusively on intoxicated patients. In addition, the sobering center is equipped to provide withdrawal management for patients if a bed is available in a medical detoxification center, which helps patients cope with withdrawal and increases their willingness to complete detoxification.

Another strength of the alternate destination – sobering center project is the project’s leveraging of paramedics in two complementary roles. Paramedics on 911 response crews can contact community paramedics for guidance if they are uncertain whether a patient meets the criteria for transport to the sobering center. Community paramedics review transports of patients to the sobering center and give 911 crews feedback on their use of the protocol for screening patients. In addition, the community paramedics’ partnership with the HOT outreach workers extends the project beyond alternate destination transport to encompass outreach to high utilizers of the sobering center to encourage them to seek treatment for their alcohol use disorder. According to the project’s leaders, this outreach is important because San Francisco has substantial services for homeless people with alcohol use disorders but people often do not know how to access these services or will not seek help on their own. Pairing community paramedics with homeless outreach workers leverages the strengths of both groups of workers. Community paramedics contribute medical knowledge, ability to access medical records, and relationships with ambulance crews. Homeless outreach workers, many of whom are formerly homeless and or in recovery from substance use disorders, can form closer relationships with clients due to their lived experience.

Savings

Table 14 displays estimates of savings associated with the alternate destination – sobering center project. For this project, savings were due to the difference in the cost of caring for intoxicated persons in the sobering center versus in an ED. During its first five months of operation, the project generated an estimated $142,780 in savings due to the reduction in ED visits. Actual savings realized by insurers may differ because the data used to estimate costs are not used for billing purposes. The majority of savings accrued to Medi-Cal because sobering center staff estimate that 60% of the patients enrolled in the project are Medi-Cal beneficiaries. Costs for ambulance transports were not reduced because no transports were avoided.

Table 14. Savings Associated with the Alternate Destination – Sobering Center Project

<table>
<thead>
<tr>
<th>Variable</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Patients Enrolled</td>
<td>226</td>
</tr>
<tr>
<td>Total Number of ED Visits Avoided</td>
<td>220</td>
</tr>
<tr>
<td>Average Cost of ED Visit Avoided</td>
<td>$649</td>
</tr>
<tr>
<td>Total Savings</td>
<td>$142,780</td>
</tr>
<tr>
<td>Savings per Patient Enrolled</td>
<td>$632</td>
</tr>
</tbody>
</table>
Conclusion

Preliminary findings suggest that paramedics participating in the alternate destination – sobering center project can accurately screen intoxicated patients to identify those who can be treated safely and effectively in a sobering center. To date the project has resulted in the transport of 220 fewer persons to an ED. Only two patients were transported to the sobering center who did not meet the eligibility criteria. Only five patients (2%) were transferred to an ED subsequent to admission to the sobering center and four of the five transfers were due to conditions that patients developed subsequent to arrival at the sobering center. There were no adverse outcomes from secondary transfers. In addition, the community paramedics participating in the project are providing valuable feedback to paramedics on 911 response crews and are partnering effectively with homeless outreach workers to encourage persons with chronic alcoholism to seek treatment.
Summary and Conclusion

The community paramedicine pilot projects have demonstrated that specially trained paramedics can provide services beyond their traditional and current statutory scope of practice in California. No adverse outcome is attributable to any of these pilot projects. These projects are enhancing patients’ well-being, improving the integration and efficiency of health services in the community, and decreasing health care costs by reducing ambulance transports, ED visits, and hospital readmissions. The majority of savings achieved by these pilots accrue to Medicare and hospitals serving Medicare patients and to the Medi-Cal program and providers that serve Medi-Cal beneficiaries. Specifically, the sites testing the seven concepts have demonstrated the following.

Post-Discharge

- All five projects decreased hospital readmissions within 30 days of discharge for at least one of the diagnoses targeted. The only site that did not achieve 30-day readmission rates for all targeted diagnoses that were at least as good as the partner hospital’s historical readmission rate provided only telephone calls to most patients. In contrast, the other four post-discharge projects provided one or more home visits to all patients.

- Improved patients’ knowledge of their medications and their ability to take medications as prescribed by their physicians.

- Achieved savings for payers (primarily Medicare and Medi-Cal) and hospitals due to reductions in readmissions within 30 days of discharge. Participating hospitals realized additional savings by lowering their risk of being penalized by Medicare for excess readmissions.

Frequent EMS User

- These projects achieved substantial reductions in the number of 911 calls, ambulance transports, and ED visits among enrolled patients.

- Community paramedics assisted patients in obtaining housing and other nonemergency services that address the physical, psychological, and social needs that led to their frequent EMS use.

- Both projects achieved savings for payers by reducing 911 calls, ambulance transports, and ED visits. San Diego’s project also decreased the amount of uncompensated care furnished by ambulance providers and hospitals because 46% of the patients it enrolled were uninsured.

Directly Observed Therapy for Tuberculosis

- Community paramedics dispensed appropriate doses of TB medications and monitored side effects and symptoms that could necessitate a change in treatment regimen.

- Persons with TB who received directly observed therapy (DOT) from community paramedics were more likely to receive all doses of TB medication prescribed by the TB clinic physician than patients who received DOT from the TB clinic’s community health workers who only worked on weekdays during business hours. Receiving all doses prescribed by the TB clinic physician increased the likelihood that a patient would be successfully treated and would not spread TB to others or develop a drug-resistant strain of TB that would be much harder to treat and to control in the community.
Hospice

- The hospice project enhanced ability to honor patients’ wishes to receive hospice services at home by markedly reducing rates of ambulance transports to an ED and ED visits. Reducing ED visits likely also reduced the number of patients whose hospice benefits were revoked.

- Community paramedics mainly assessed hospice patients, provided psychosocial support, and administered medications from the hospice patients’ “comfort care” packs when necessary, in consultation with a hospice nurse.

- The project also yielded savings for Medicare and other insurers due to reduction in unnecessary transport and visits to an ED. Insurers’ expenditures for inpatient care were also reduced because some ED visits for hospice patients result in an inpatient admission.

Alternate Destination – Mental Health

- Twenty-five percent of persons screened by the community paramedics were transported to the mental health crisis center and more could have been transported to the crisis center if the county had more inpatient psychiatric beds or if the crisis center accepted people with private insurance or Medicare. (Some persons were not eligible for transport to the mental health crisis center because they had a medical need, were intoxicated, or were violent.)

- Ninety-six percent of patients who participated in the project were treated safely and effectively at the mental health crisis center without the delay of a preliminary emergency department visit. Only 4% of patients (n = 9 patients) required subsequent transfer to the ED, and there were no adverse outcomes.

- The project also improved public safety because community paramedics could take responsibility for a person with mental health needs, which allowed law enforcement officers to return to law enforcement duties instead of transporting the person to an ED and waiting to transfer responsibility for the patient to clinicians in the ED.

- The project generated savings for payers, primarily Medi-Cal, by reducing ED visits and transfers of patients from EDs to psychiatric facilities. For uninsured persons, the amount of uncompensated care provided by ambulance providers and hospitals also decreased.

Alternate Destination – Urgent Care

- More data are needed to make firm conclusions about the alternate destination – urgent care projects due to the limited number of patients enrolled and the percentage of patients rerouted or transferred to an ED.

- Among patients who were enrolled, paramedics were able to screen patients according to protocol and identify those for whom transport to an urgent care center was an appropriate option.

- No patients experienced an adverse outcome, although two patients (4%) were transferred to an ED following admission to an urgent care center, and nine patients (19%) were rerouted to an ED because the urgent care center declined to accept the patient.

- To operate safely and efficiently, these projects need to closely match field screening protocols with the capabilities of urgent care centers and the illnesses and injuries they are willing to treat.

- The projects yielded modest savings because insurers pay less for treatment provided in urgent care centers than in EDs for the same illnesses and injuries.
Alternate Destination – Sobering Center

- Ninety-seven percent of patients enrolled in the alternate destination – sobering project (220 of 226) were treated safely and effectively at the sobering center. Only five patients (2%) were transferred to an ED within six hours of admission to the sobering center and only one (1%) was rerouted from the sobering center to an ED. None of these patients were admitted to a hospital for inpatient care.

- In addition, community paramedics participating in the project provided feedback to paramedics on 911 crews on how to screen intoxicated persons to determine if they are candidates for transfer to the sobering center. They also partnered effectively with homeless outreach workers to encourage people who use the sobering center frequently to seek treatment for chronic alcoholism, housing, and other services.

- During its first five months of operation, the project generated an estimated $142,780 in savings. The majority of savings accrued to Medi-Cal because the majority of patients enrolled in the project are Medi-Cal beneficiaries.

Conclusion

The California community paramedicine pilot projects were designed to integrate with existing health care resources and utilize the unique skills of paramedics and their round-the-clock availability. Findings from the evaluation indicate that Californians benefit from these innovative models of health care that leverage an existing workforce that operates at all times under medical control — either directly or by protocols developed by physicians experienced in EMS and emergency care. No other health professionals were displaced. Instead, these pilot projects have demonstrated that community paramedics can partner with physicians, nurses, behavioral health professionals, and social workers to fill gaps in the health and social services safety net. No adverse outcome is attributable to any of these pilot projects.

At least 33 states are operating community paramedicine programs, and research conducted to date indicates that they are improving the efficiency and effectiveness of the health care system. These findings suggest that the benefits of community paramedicine programs grow as they mature, solidify partnerships, and find their optimal structure and niche. The evaluation of HWPP #173 yields consistent findings for six of the seven community paramedicine concepts tested. All of the post-discharge, frequent 911 users, DOT for TB, hospice, alternate destination – mental health projects have been in operation for 21 or more months and have improved patients’ well-being and, in most cases, have yielded savings for payers and other parts of the health care system. Preliminary findings regarding the sixth concept, alternate destination – sobering center, suggest that this project is also benefitting patients and the health care system. The seventh concept, alternate destination – urgent care, shows potential but further research involving a larger volume of patients is needed to draw definitive conclusions.

If community paramedicine is enabled on a broader scale, the current EMS system design is well suited to utilize the results of these pilot programs to optimize the design and implementation of proposed programs and to assure patient safety. The two-tiered system of local control with state oversight and regulation enables cities and counties to tailor community paramedicine programs to meet local needs while both local and state oversight and regulation ensure patient safety.
Appendix A. Map of California Community Paramedicine Pilot Projects

- **Post-discharge** (3 sites)
- **Directly observed TB therapy** (1 site)
- **Hospice** (1 site)
- **Frequent EMS users** (2 sites)

Alternate destination:
- **Behavioral health** (1 site)
- **Medical care** (3 sites)
- **Sobering center** (1 site)
Appendix B. Methods for Estimating Savings

This appendix describes the methods used to estimate savings associated with each of the seven community paramedicine concepts that are being tested as part of HWPP #173. Estimates of savings associated with the seven community paramedicine concepts reflect savings that accrue to parts of the health care system other than EMS transport providers, such as health insurers and hospitals. None of the projects realized savings for the EMS transport provider because they operate on fee-for-service basis and are reimbursed only for transport. These agencies had to provide in-kind contribution of supplies and labor to operate the pilot projects.

Different methods were used to estimate the savings associated with each concept due to the differences in the services provided and the types of outcomes each concept seeks to improve. For concepts that strive to reduce unnecessary ambulance transports, ED visits, and hospitalizations, the analysis focused on estimating the impact of these reductions on health insurers’ expenditures because insurers typically pay for these services. Effects on hospitals’ ability to manage “full risk” contracts with health insurers and avoid Medicare readmission penalties for excessive readmissions were addressed but could not be estimated quantitatively.

Post-Discharge

To generate estimates of savings, the differences between (1) the rates of readmission within 30 days of discharge among persons enrolled in the post-discharge projects, and (2) historical 30-day readmission rates for partner hospitals were calculated. Historical readmission rates were obtained from Medicare Hospital Compare, a system for reporting and publicly releasing data on the quality of care provided by Medicare-certified hospitals. Medicare Compare collects data on readmissions for persons with four of the six conditions targeted by the post-discharge projects: heart failure, acute myocardial infarction, chronic obstructive pulmonary disease, and pneumonia. A dataset containing data on readmission rates of partner hospitals between July 2012 and June 2015 was downloaded from Data.Medicare.gov. These data were used to assess the projects’ impact on 30-day readmission rates because all partner hospitals used similar methods to report the data to Medicare and because there was minimal overlap between the time period for which Hospital Compare data were collected and the implementation of the post-discharge projects.

The difference in the rate readmission was multiplied by the number of people enrolled in each pilot project to generate an estimate of the number of readmissions avoided for each of the targeted diagnoses. The number of readmissions avoided was multiplied by an estimate of the average cost of admissions for patients with diagnoses targeted by the projects. Estimates of the cost of admissions for targeted diagnoses were derived from OSHPD’s public hospital inpatient discharge dataset. Costs per admission were calculated by multiplying the hospital’s average charges for a diagnosis by the hospital’s cost-to-charge ratio. This is a widely used method for estimating the cost of inpatient care. Using this method, costs per admission varied substantially across diagnoses targeted by the pilot projects, ranging from $11,562 for chronic obstructive pulmonary disease to $26,621 for acute myocardial infarction. For each project, the average cost per readmission was calculated as a weighted average of the costs of admissions of persons with targeted diagnoses with weights assigned based on the proportion of total readmissions that occurred among persons with each targeted diagnosis.

Frequent EMS User

Savings were estimated by multiplying the numbers of ambulance transports and ED visits avoided by (1) the average cost per transport to an ED, and (2) the mean Medicare reimbursement for ED visits. Based on interviews with manager of San Diego’s frequent 911 user projects, we assumed that every 911 call prevented resulted in avoidance of an ambulance transport and an ED visit.

For San Diego’s project, the number of ambulance transports and ED visits avoided was estimated by comparing the number of 911 calls made by enrolled patients during the 12 months prior to their enrollment to the number of
911 calls made during the 12 months following enrollment. Calls made during the month of enrollment were excluded in recognition that the month of enrollment is a time of transition for patients. Data on 911 calls pre- and post-enrollment were available for 35 of the 46 enrollees from November 2015 through June 2017. The reduction in 911 calls over the 12 months post-enrollment was divided by 12 to estimate the numbers of 911 calls, ambulance transports, and ED visits avoided per month.

Estimates of the cost of ambulance transports avoided were obtained from the sites. Data for ED cost estimates were obtained from the University of California Research Exchange (UC ReX) and reflect visits to EDs at University of California medical centers in 2015. Hospitals bill insurers for ED visits at one of five levels based on the amount of equipment and supplies needed to care for a patient. Level 1 is the lowest level and level 5 is the highest. For the frequent EMS user projects, we used the national average Medicare reimbursement rate for all five levels of ED visits because information was not available to enable us to determine the most common reasons why frequent EMS users visit EDs or the severity and complexity of their needs. Medicare reimbursement rates were used because Medicare is the payer whose reimbursement is widely considered to be closest to the cost of care. The analysis was not limited to ED visits for any particular diagnoses because diagnosis is not a criterion for enrolling in the Frequent EMS User projects. We could not use the cost-to-charge ratio method used to estimate the cost of inpatient readmissions avoided, because OSHPD does not collect complete data on charges for ED visits.

**Tuberculosis**

A quantitative analysis of savings associated with the project that provides directly observed therapy (DOT) for tuberculosis (TB) was not conducted due to challenges associated with estimating the impact of the project. As discussed in the main body of the report, the project found that community paramedics missed a smaller percentage of prescribed DOT treatments than community health workers (0.07% vs. 6.8%). However, we found no research that addressed the impact of a difference in adherence in a US population that compared groups of people with adherence rates of over 90%. In the absence of such research, we concluded that the most we could do would be to make directional statements about the potential impact of the increase in adherence on public health expenditures associated with investigation of close contacts of persons with TB and treating people infected by a noncompliant patient. We also make a directional statement about the impact of the use of community paramedics on the TB clinic’s use of community health workers.

**Hospice**

Savings for the Hospice project were estimated by multiplying the number of transports and ED visits avoided by (1) the average cost per ambulance transport to an ED and (2) the average Medicare reimbursement for an ED visit for a high-acuity patient. The estimate of costs per transport reflects data reported by the pilot site for June 2015 through September of 2016. The estimates represented actual “cash collected” by the agency from insurers and other payers. The number of transports avoided equals the difference between the number of transports that would have occurred if the percentage of hospice 911 calls that resulted in a transport to an ED remained at the level observed prior to the pilot project (80%) and the number of transports that occurred among hospice patients enrolled in the pilot project.

As indicated above in the description of the estimates of savings for the Frequent EMS User projects, data for ED cost estimates were obtained from the University of California Research Exchange (UC ReX) and reflect visits to EDs at University of California medical centers in 2015. To estimate the cost of ED visits that do not result in a hospital admission, we applied national average Medicare reimbursement rates for all care provided to patients. For the hospice project, the median reimbursement for level 4 and 5 visits was used because terminally ill patients are likely to have acute needs. Mean reimbursement for level 4 and 5 visits across all diagnoses were used in lieu
of the costs related to specific diagnoses because information was not available to determine the diagnoses for which hospice patients were transported to an ED.

Alternate Destination – Mental Health

Savings for the Alternate Destination – Mental Health project were estimated by multiplying the numbers of ambulance transports and ED visits avoided by (1) the average cost per transport and (2) the average Medicare reimbursement for an ED visit for persons who only have behavioral health diagnoses. Because patients enrolled in the project are transported directly to the mental health crisis center, an ED visit is avoided every time a patient is enrolled as well as a secondary transport from an ED to a behavioral health facility.

The estimate of the average cost per ambulance transport was based on information provided by Stanislaus’ EMS provider.

As indicated above in the description of the estimates of savings for the Frequent EMS User projects, data for estimates of the cost of ED visits were obtained from the University of California Research Exchange (UC ReX) and reflect visits to EDs at University of California medical centers in 2015. To estimate the cost of ED visits that do not result in a hospital admission, we applied national average Medicare reimbursement rates for all care provided to patients for which the only diagnoses reported are mental health diagnoses. These diagnoses were chosen because the alternate destination – mental health project serves persons who only have acute mental health needs.

Alternate Destination – Urgent Care

Savings for the Alternate Destination – Urgent Care project were calculated based on an estimate from the literature of the difference in the cost of treating minor illnesses and injuries in an ED versus an urgent care center. Estimates published in the literature suggest that insurers pay urgent care centers 45% of what they pay hospitals for ED visits for the same minor illnesses and injuries.23 The difference between reimbursement for ED visits and urgent care center visits was multiplied by the number of persons enrolled in the alternate destination – medical care projects to obtain an estimate of total savings.

No estimate of savings associated with reduction in ambulance transports is included because, unlike other community paramedicine concepts that reduce ED visits, the Alternate Destination – Urgent Care projects did not reduce ambulance transports. Transport costs do not change because all enrolled patients are transported to an urgent care center.

As indicated above in the description of the estimates of savings for the Frequent EMS User projects, data for estimates of ED costs were obtained from the University of California Research Exchange (UC ReX) and reflect visits to EDs at University of California medical centers in 2015. To estimate the cost of ED visits that do not result in a hospital admission, we applied national average Medicare reimbursement rates for level 1 and level 2 ED visits. These levels were used because these projects enrolled people with minor illnesses or injuries. This rate was multiplied to estimate the average cost of treating people with minor illnesses or injuries in an urgent care center.

Alternate Destination – Sobering Center

Savings for the Alternate Destination – Sobering Center project were estimated by multiplying the numbers of ambulance transports and ED visits avoided per month by the cost of treating an intoxicated person with no co-morbidities in an ED. Costs for ambulance transports were not included in the calculation because this project did not decrease the number of ambulance transports. No offset for the cost of providing care in the sobering center was included because the sobering center does not bill insurers for its services.
The estimate of the average cost of treating an intoxicated person with no co-morbidities in an ED was based on an estimate generated by the San Francisco Department of Public Health. This estimate represents average total costs for a patient to be served at Zuckerberg San Francisco General Hospital, the county’s public hospital, by dividing total operational and facility expenses by the number of patients served. These costs are not used for billing purposes and, thus, may not reflect what the hospital charges insurers for treating these patients.
References


http://www.annemergmed.com/article/S0196-0644(16)30721-1/fulltext


