



- This is the midyear 2010 report of the Contra Costa EMS QI Program Partnership
- The purpose of this presentation is to communicate EMS QI Program performance to date

# A New Phase: A 5-year plan

“A Patient-Focused Evidence-Based EMS System”



- Patient Safety
- Data Integration
- CEMSIS Participation
- EMS Patient Care Enhancement
- Enhanced Workforce Education and Training

High  
Reliability  
High  
Trust!

- In January 2010 a new 5-year plan for the EMS system was established
- A patient-focused, evidenced-based EMS system that positions us to become not only a high performance EMS System but a high-reliability and high-trust organization
- There are 5 key focus areas to achieve this and they include patient safety, data integration, CEMSIS participation, patient care enhancement and workforce engagement

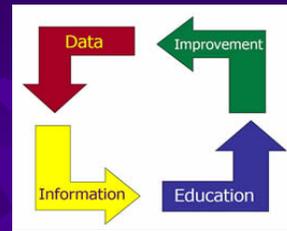


## Our 2010 Accomplishments

- STEMI System
  - 12-lead Transmission Project
  - NSTEMI to STEMI Center Protocols
- EMS Performance Trending
- Pediatric Surge & Disaster Preparedness
- Fire EMS Consortium & Facilities Partnerships
- Rapid Cycle Improvement Processes
- Stroke System Development

- EMS is increasingly being called upon to address patient, provider and system issues in a networked and collaborative way where the solution relies on each group or individual doing the right thing in the right way at the right time
- Contra Costa is a leader in formulating these solutions for our local community and continues to play a prominent leadership role on a regional and state-wide basis

# Patient/Provider Safety



## • Performance Criteria:

- “Doing the right thing when no one is looking”
  - EMS Event Reporting
  - Utilization of patient safety data

## • Opportunities:

- Expanded patient safety management with recognition of prehospital excellence
- Prehospital Safety Culture Assessment

- Fundamental to our CQI program is EMS Event reporting which started in June 2007
- We need a continued strong focus on patient safety and we need to be fearless in our ability to look at each event as an opportunity to improve the system
- This relies on our continued ability to support EMS event reporting processes and data review
- As we have gained experience with this tool, we have identified the need to expand skills in data analysis and data management
- EMS Event Reporting is also meant to capture excellence in our system, and efforts are needed to build pathways to consistently recognize the individuals involved in these exceptional events
- EMS has the opportunity to participate in a Safety Culture Evaluation that assesses factors, attitudes and practices that affect our system’s safety profile.

# EMS System Data Integration

## ☀ Performance Criteria:

- Data Sharing
- Patient Outcome Linkages
  - CARES, STEM, Trauma, Stroke
  - CEMSIS



## ☀ Opportunities

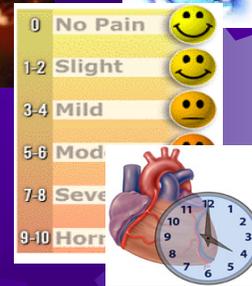
- Data Management and Analysis
- Performance Dashboards
- Reduce Excessive Data Handling
- One Patient One Record!

- Data management and integration continues to be one of our most challenging areas of work
- EMS is actively exploring using First Watch as a possible data hub for response time and clinical performance monitoring
- Our 12-lead transmission program is now underway with JMMC-Concord. Doctors San Pablo will be added to the pilot in the near future.
- EMS is already participating in the CEMSIS transmission program for Trauma and our first data extract for EMS data will be submitted on November 1<sup>st</sup> 2010
- We have an upgrade of MEDS (the AMR electronic prehospital medical record) coming in early 2011 which will bring that dataset in compliance with CEMSIS and NEMSIS
- These upgrades provide us the opportunity to update our local Contra Costa data dictionary bringing it in line with State (CEMSIS) and National (NEMSIS) standards
- The NIH/CDC Registry CARES (Cardiac Arrest Registry for Enhanced Survival) has been one of the most important data platforms in evaluating cardiac arrest patient outcome throughout our EMS system
- EMS is currently identifying hospital leads for the project. Once identified they will be oriented to the hospital web-based patient outcome reporting feature of the CARES registry
- Along the way we need to constantly evaluate what we do and why, to reduce ambiguity and duplication in our our documentation systems and support a seamless electronic patient record that could eventually be linked to the patient's hospital record

# EMS Patient Care Enhancement

## ● Performance Criteria: EMS clinical issues (pedi/adult) protocol enhancement

- STROKE System Development
- STEMI Transmission
- Pain Assessment and Treatment
- Head Trauma Triage Study
- Intra-facility Transport and CCT-P
- *HeartSafe* and Take Heart Programs
- Pediatric Surge Preparedness



## ● Opportunities: Workforce fully engaged supporting improved patient care outcomes

- Contra Costa has had a track record of excellence and innovation in patient prehospital care and we intend to continue to perform at a high level
- Patient care improvement requires a strong commitment from EMS leadership and stakeholders to support competency and accountability
- Listed are a number of areas currently being worked on to enhance patient care
- There will be continued opportunities for collaboration between prehospital and emergency departments moving forward on programs to enhance patient care such as STEMI and stroke

# Education and Training



- **Performance Criteria:**
  - **Providers actively engaged in learning**
- **Current Initiatives**
  - MCI Preparedness
  - Patient Pain Assessment and Management
  - Intra-facility Transfer
  - Patient Documentation
- **Fire-EMS Training Consortium Partnership**
- **Opportunities:**
  - Outstanding Field Decision Making and Patient Advocacy

- Education and training are essential to an effective QI program and the Fire EMS Consortium has been a leader in this area
- In this time of constrained resources increasingly more effective and efficient ways to support high level of competency within our EMS workforce need to be utilized
- These may include social media, computer assisted instruction, gaming, and simulation training
- Time, money, personnel resources, and motivation are barriers that need strong partnerships to overcome
- One solution is to expand use of web and self-paced learning
- Creating a culture of professional EMS development....will take time

## EMS Themes for the Future

- High Performance is no longer enough!
- EMS Economics
- Health Care Reforms Impacts
- Reliable System Metrics
- Performance “trending” a must
- Focus on where EMS makes a difference
- Adopt, Build and Promote a Safety Culture

Pinnacle Conference 2010

- At a recent EMS leadership conference the future of EMS was discussed and these were the themes

# High Performance > High Reliability, High Trust Systems



- ☀ Reliability
  - Response
  - Patient Care Performance
- ☀ High Trust
  - Patient Satisfaction
  - Safety
- ☀ Workforce Commitment

## High Reliability Organizations

- The transition from a high-performance system to a high-reliability system will require us to all work together to support our public and private provider agencies to become high-reliability organizations
- EMS believes our community has all the fundamentals in place to support these efforts

## EMS Systems will be impacted

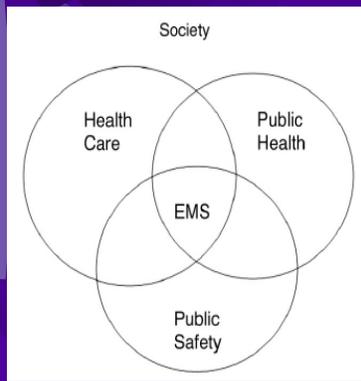


- New Requirements
- Public vs Private
- EMS System Impacts
- Strategic Spending
- New Services
- New Revenue Streams

### EMS As Health Provider Facilitators

- There are opportunities for EMS provider agencies, both public and private, to partner with hospitals in facilitating access to appropriate levels of patient care and to assure that patients do not unnecessarily return to the hospital after discharge
- EMS in many ways is uniquely qualified to be a facilitator of patient care, connecting those who cannot access care with more appropriate services and programs, thereby reducing emergency department saturation and wait times and improving EMS patient flow through the entire EMS system

# Health Care Partnerships ....EMS Part of the Solution



- **Accountable Care Organizations**
- **Reimbursement**
- **Data Utilization**
- **Hospital and EMS**
  - Appropriate use of ED
  - Appropriate use of 911
- **Public Health and EMS**
  - Prevention
  - Healthy Community Initiatives
- **Opportunity**
  - Improved matching of patients to services

- The Contra Costa EMS system is positioned to fully participate in all these opportunities
- New Accountable Care Organizations are forming in response to Health Care Reform and EMS has let leadership know we want to be at the table to support solutions to patient care access and outcomes

# EMS Performance Update



**Performance  
Monitoring**  
Performance Monitoring

- The following are some of the areas we have been evaluating at as we look at our EMS system performance

# EMS System Customer Satisfaction

## AMR Contra Costa County

### Customer Satisfaction Survey Results

Q2 2010

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I had the trust and confidence in the paramedic ambulance crew's professional skills.	373	97	11	4	3
The paramedic ambulance crew explained the care / treatment in a way you could understand.	321	127	22	9	3
The paramedic ambulance crew took steps to ensure comfort and minimize pain.	367	103	11	3	4
Overall, the service received from the paramedic ambulance company was excellent.	383	89	9	7	3
<b>Total Percentage</b>	<b>95%</b>		<b>3%</b>	<b>1%</b>	<b>1%</b>

*Based on 502 individual responses representing a 2.95% survey return*

AMR survey data 2010

- Customer Satisfaction is a key indicator of the EMS System performance
- This data comes from AMR and has consistently remained high at 93-95%
- Moving forward we are encouraging our other provider agencies to incorporate customer satisfaction as a part of provider performance metrics

# EMS Event Reporting A Power Tool for EMS Improvement

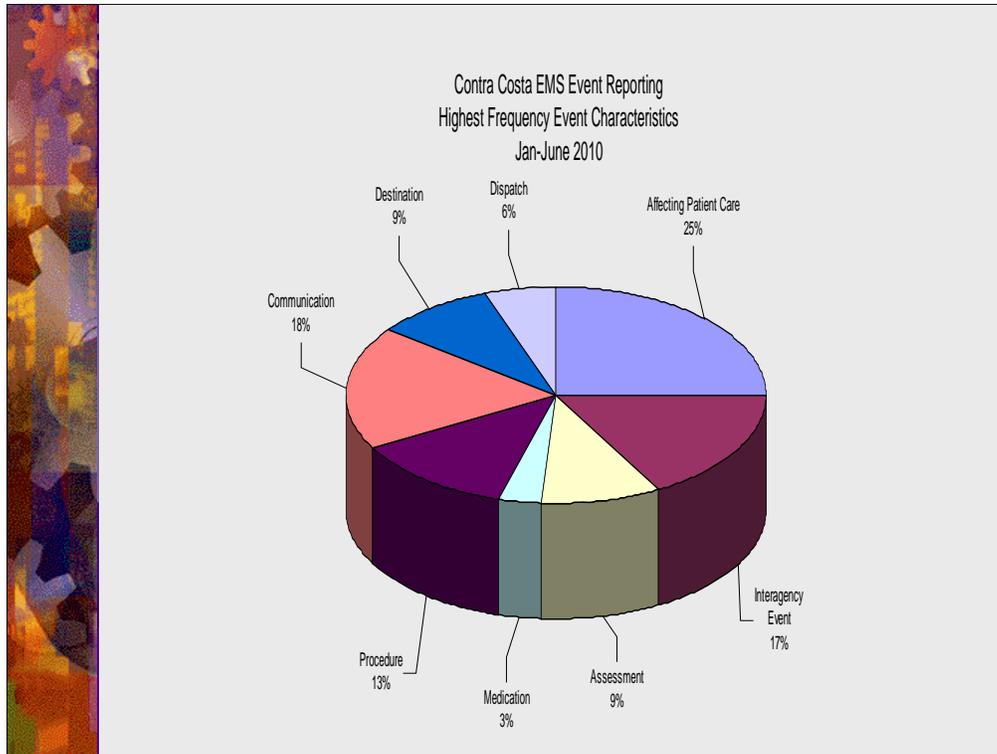


## Process Design Flaws

- ✓ Unnecessary steps, wasteful measures and/or data
- ✓ Unnecessary complexity
- ✓ Practices that fail to recognize need for preventive measures
- ✓ Ineffective Training
- ✓ Ineffective Communication
- ✓ Failures in Standardization

**“Reported Event = System Improvement Opportunity”**

- The biggest advantage that the EMS event reporting program provides is its ability to identify process design flaws
- It helps the system focus on gaps and failures of our process, policy, procedure that has not only failed the medic but also failed the patient



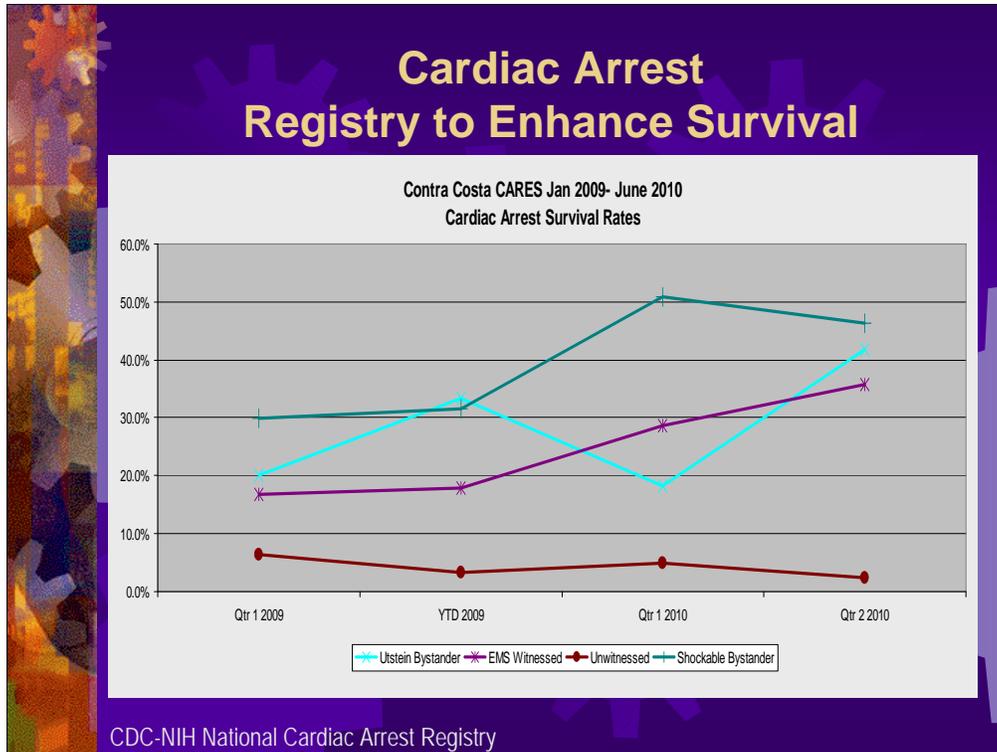
- EMS Event Reporting in the first 6 months of 2010 demonstrated:
  - 34 safety events
  - 3 exemplary care events
  - The time to close each safety event case averaged 18 day
- Our method of capturing EMS events provides us with indicators identifying gaps in EMS system processes that failed the patient or provider

# CEMSIS Project

(CEMSIS: California EMS Information System)

- ☀ Grant Application Accepted June 2010
- ☀ Trauma Data Submission Process in Place
- ☀ Medical Data Submission Process in Development
- ☀ First Data Extract Nov 1, 2010
- ☀ Grant Priorities: Data Management

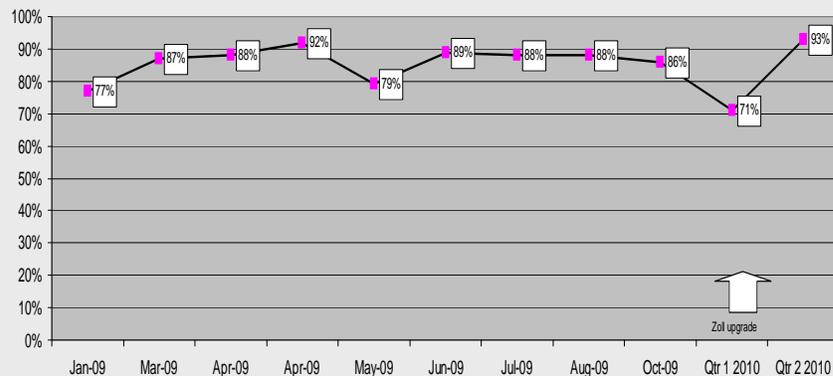
- CEMSIS stands for the California EMS Information System
- Data from the EMS electronic patient care record is able to be compiled and analyzed for EMS research, patient safety and quality improvement
- Contra Costa is far ahead of other EMS agencies in the use and analysis of prehospital data to improve patient care



- Cardiac Arrest Survival is considered the gold standard of the health of an EMS System
- Participation in the CARES registry enables local EMS agencies identify who is affected, when and where cardiac arrest events occur and how changes can be made to improve survival. Contra Costa has participated in CARES since January 2009
- It has helped us determine that the real opportunity for improved survival is by increasing Bystander CPR and use of AED in our community
- The *HeartSafe* Community Program led by Prehospital Care Coordinator Pam Dodson and Medical Director Joe Barger helps focus efforts to improve these areas
- The program will now be supplemented by a new program called Take Heart America, again led by Pam Dodson
- National goals have been set to improve Utstein survival (the type of cardiac arrest with the most chance of good outcome) to 50%
- The Contra Costa CARES data demonstrates significant improvement in cardiac arrest survival since programs like (*HeartSafe* Communities and Take Heart) have been adopted by EMS

# Documentation Completion Rate

Overall Zoll ePCR (All Calls with Patient Contact) Completion Rates  
EMS System Zoll ePCR Performance Run Chart  
Progress Report: Zoll upgrade impacts performance success  
Majority of training now complete....Compliance improves dramatically this quarter!



•Implementing a successful electronic prehospital medical record is very challenging and we are continuing to make progress in ePCR utilization

•EMS Policy Expectations:

•**Transport:** Preliminary draft ePCR or completed paper prehospital record on arrival at ED and ePCR completion within 24 hours

•**First Responders:** ePCR complete within 24 hours

•Our long-term goal is to eventually electronically push the prehospital record in real time into the hospital's medical record system

## Prehospital Skills

Midyear Skill	2010 Q1 Total	2010 Q2 Total	Midyr Total
Vascular Access-Peripheral	5690	5833	11523
External Jugular	7	4	11
IO	137	102	239
Oral Intubation	152	125	277
King Tube	55	50	105
CPAP	165	26	191
Cardioversion	14	2	16
External Pacing	45	13	58
Needle Thoracostomy	6	4	10
Auto Pulse	11	7	18
Lucas	12	12	24
Total Interventions	6294	6178	12472

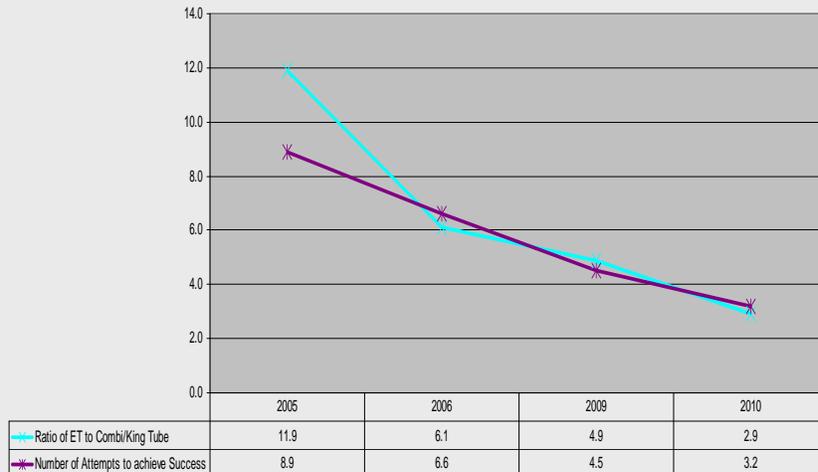
**Opportunity to Perform Skills Impacts Competency**

**How Do We Fill the Gaps?**

- The data is primarily demographic and helps us understand what skills are done most often in our EMS system
- The challenge continues to be how to maintain competency in our workforce with skills that are invasive (high risk) but are rarely needed by patients (low frequency)
- Most prehospital advanced life support skills fall into this category with the exception of Peripheral IV Access

# Advanced Airway Management

Contra Costa Advanced Airway Management  
Jan 2005 to June 2010

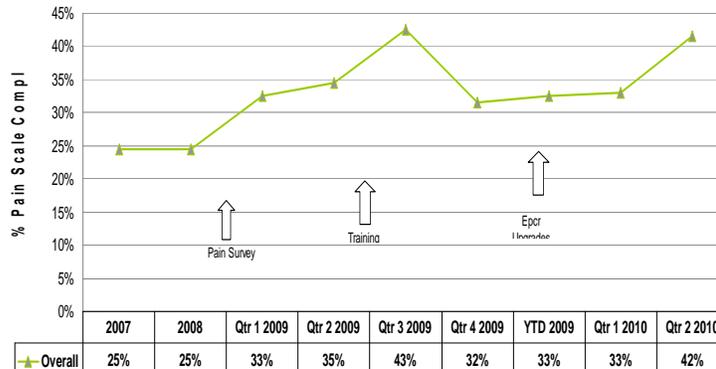


- In the coming year we are continuing to develop our metrics in the area of patient airway management so that it reflects the entire spectrum of prehospital intervention at our disposal including oxygen, CPAP, KING and Intubation
- Patient-focused effective airway management relies on **Experience** (psychomotor skills, knowledge) + **Environment** (scene safety, lighting) + **Patient Selection** (patient condition, airway characteristics) = **Rate of Success**
- There will always be a subset of patients that, even under the best conditions, we will not be successful with due to patient and scene factors outside of our control
- Above is an example of how a change in EMS patient care protocols using King Tube and criteria for reducing Advanced Airway Attempts are succeeding as our understanding of what is most important to patient outcome increases
- Prehospital protocol changes reducing advanced airway attempts and supporting uninterrupted compressions during CPR are key to successful outcomes
- Evidence shows that anything that interrupts compressions for significant periods of time does not benefit the patient

# Our Patients in Pain

## ☀ Painful conditions and EMS pain assessment

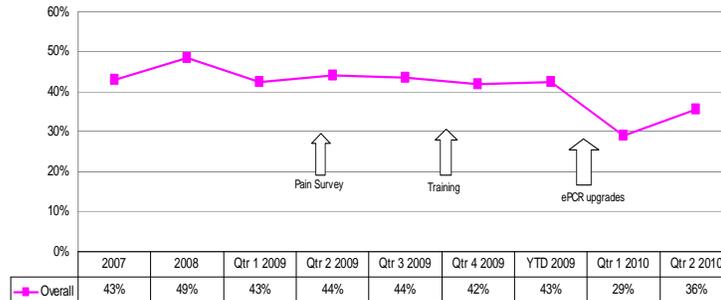
Documentation of Pediatric Pain Scale for Top 10 Painful Primary Impressions  
Performance Run Chart



- Pain assessment is one of our EMS System Clinical Performance Measures
- Pain is “the 5<sup>th</sup> vital sign” essential to a patient’s outcome, satisfaction and quality care
- Our current EMS system pain indicator measures the top 10 primary impressions for pain and whether a pain scale was documented as part of patient care
- Dr. Barger has just completed a more in-depth analysis of pain assessment and management in our system that will influence future prehospital protocols
- Contra Costa EMS data demonstrates the need for protocols to link pain assessment criteria to the intervention of pain management to improve patient comfort
- During the next year EMS provider agencies are continuing with education efforts to support appropriate pain assessment and management in the field
- Our goal is to have prehospital providers prioritize pain assessment and management for all conditions the same way they do in the assessment and management of chest pain

# Our Patients In Pain: Adults

Documentation of Adult Pain Scale for Top 10 Painful Primary Impressions Performance Run Chart



- What this shows is that our educational efforts have not been sufficient to change practice
- That is why Dr. Barger plans to incorporate pain assessment criteria into our protocols to facilitate sustained EMS system performance in the area of pain management

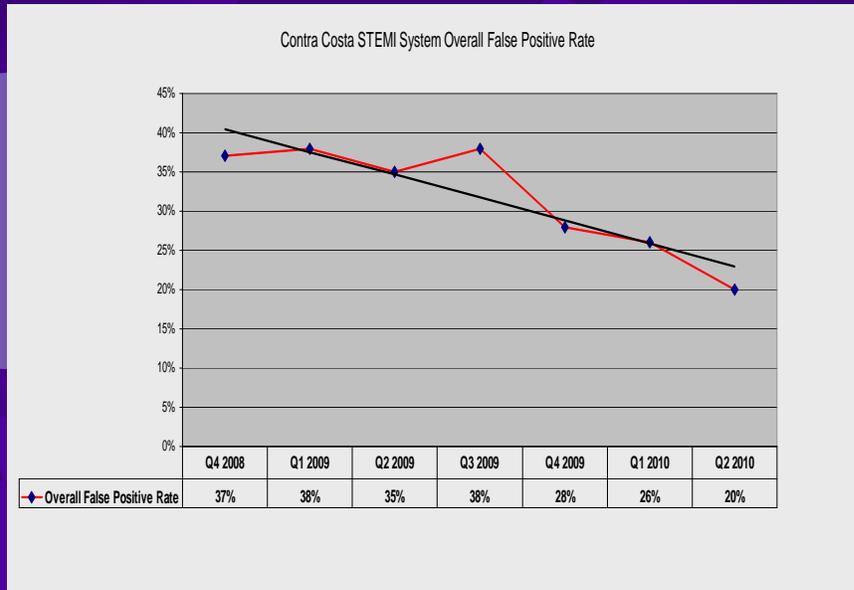
## Our High Performance STEMI System

<b>National Benchmark</b>	
<b>EMS to Intervention &lt; 90 minutes</b>	
<b>Local Performance Jan-Jun 2010</b>	
<b>EMS to Intervention</b>	<b>81 minutes</b>
<b>EMS Scene Time</b>	<b>13 minutes</b>
<b>911 to Intervention</b>	<b>88 minutes</b>



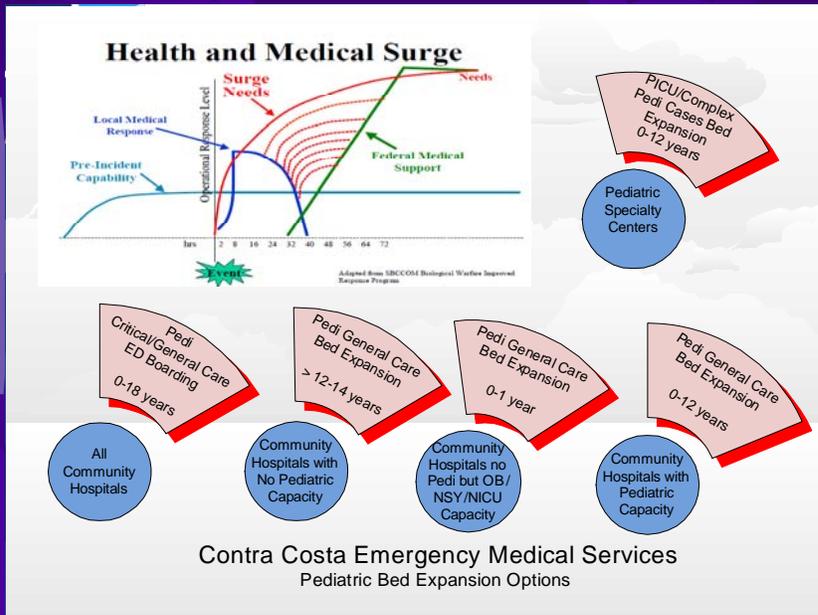
- We have several hospitals to recognize for their accomplishments supporting outstanding patient care in the area of heart disease and stroke:
  - Congratulations to JMMC Concord, Walnut Creek for their AHA (American Heart Association) Get with the Guidelines 2010 Triple Gold Achievement Award
  - Congratulations to Kaiser Walnut Creek Campus on their AHA Gold Plus 2010 Achievement Award
  - Congratulations to San Ramon Regional Medical Center on their AHA Gold 2010 Achievement Award
- Contra Costa EMS has worked with Doctors San Pablo and Kaiser Walnut Creek, which are 2 out of 6 hospitals in the state participating in a CDPH demonstration study
- The EMS and AMR Medical Directors are collaborating on two journal articles based on our STEMI system data
- We continue to have inquiries from local, state and out-of-state systems developing their STEMI agencies looking at Contra Costa as a model
- We are working collaboratively with Solano and Alameda County STEMI Systems
- Best of all we have a strong transparent patient focused CQI process
- Congratulations to all our STEMI system partners

## Quality Efforts to Reduce False Positives



- One of the most outstanding accomplishments has been the steady reduction of false positives in the EMS system
- The opportunity with the 12-lead transmission pilot is to drive that false positive rate into the single digits!

# Pediatric/Neonatal Surge Preparedness



- Contra Costa is actively supporting local, regional and state planning for pediatric/neonatal surge preparedness through education and coalition building
- This year pediatrics will be strongly incorporated into our statewide disaster exercise in November 2010
- The exercise will help test our model for pediatric/neonatal surge using 5% flex in both the tabletop and functional exercise

## Moving Forward: A Commitment to the Systems Approach to Patient Care



**A Versatile, Committed and Skilled Workforce Required**

- We will need to redouble our efforts to supporting our workforce for the journey ahead

## Contra Costa Team EMS!



Positioned to Become California's  
First High Reliability EMS System

### •In Summary

- Contra Costa EMS System Partners have effectively built a system of EMS CQI infrastructure to support an accountable program of quality prehospital care
- We continue to demonstrate excellence and have been recognized by national experts in STEMI, CARES, AHA, Society of Chest Pain, Quality, Risk Management
- We have set standards and created programs that have set an example for other EMS systems in California and across the country
- We need to recognize and celebrate these accomplishments and the teamwork that has been required to get there
- There is much work still to be done and the work requires expanded skills in data management
- However with all this in place Contra Costa is positioned to become California's First High Reliability EMS System!
- If you would like to learn more about our QI program please visit our website at [www.cccems.org](http://www.cccems.org)
- This presentation is respectfully submitted by Pat Frost RN, MS, PNP, Assistant EMS Director, Contra Costa County