Contra Costa County Emergency Medical Services Data Infrastructure Project

EMS Authority HIE Grant C13-033 Report

This report was prepared by the Contra Costa EMS Staff and explores Health Information Exchange (HIE) opportunities for Contra Costa EMS community and provides a data infrastructure analysis. This project was supported by an HIE grant awarded by the California EMS Authority.

Prepared by the Contra Costa EMS Staff
Health Information Exchange (HIE) Workgroup
12/28/2013

Contra Costa County Emergency Medical Services

Data Infrastructure Project

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Introduction

Positioning EMS agencies for successful health information exchange - is not a small task. Thoughtful and strategic planning is required to produce the desired outcomes in EMS environments grappling with reduced resources and funding. This report will capture the lessons learned and make recommendations for best practices to support health information exchange (HIE) within the EMS, health care and public safety communities.

The Contra Costa Data Infrastructure Project was designed to produce three core deliverables that would contribute to a long-term strategic process to align and integrate data systems vital to the oversight and delivery of patient care, while positioning them for future opportunities associated with health care reform, as well as an upcoming RFP for ambulance services. The three deliverables were:

1. Workflow assessment and recommendations for improvement: Basically answering the questions about what we currently do, and whether there is an easier way.
2. Implementation of a pilot dashboard supporting EMS system data integration: Could we use our current data systems to support a real-time situation status that support hospital readiness for patient offload? Exploration of Contra Costa Health Services (CCHS) EPIC integration: Is there an opportunity to partner with CCHS and Contra Costa Regional Medical Center to support patient care within current data systems?

What follows is a report on those deliverables and recommendations based on our experience that may be useful to others learning how to navigate this exciting and challenging environment.

Key to successful deployment and operation of HIE systems is a commitment to ensure the patient comes first and can reliably receive safe, value--based health care. In environments with limited resources, staffing, funding and other demands, leadership is required to ensure that the needs of the patient are balanced with that of the organization. Contra Costa EMS would like to thank the California EMS Authority for their grant of $30,000 to help position our local EMS system to support a data environment where EMS patient care data is seen as a vital part of the patient health care record and that, in the future, all health care data follows the patient regardless of where and how they enter the health care system.

Sincerely,

Patricia Frost RN, MS, PNP
Director, Contra Costa Emergency Medical Services

The Contra Costa EMS System Data Environment

EMS System Data Environment

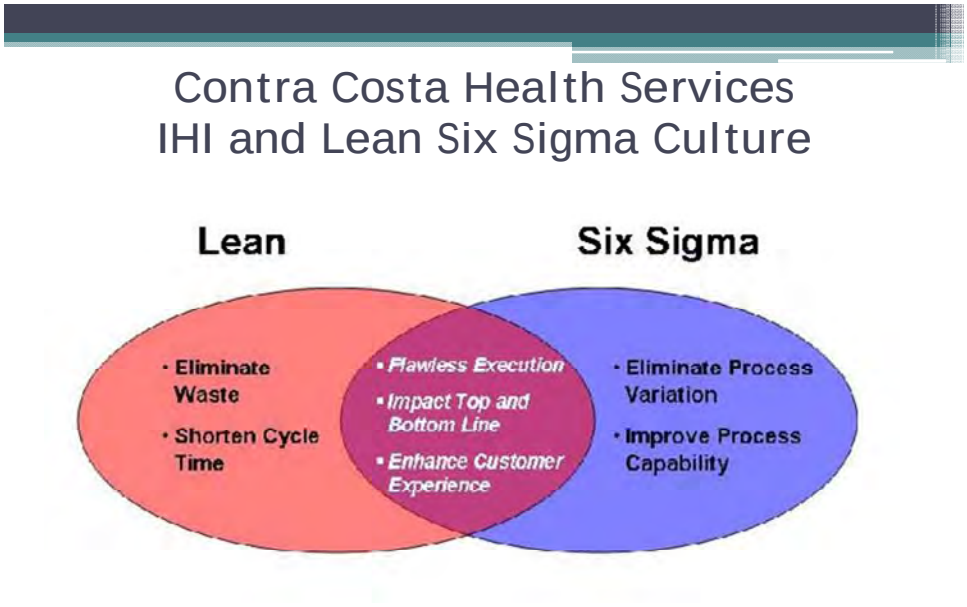
- 86,134 EMS Responses
- 64527 Transports
- 25 EMS Data System Sources
  - 9 Emergency Receiving Hospitals
  - 9 Fire Districts
  - 3 Fire-EMS Dispatch
  - 3 Emergency Ambulance Providers
  - 1 Base Hospital
- National, State and Local Platforms
- Clinical/QI (Core Metrics)
- Trauma System (Local and Region)
- STEMI System (Local)
- Stroke System (Local and State)
- EMS Disaster Communications
  - ReddiNet and Radio Testing

Contra Costa County is an urban-suburban community in the Bay Area. The EMS system in Contra Costa serves approximately 1.08 million people through public-private partnerships, with care provided by basic and advanced life-support first responders, and advanced life-support transport providers. The county consists of 802 square miles of rural, suburban and urban communities. The population is ethnically and economically diverse. In 2012, the EMS system responded to over 86,000 calls and transported over 64,000 patients.

The county has over 25 EMS partners providing data to support the medical and system oversight of resources and services. Contra Costa has a mature trauma system, STEMI (ST Elevation Myocardial Infarction) and stroke systems of care and participates in local, state and national data registries, including Trauma I, State Core Metrics, California Stroke Registry, Mission Lifeline and CARES (Cardiac Arrest Registry to Enhance Survival).

In addition, the EMS Agency serves as the Hospital Preparedness Program manager and utilizes a performance-driven approach to measure competency. HAvBED and radio testing performance data are captured, measured and prepared into reports to support process improvement in the area of emergency communications.

A Culture of Improvement and Patient Safety



Contra Costa Health Services has been an advocate and longtime partner with IHI (Institute of Healthcare Improvement) and, over the last five years, the EMS Agency has actively incorporated its methodologies into the EMS system quality improvement efforts. IHI and Lean Six Sigma are training standards recommended for all those participating in EMS system quality efforts. Application of these quality methods relies on the use of valid measurements of workflow to improve processes, while eliminating waste and variation that interferes with the delivery of safe, high-quality patient care.

Intelligent Design-Coordination (Processes)-Protocols (Standard Work)

Within this culture of improvement, Contra Costa EMS believes that ineffective systems, processes and protocols are the primary reasons for system failure. Systems are perfectly designed to produce success and failure, and require intelligent design, coordinated processes and reliable standard work (protocols) to deliver optimal performance. The goal of this effort was to take the first steps in understanding what was required to create both reliable and efficient data cycles supporting EMS system improvement and a safety culture.

The Contra Costa EMS Patient Care Data Experience

Contra Costa EMS Experience
Patient Care Data and HIE

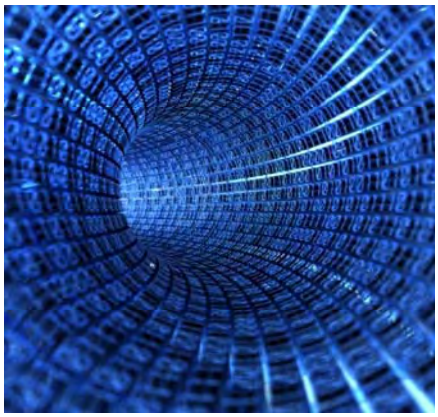
- MEDS (AMR)
  - 2004
- First Watch
  - 2006
- Zoll (Fire)
  - 2007
- HL7-Ready Platforms
  - January 2014
- CARES
- Trauma One
- California Stroke Registry
- LifeNet & CodeSTAT

The current data systems used by the Contra Costa EMS Agency were evolved over time in response to situational need and available grant funding, without regard to future integration or readiness for health information exchange. Platforms were chosen based on subject-matter expert recommendations, competitive bid processes and grant availability. Over time, challenges have arisen regarding the interoperability of the platforms and the requirements for technology upgrades, coupled with the increasing demands for efficient data management. These factors added to the need for the EMS Agency to re-evaluate data system and management requirements in order to position the system for success with HIE in the future. EMS staff and system stakeholders were finding themselves working for the data systems, instead of the data systems working for them. Highly qualified clinical and quality subject-matter experts slogged through clerical-level single or double data entry just to complete simple reports.

While each of these data systems generate millions of bits of data, their lack of interoperability created barriers to management, coordination and analytic capability that resulted in a situation where the EMS Agency inundated with non-relevant data that did not contribute to EMS system operations or improvement. Access to reporting, and reliable data, required skill sets known to only one or two individuals in the organization. Infrastructure realignment was clearly needed to begin the process of correcting these gaps in our data management infrastructure. The Contra Costa Data Infrastructure Project was designed to address these needs.

Pre-hospital Data Integration Assessment and Implementation Support

- **Data Silos:** 13 individual information systems
- **Staff Intensive Data Workflows:** Report Access and Automation Gaps
- **Internal and External Costs:** Supporting Data Management
- **Unique Opportunity:** By 2016, hospitals countywide on EPIC.



Data Information Workflows

In the summer of 2013, Contra Costa EMS contracted with Xerox to perform an internal data system analysis. We began with the two simple questions: What do we currently do? And is there an easier way?

Workflows of all program staff were analyzed and mapped. The findings identified that the EMS Agency used more than 13 individual information systems that required intensive staff support to input and produce analytic reports, reducing productivity and program efficiency. Program oversight processes also impacted the workflow of hospital and fire personnel, who would need to be brought into the process to support the acquisition of case review or determination of patient outcome for missing bits of data, due to the complexity of home grown practices used to obtain that information. Finally, by modifying current staff workflows and building in some data management system automation, significant opportunities were available to reduce the time and effort required to support the data entry and reporting of data. The Current Workflow and Opportunities chart summarizes the findings and efficiencies that could occur if workflow was modified as recommended.

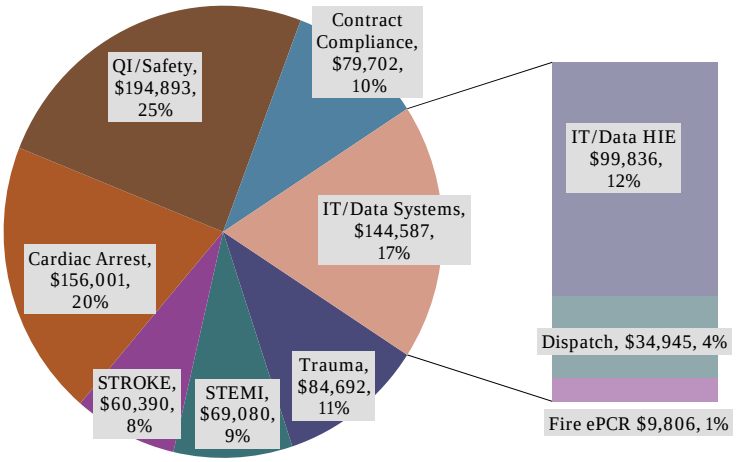
Current Workflow and Opportunities

Information Processing Workflow

Program	Current Flow	Current Staff	Opportunity
Trauma	20 steps	2-3 EMS staff , 1 hospital, 20+ MICN/ED staff & field personnel	9 steps
Stroke	22 steps	2-3 EMS staff, 7 hospital staff, field personnel	7 steps
STEMI	13 steps	2-3 EMS staff, 6 hospitals, ED staff, field personnel	4 steps
CARES	28 steps	4-5 EMS staff, 9 hospitals, ED staff, field personnel	16 steps

Change Needed due to Unsustainable Workflows and Costs

Findings: Unsustainable Costs
Data Management & Oversight by Program
Annual Expenditure : $ 984,238



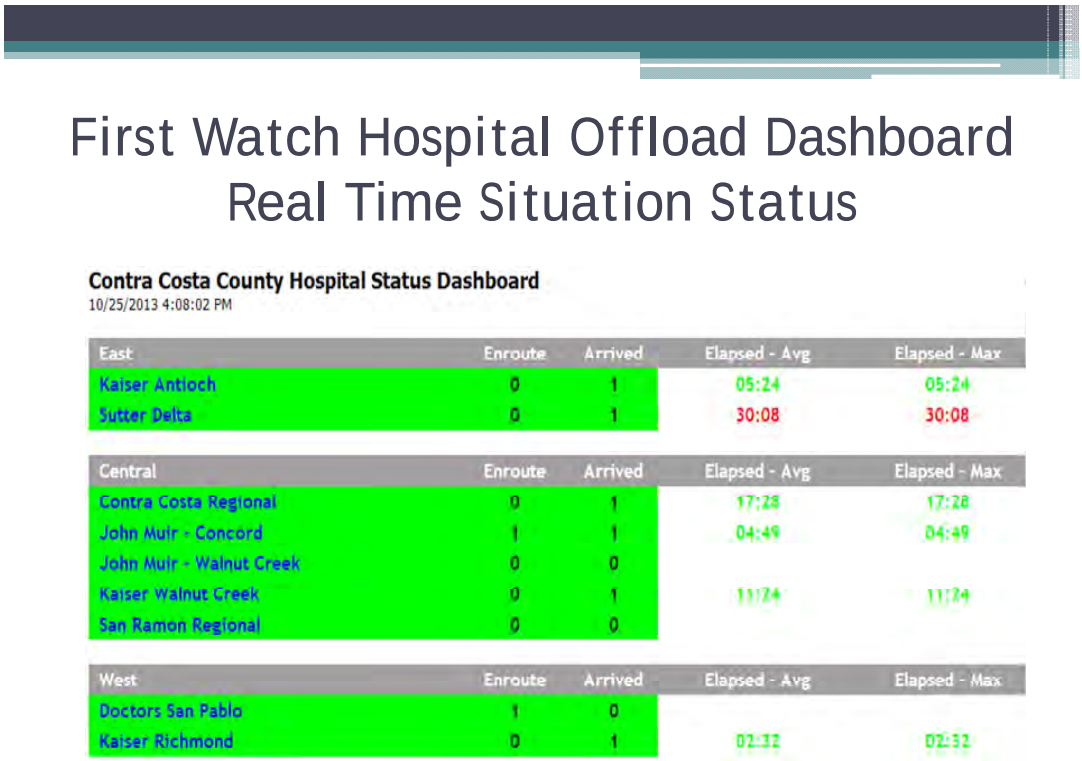
Cost is always a factor in planning for change, which is why the cost of supporting data management for each program was compiled. Given the current fiscal environment, additional funds are unlikely to be readily available to the EMS Agency. However, if efficiencies could be achieved by realigning current fiscal resources, or expenditures justified by future cost savings, barriers may be overcome. It was clear that planning for efficient data flow, while challenging, was a solvable problem.

Key Recommendations

- Appropriately define and prioritize EMS system reporting needs
- Build data systems to support the reporting of those needs
- Invest in data management systems and processes that are capable of producing automated analytics and alerts
- Hire and/or train staff to support reliable reporting and technological management of data systems
- Build relationships with health care system providers to take advantage of opportunities to integrate EMS data wherever possible
- Consider the impacts of data system changes, upgrades and enhancement on stakeholder workflow

Pilot Dashboard Implementation

Our next deliverable was the pilot implementation of a real-time dashboard supporting EMS System data integration. Could we use our current data systems to support a real-time situation status that supports hospital readiness for patient offload? Dashboards are increasingly used to support situation awareness, alerts and reporting within the EMS community. They are used extensively as part of system status management and can be powerful tools in process improvement supporting performance-based efficiencies as part of engaged workflows working with real-time automated reporting.



The First Watch[1] Solutions Hospital Offload Dashboard is a real-time situation status screen that has been modified to be hospital specific. The view captured in the graphic is an example of the EMS Agency Dashboard viewer which lists the offload status of all hospitals. The times displayed indicate when and how many ambulance units are en route, arrived, and the elapsed time averages and maximums. Colors notify users of excessive delays: Green, yellow, red, and, for the most severe cases, black.

[1] First Watch Solutions is a cloud-based situation status platform that can be used to support EMS system clinical and utilization performance. http://www.firstwatch.net/

This dashboard was introduced to all emergency department (ED) nurse managers and directors at the Facilities and Critical Care Committee meeting in September 2013, and was met with enthusiasm. Access to the web site was distributed to the emergency departments to implement.

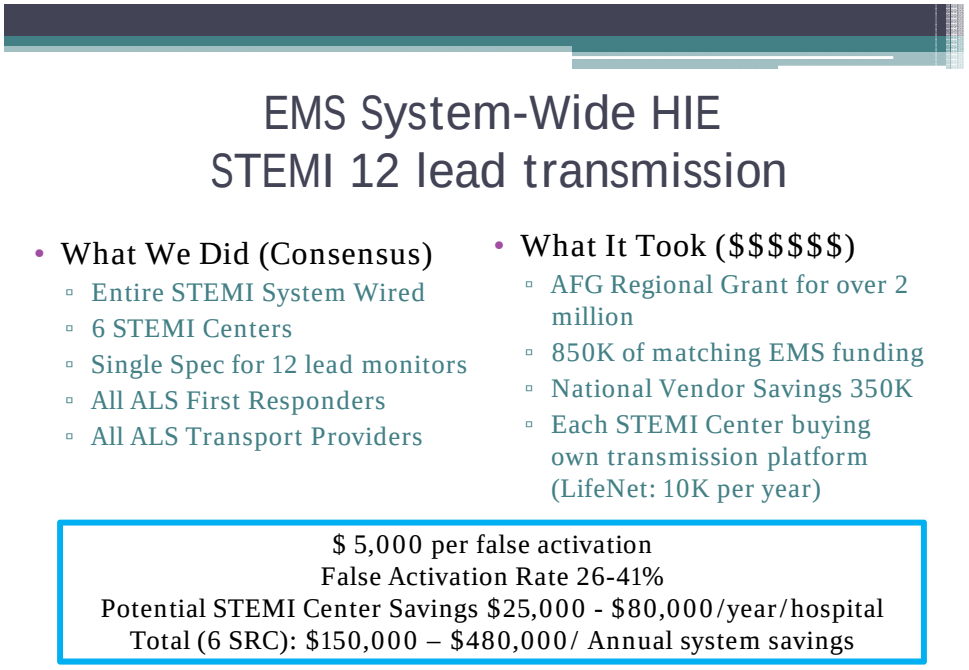
However, a follow-up meeting with the nurse managers a month later found that the hospitals had failed to implement the dashboard. Arrangements have since been made to visit each emergency department, train ED staff in the dashboard's use, and help them implement the dashboard as part of their operational workflow.

This experience demonstrates the importance of engaging intended users at the launch of new technology, so that it can be successfully implemented. Without this commitment, HIE on any level can go underutilized, or worse yet, not used at all. Being sensitive to end-user workflow is a critical part of any technology implementation to support the health information exchange process. Early success can influence confidence, and encourage local EMS agency requests to link pre-hospital patient care and utilization data to that of the hospital and health care system. A commitment is needed to have EMS staff support the training and integration of these tools to achieve effective operational deployment. In other words, just because you built it, it does not guarantee they will come.

Key Recommendations

- Implementation of any new interoperable data technology requires engagement of end-users who will be using it during their operations.
- EMS agencies must plan on building in supports for training and accessibility, and must partner with stakeholders in problem solving about how to display information in a meaningful way.
- When dashboard technology and reporting reliably occurs, and is accessible, it is known to produce improvement- and patient-focused discussions.

HIE System Wide: STEMI 12 Lead Transmission and Cost Savings

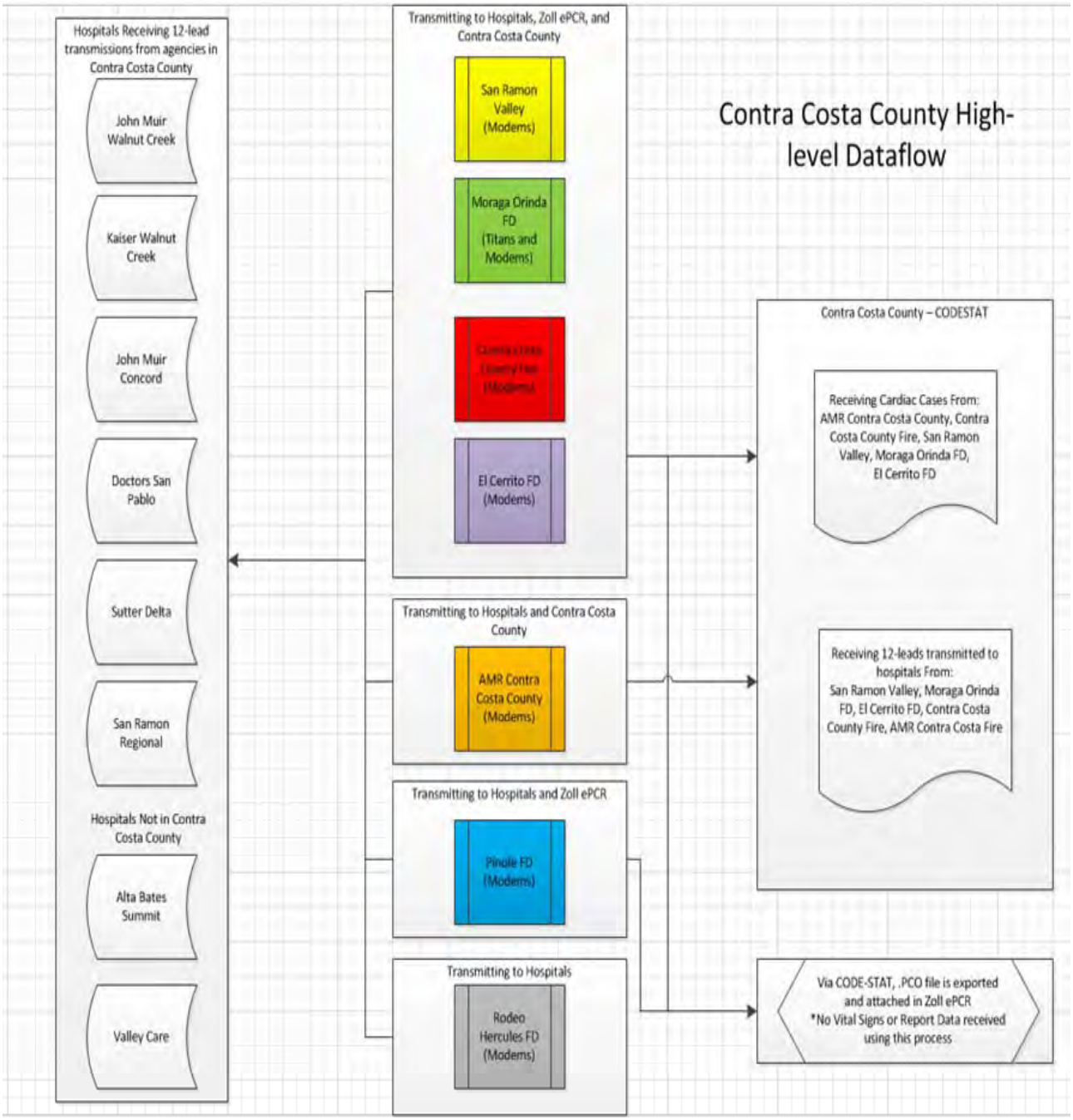


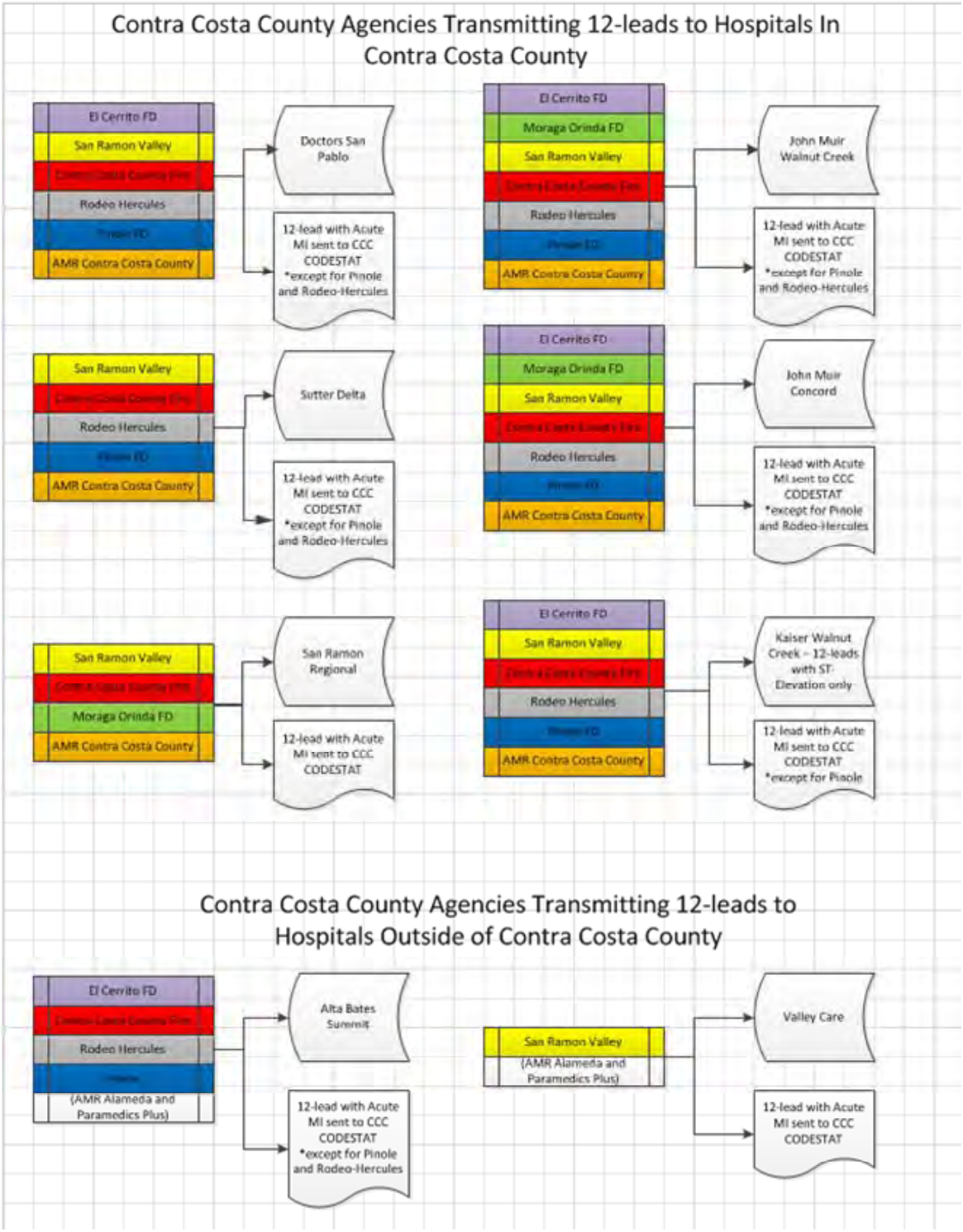
Contra Costa EMS has experience with the successful implementation of an EMS system-wide HIE exchange. In 2012, we implemented one of the first county wide 12-lead transmission systems in the United States, incorporating all six of our STEMI Receiving Centers (SRC) as well as SRC in Alameda County. The hospitals included both single facilities and large health care systems, including Sutter, Kaiser Permanente, Tenet Healthcare, John Muir and Doctors Medical Center in San Pablo. Each hospital invests more than $10,000 annually to support the Physio Control LifeNet and CodeSTAT platforms to support the transmission network and its oversight. The EMS Agency partnered on a regional Assistance to Firefighters Grant with Contra Costa Fire Protection District to support the acquisition of new devices to achieve a single specification for 12-lead monitors for interoperability and connectivity. This interoperability facilitates the effective transmission of real-time 12-lead ECGs to SRC staff and cardiologists to determine if activation of the cardiac intervention team is required.

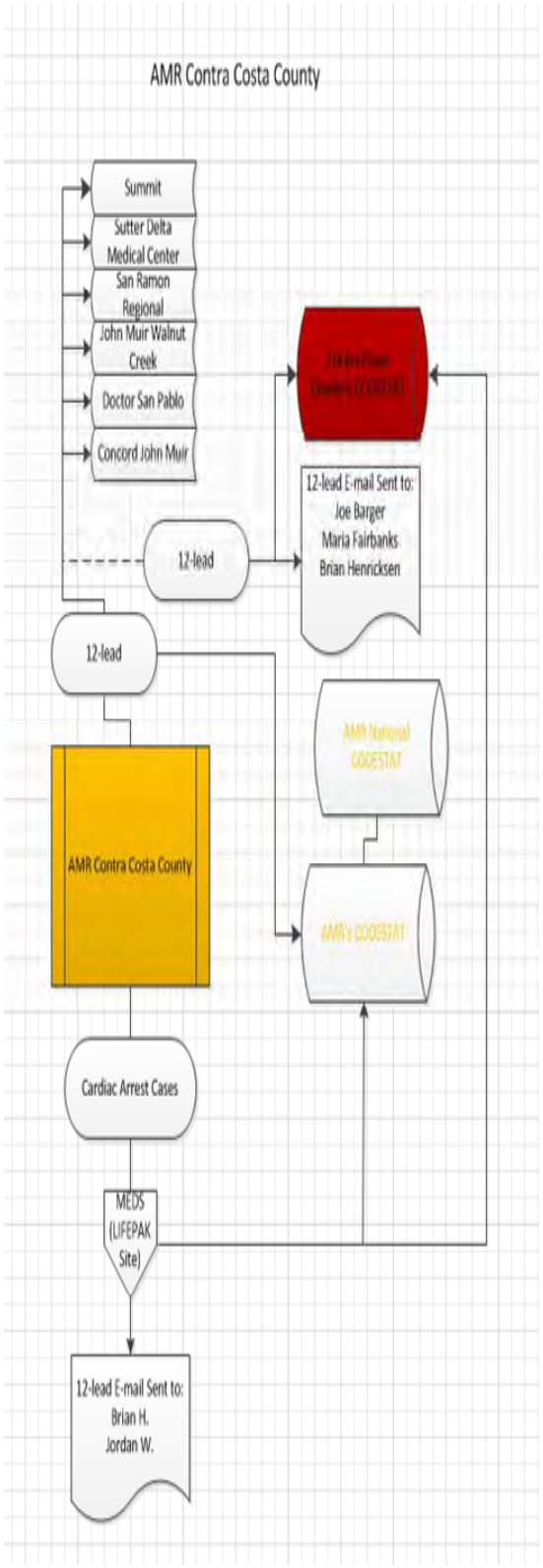
The average cost of false activation in the Contra Costa health care community is approximately $5,000 per activation. Prior to implementation of the 12-lead transmission program the Contra Costa EMS system, false activation rate varies between 26% and 46%. Reliable 12-lead transmission, when used to its full potential to support patient care, is projected to reduce or eliminate false activation and produce a SRC savings of $25,000 to $80,000 per year. The potential cost savings to the Contra Csta hospital and the health care community would amount to approximately $480,000 annually. As reimbursement in

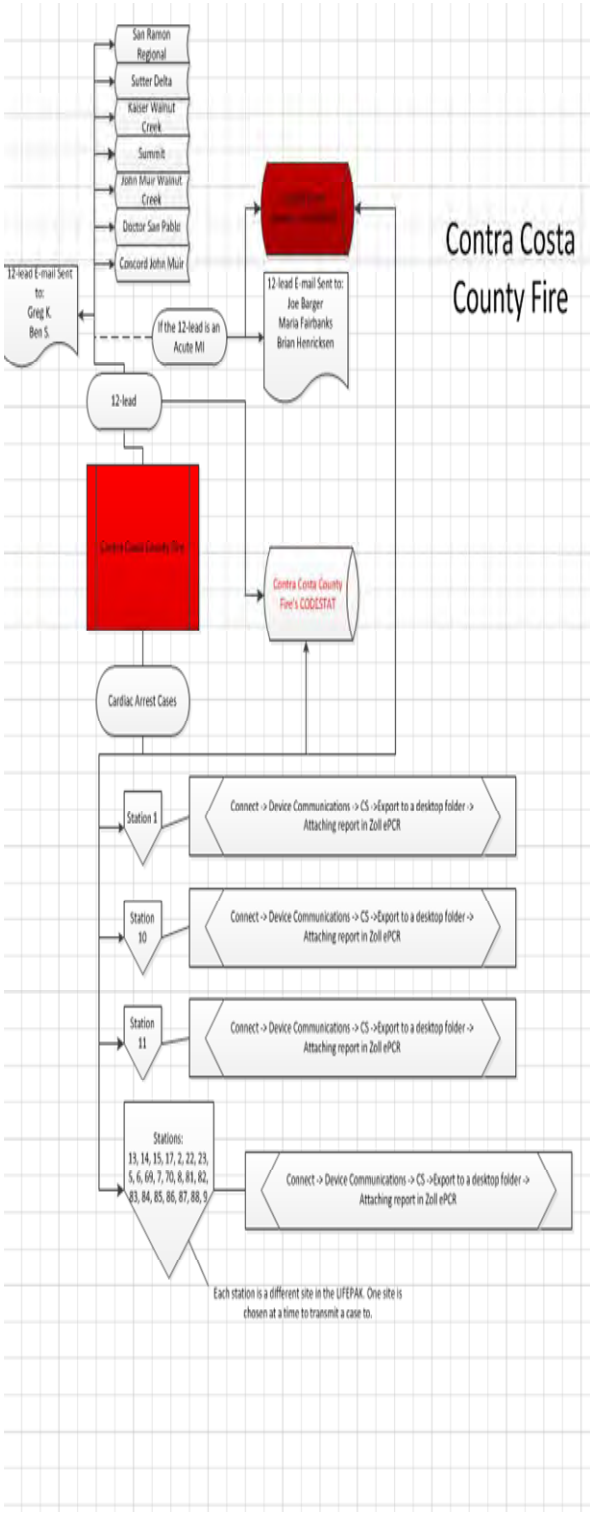
health care becomes increasingly value based, increasingly reliable processes to reduce duplicate procedures will benefit both the provider and the patient. -

The charts that follow are illustrations of both high-level and end-user workflows for the Contra Costa 12-lead transmission program. The charts demonstrate primarily automated steps, to achieve HIE of 12 lead data in real time to support Cardiac Intervention efficiencies throughout the County EMS System. These workflows are complex and require ongoing effort and training to support reliable use of equipment, processes and protocols vital to sustaining high-performance results.


Contra Costa County High-level Dataflow
Hospitals Receiving 12-lead transmissions from agencies in Contra Costa County
John Muir Walnut Creek
Kaiser Walnut Creek
John Muir Concord
Doctors San Pablo
Sutter Delta
San Ramon Regional
Hospitals Not in Contra Costa County
Alta Bates Summit
Valley Care
Transmitting to Hospitals, Zoll ePCR, and Contra Costa County
San Ramon Valley (Modems)
Moraga Orinda FD (Titans and Modems)
El Cerrito FD (Modems)
Transmitting to Hospitals and Contra Costa County
AMR Contra Costa County (Modems)
Transmitting to Hospitals and Zoll ePCR
Pinole FD (Modems)
Transmitting to Hospitals
Rodeo Hercules FD (Modems)
Contra Costa County – CODESTAT
Receiving Cardiac Cases From: AMR Contra Costa County, Contra Costa County Fire, San Ramon Valley, Moraga Orinda FD, El Cerrito FD
Receiving 12-leads transmitted to hospitals From: San Ramon Valley, Moraga Orinda FD, El Cerrito FD, Contra Costa County Fire, AMR Contra Costa Fire
Via CODE-STAT, .PCO file is exported and attached in Zoll ePCR
*No Vital Signs or Report Data received using this process

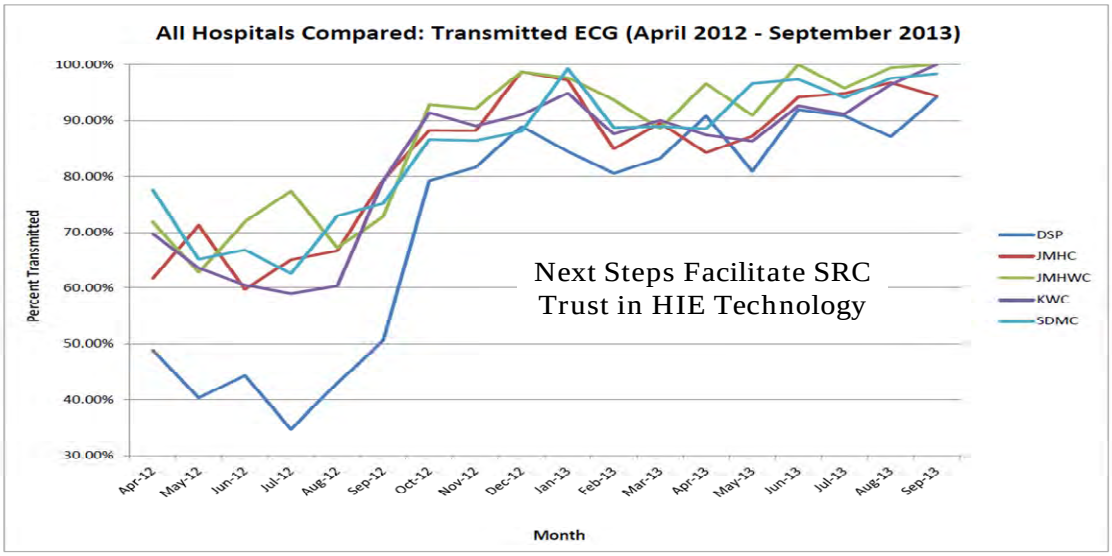

Contra Costa County Agencies Transmitting 12-leads to Hospitals In Contra Costa County
El Cerrito FD
San Ramon Valley
Rodeo Hercules
AMR Contra Costa County
Doctors San Pablo
12-lead with Acute MI sent to CCC CODESTAT *except for Pinole and Rodeo-Hercules
El Cerrito FD
Moraga Orinda FD
San Ramon Valley
Rodeo Hercules
AMR Contra Costa County
John Muir Walnut Creek
12-lead with Acute MI sent to CCC CODESTAT *except for Pinole and Rodeo-Hercules
San Ramon Valley
Rodeo Hercules
AMR Contra Costa County
Sutter Delta
12-lead with Acute MI sent to CCC CODESTAT *except for Pinole and Rodeo-Hercules
El Cerrito FD
Moraga Orinda FD
San Ramon Valley
Rodeo Hercules
AMR Contra Costa County
John Muir Concord
12-lead with Acute MI sent to CCC CODESTAT *except for Pinole and Rodeo-Hercules
San Ramon Valley
Moraga Orinda FD
AMR Contra Costa County
San Ramon Regional
12-lead with Acute MI sent to CCC CODESTAT
El Cerrito FD
San Ramon Valley
Rodeo Hercules
AMR Contra Costa County
Kaiser Walnut Creek – 12-leads with ST Elevation only
12-lead with Acute MI sent to CCC CODESTAT *except for Pinole
Contra Costa County Agencies Transmitting 12-leads to Hospitals Outside of Contra Costa County
El Cerrito FD
Rodeo Hercules
(AMR Alameda and Paramedics Plus)
Alta Bates Summit
12-lead with Acute MI sent to CCC CODESTAT *except for Pinole and Rodeo-Hercules
San Ramon Valley
(AMR Alameda and Paramedics Plus)
Valley Care
12-lead with Acute MI sent to CCC CODESTAT


AMR Contra Costa County
Summit
Sutter Delta Medical Center
San Ramon Regional
John Muir Walnut Creek
Doctor San Pablo
Concord John Muir
12-lead
12-lead E-mail Sent to:
Joe Barger
Maria Fairbanks
Brian Henricksen
12-lead
AMR National CODESTAT
AMR Contra Costa County
AMR's CODESTAT
Cardiac Arrest Cases
MEDS (LIFEPAK Site)
12-lead E-mail Sent to:
Brian H.
Jordan W.


Contra Costa County Fire
San Ramon Regional
Sutter Delta
Kaiser Walnut Creek
Summit
John Muir Walnut Creek
Doctor San Pablo
Concord John Muir
12-lead E-mail Sent to:
Greg K.
Ben S.
If the 12-lead is an Acute MI
12-lead E-mail Sent to:
Joe Barger
Maria Fairbanks
Brian Henricksen
12-lead
Contra Costa County Fire
Contra Costa County Fire's CODESTAT
Cardiac Arrest Cases
Station 1
Connect -> Device Communications -> CS ->Export to a desktop folder -> Attaching report in Zoll ePCR
Station 10
Connect -> Device Communications -> CS ->Export to a desktop folder -> Attaching report in Zoll ePCR
Station 11
Connect -> Device Communications -> CS ->Export to a desktop folder -> Attaching report in Zoll ePCR
Stations: 13, 14, 15, 17, 2, 22, 23, 5, 6, 69, 7, 70, 8, 81, 82, 83, 84, 85, 86, 87, 88, 9
Connect -> Device Communications -> CS ->Export to a desktop folder -> Attaching report in Zoll ePCR
Each station is a different site in the LIFEPAK. One site is chosen at a time to transmit a case to.

Over the last year, the training effort to support reliable pre-hospital transmission required approximately four months of initial training at start-up, and ongoing performance-based monitoring. That performance-based monitoring is tracked and pulled as monthly data and is routinely reviewed by the Contra Costa Quality Leadership Group. This information is displayed below, representing our first success with HIE as a direct push of data supporting efficient patient care.

Our First Success with HIE Push



The next steps to this process, which will proceed over the next year, are to work with hospitals on how they can best incorporate it into their workflows. This requires hospitals to trust the new technology, and the level of trust among hospitals varies greatly at this time. We believe that with time and continued reliable performance, trust will grow and efficiencies will be maximized.

The Contra Costa EPIC Opportunity

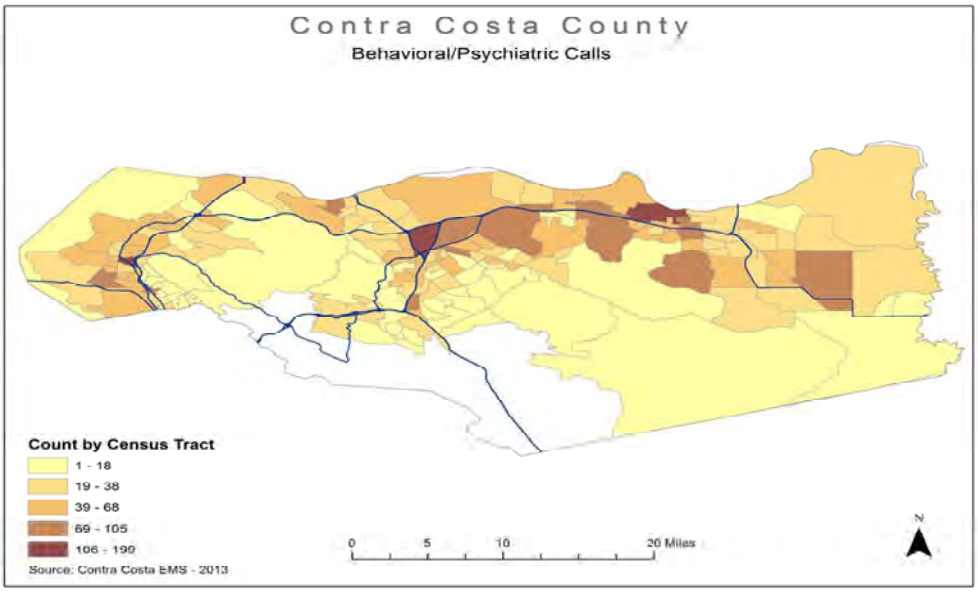
By 2016, the vast majority of Contra Costa hospitals will have a single Electronic Medical Record (EMR) platform. Hospital executives throughout Contra Costa wanted to position their facilities for significant EMR functionality and HIE to meet the needs of the community. HIE is considered essential to the success of Contra Costa accountable-care organizations and their partners.

This alignment presented a unique opportunity to facilitate the integration of pre-hospital and EMS data within a single data platform. As a first step to this process, the need to get our EMS data systems in

order was prioritized, as described earlier in this report. Next, we began the exploring linkages with the EPIC platform within our own Contra Costa Health Care System, which had implemented EPIC as a comprehensive inpatient and outpatient platform a year earlier.

Although we had approached CCHS about linkages at that time, there were insufficient resources for the daunting task of launching such a large-scale EMR implementation. During that period, our efforts focused on demonstrating how EMS data offered value to other divisions within Contra Costa Health Services. The chart below is just one example of how EMS data could be used to reveal the distribution of behavioral patients throughout the county. In turn, this data could assist Behavioral Health and other services to better match health care resources with patient need.

Matching Patient Need to Health Care Resource
Mobile Mental Health Services



Under Affordable Care Act (ACA), mobile mental health services are being considered by CCHS Behavioral Health and could target known community hotspots identified by EMS data for optimal deployment. EMS professionals could be mobilized to support these services in a variety of ways, including community paramedicine.

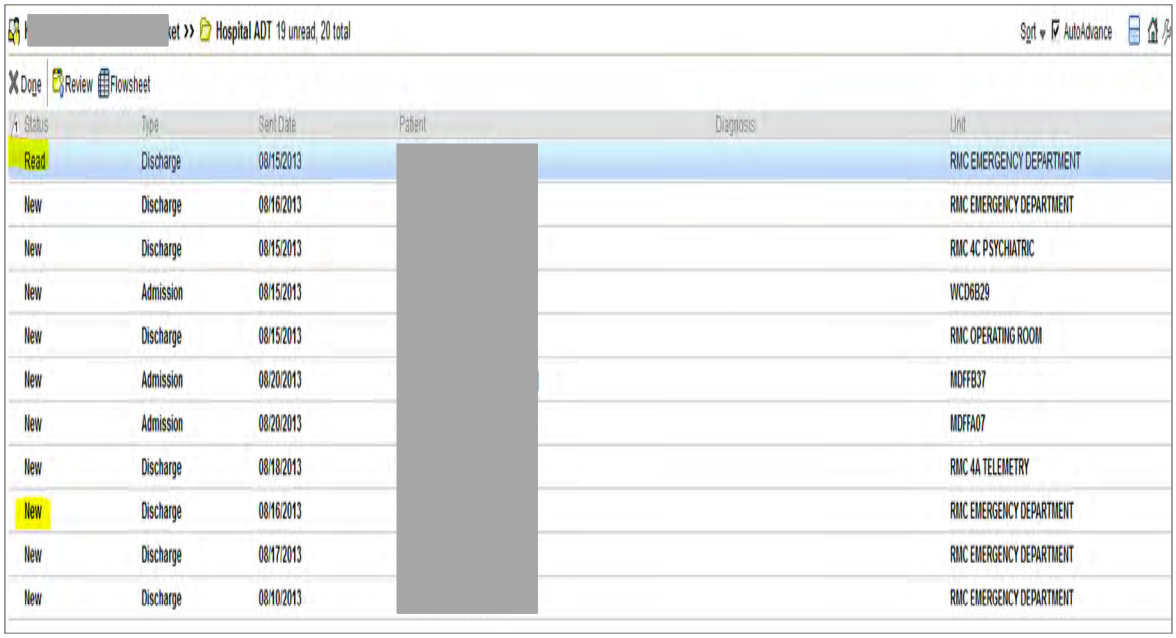
EMS-CCHS EPIC Progress

A full year after the EPIC implementation throughout the CCHS community, Contra Costa EMS met with CCHS Information Services to revisit the opportunity to gain access to 911 patient outcome information to support EMS program quality oversight. In November 2013, a meeting with the CCHS Chief Medical

Information Officer, CCHS Director of Information Services and Contra Costa EMS staff has resulted in two deliverables.

1. Access to EPIC patient care data to support EMS staff involved in quality managementto identify patient outcomes. Program staff supporting trauma, cardiac arrest, stroke, STEMI and patient safety will be allowed appropriate access.
2. Exploration of the components of a continuity of care document (CCD) to allow the pulling and pushing of pre-hospital and hospital quality reporting. These CCD components may later serve as a baseline for real-time data exchange.

EPIC-EMS/ED Interface Exploration
Patient Disposition Access

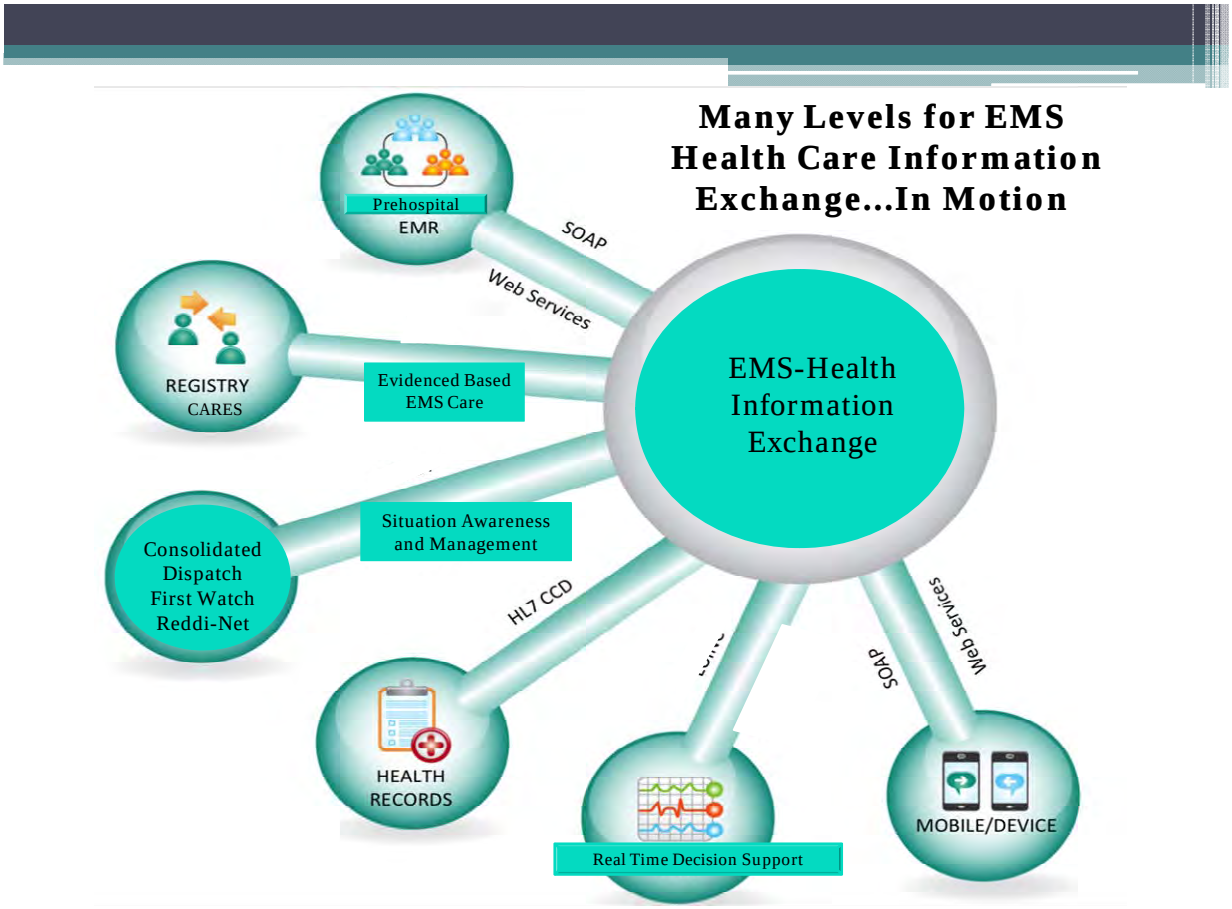


The illustration above is an example of a patient disposition interface that is sent to the primary care physician for all patients served by Contra Costa Regional Medical Center's Emergency Department. The document arrives through a protected email compliant with all HIPAA and HITECH requirements. Inside the document are links that the approved provider can use to access details of the patient during their encounter.

Our proposal to CCHS is to explore if a similar disposition document could be created for EMS and mapped to registries, automated quality reports, or analytic platforms to support data management and additional efficiencies in the future, supporting sustainable oversight of the EMS system.

Other opportunities for HIE are also being considered through HealthShare Bay Area, an organization exploring opportunities to create a regional Bay Area HIE. Contra Costa EMS established a dialogue with the president and COO of that organization in 2011, and continues to monitor its progress with the intention of getting involved when other hospitals and health care systems are ready to consider HIE on a regional basis.

At present, the single-platform strategy for our local community has reduced the need for hospitals and health care systems to actively develop a Bay Area HIE, as many of our county hospitals are the major health care systems within the region. Those hospitals and health care systems tied to EPIC intend to initially use EPIC's internal HIE "Care Everywhere" and "Care Anywhere" features to conduct HIE. However it is believed that a Bay Area HIE will eventually be needed to support the community based health management required as part of the Affordable Care Act.



Key Findings and Recommendations for EMS HIE

- EMS agencies tied to health care systems are best positioned to conduct HIE within their own organizations when those systems are ready to engage.
- Significant effort may be needed to ensure that EMS is not left out of the effort.

- EMS agencies need to fully articulate what value EMS data can bring to support population-based health care.
- Timing is everything, and relationships need to be nurtured to support engagement in local and regional HIE programs.
- EMS agencies need to develop an awareness of what strategic planning is being conducted within their communities to take full advantage of opportunities for HIE.
- EMS agencies that tailor patient care data and population data to support engaging the health care system are more likely to be seen as credible partners and will be positioned to engage in meaningful HIE to support patient care.

Summary

HIE is vital to the continued evolution of the future delivery of EMS services. The Contra Costa Data Infrastructure Project was designed to produce three core deliverables to contribute to a long-term strategic process to align and integrate data systems vital to the oversight and delivery of patient care, while positioning them for future opportunities associated with health care reform, as well as an upcoming RFP for ambulance services.

Workflow assessment and recommendations for improvement: Answering questions about what do we currently do and if there is an easier way. The assessment found home-grown, inefficient processes that reduced staff and organization productivity and cost. Recommendations for improved workflow were identified and are being implemented. The assessment also revealed that, with improved configuration, our First Watch data platform could automate reports and improve organizational data management, reliability and productivity.

Implementation of a pilot dashboard supporting EMS system data integration: Could we use our current data systems to support a real-time situation status to support hospital readiness for patient offload? Contra Costa EMS created a real-time ambulance offload tracking dashboard through First Watch and we shared it with our hospital emergency departments. On follow up, it was determined that the dashboard – though received enthusiastically – was not being used. Training and accessibility were identified as key issues in the failure to implement, and the dashboard will be redeployed after these issues are addressed to improve emergency department personnel ability to incorporate it into their busy workflow.

Exploration of Contra Costa Health Services (CCHS) EPIC integration: Is there an opportunity to partner with CCHS and Contra Costa Regional Medical Center to support patient care within current data systems? Contra Costa EMS is now working with the CCHS EPIC team, and has been given read-only access to data from patients arriving to the emergency department by ambulance. EMS has been working with the CCHS EPIC team to explore direct reporting and interfaces between EPIC and EMS to monitor patient care quality and disposition. We have also recently learned that Kaiser Permanente Northern California and AMR are exploring a demonstration project, and we hope that our community will have an opportunity to be an incubator for such a project.

Contra Costa EMS believes that Health Information Exchange is the key to effectively meeting patient care, medical transportation, and health care access needs. Contra Costa is committed to supporting opportunities to building a system of care that provide our patients with safe, reliable, timely and cost effective medical transportation, regardless of urgency.

This report was prepared by the Contra Costa EMS Health Information Exchange Project Team.

Patricia Frost, RN, MS, PNP	Contra Costa EMS Director
Joseph Barger, MD	Contra Costa EMS Medical Director
Bruce Kenagy, EMT-P	Acting Prehospital Care Program Manager
Brian Henricksen, EMT-P	Prehospital Care Coordinator
Laura O'Neal, RN	Prehospital Care Coordinator
Maria Fairbanks, RN	Prehospital Care Coordinator

Contra Costa EMS would like to express it thanks to the following individuals who helped support this project:

William Walker, MD	County Health Officer and Director CCHS
David J. Runt, FHIMSS	Director Information Services, CCHS
Rajiv Pramanik, MD	Chief Medical Information Officer, CCHS
David Minch President and COO	HealthShare Bay Area
Steve Gray, Consultant	Healthcare Provider Solutions (Xerox Company)

Addendum I (Minutes of HIE Meeting with CCHS)

MEETING: Prehospital Health Information Exchange

DATE: November 18, 2013 0900-1015

PRESENT: Pat Frost, EMS; Dr. Joe Barger, EMS; Brian Henricksen, EMS; Bruce Kenagy, EMS; Laura O'Neal, EMS; Dr. Rajiv Pramanik, Chief Medical Informatics Officer, CCRMC; David Runt, Chief Information Officer Contra Costa County.

TOPIC	DISCUSSION	ACTION
Purpose	Pat Frost discussed the need for EMS to link with EPIC to share patient information; to have data available to automate reports i.e. patient disposition information, dx.; to review for quality; systems oversight e.g.(STEMI/Stroke) as part of a grant deliverable. To begin this with Contra Costa County Health Services as a base to build. Pat discussed the goal of having sufficient data available to allow EMS to demonstrate how the system would be best structured to benefit the patient and stakeholders. Both in improved patient care and fiscal considerations.	Informational. Plan is to use CCHS as a pilot for future linkages with other in-county EPIC providers in the future.
Defining a business plan	Discussion on where to begin the link with hospital records. Dr. Pramanik agreed starting with one health system advisable. The need to define the outcome. Long range goal linking Prehospital EMR with EPIC to pull/push data. To view patient continuum of care. The first stage is to 1.) define who will need access, HIPAA compliant and have clinical knowledge to use the information; 2.) define the data elements specifics with numerator/denominator measurement. There was discussion regarding data currently collected through Trauma Registry, STEMI/Stroke, CARES and if necessary or possible to connect with those elements and to facilitate capturing data currently difficult to obtain for those systems.	Dr. Barger will gather data elements, discuss with EMS Program Staff for input and forward to Dr. Pramanik. Laura to facilitate identifying staff needing access to EPIC for Dr. Pramanik.
Summary	The project is long term. The beginning is to develop an initial link between EMS and hospital information system for the purpose of collecting data for quality assurance and system development. After these steps are accomplished the team will discuss with Dr. Pramanik and Mr. Runt how to work with the IT department to continue this work. The consensus was that by spring of 2014 this task force should be prepared to move forward.	Followup with Dr. Pramanik and Mr. Runt as needed. Next meeting TBD.

Addendum II:

Recommendations for EPIC EMS CCD (Continuity of Care Document)

Contra Costa EMS identified the follow data elements for EPIC Health Information Exchange between our internal Contra Costa Health Services (CCHS) EPIC Informatics Team and Contra Costa EMS. These elements are being evaluated by the CCHS Informatics team to determine the following:

- Which elements are part of the current Community Physician CCD processes used to communicate key patient Emergency Department encounter and outcome information for patient care continuity.
- Which data elements are currently present in EPIC but not part of the Community Physician CCD. These data elements would require mapping to be integrated into an EMS-based CCD.
- Which data elements are not currently present in EPIC as part of any CCD and would require the development of additional fields to be populated by end users or pulled from other sources through interface mapping.

Those data elements are:

Demographics
- First and last names
- DOB
- Age
- Gender
- Race/Ethnicity
- Language Spoken
- Last 4 SSN
- Homeless (they apparently have a high-risk flag for this)
- Unique encounter number at hospital (hopefully linked by face sheet that ambulance folks get)
- Hospital Record # (helpful for looking at repeat visits)

Clinical
- Date/Time of ED arrival
- Date/Time of ED disposition (admit, discharge, etc.)
- Date/Time of Hospital Discharge (if admitted)
- ED Triage Acuity Level (5 level used by most systems)
- ED Disposition (Admit, discharge, morgue, transfer)
- Admission Site (ICU, Ward, OR, Stepdown)
- ED Diagnoses (ICD-9 or 10)
- ICD-9 E-codes (injury codes)
- Hospital Discharge Diagnoses (ICD-9 or 10)
- Hospital Disposition (e.g. home, morgue, transfer, SNF)
- Site of arrival (e.g. ED, PES (Psych Emergency) , L&D or other site)

Patient functional outcome if available (e.g. ambulatory, independent ADL status), if captured by EPIC.