



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

Overall Goal: EMS QI System Development



- Final year of 3 year plan.
- Establish comprehensive county-wide QI program focused on best practices and improved outcomes.

•2009 is the last year of our EMS system QI program development plan

Define & Implement EMS System Key Performance Indicators



Dynamic, Evolving & a Moving Target

- We have actively begun the processes of selecting our key performance indicators, building them out, automating and reporting on them
- Time consuming process requiring analysis and planning
- This is going to evolve over a longer period of time.
- Why? Because this is an evolving area that is dynamic and changing constantly....A moving target!
- Performance measures and indicators for EMS systems have not been universally defined.
- Contra Costa is currently positioned to demonstrate leadership on a local, state and national level in this area.

2008 Accomplishments

- EMSC Plan Update
- STEMI System
- QI Program Progress
- Consortium Quarterly Training
- Field handoff standard established (SBAR)
- Pediatric Simulation Training (METI)
- Pediatric Medication/ Pain Dosing Guidelines
- Pedi/Adult advanced airway improvements
- Website enhancements
- EMS Event (Patient Safety) reporting

- It is important to acknowledge the accomplishments of our hardworking EMS stakeholders who have supported these activities.
- In 2008 these are just some of the highlights.

2009: Goals In Review

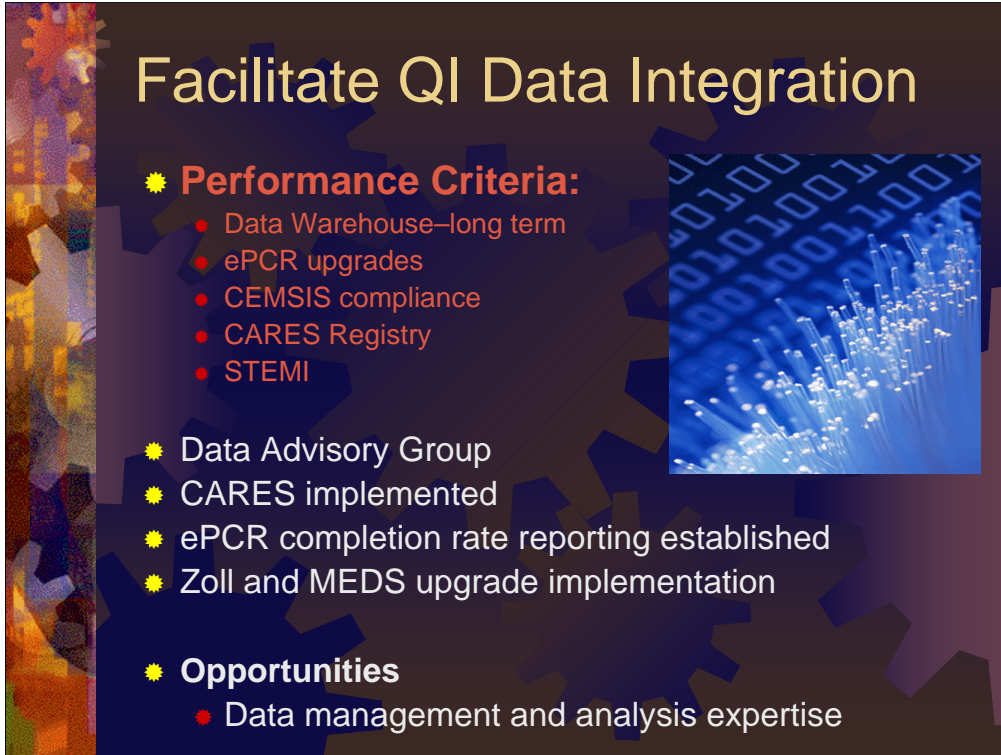


- Facilitate QI Data Integration
- Stakeholder QI reporting
- Patient Safety
- Patient Care Improvement
- Standard Building

- Our 2009 Goals continue to build on our previous objectives.
- We have again established performance criteria for each goal.
- What follows is a quick review of our annual goals and our performance to date.

Facilitate QI Data Integration

- * **Performance Criteria:**
 - Data Warehouse—long term
 - ePCR upgrades
 - CEMSI compliance
 - CARES Registry
 - STEMI
- Data Advisory Group
- CARES implemented
- ePCR completion rate reporting established
- Zoll and MEDS upgrade implementation
- * **Opportunities**
 - Data management and analysis expertise



- Continues to be one of our most challenging areas of work
- EMS leadership is on board with concept of data warehouse (long term).
- Zoll core performance measures ePCR completion, skills and pain assessment reporting is established
- Upgrades of the Zoll/MEDS electronic patient care record systems are in progress. This will provide us the opportunity to update our local Contra Costa data dictionary
- CARES (Cardiac Arrest Registry for Enhanced Survival) is up and running
- We have active processes in place to monitor MEDS and Zoll ePCR compliance and establishing feedback mechanisms to agencies and providers involved.

Stakeholder QI reporting

- Performance Criteria:
 - Stakeholder quarterly reporting compliance
- QI Activity reporting > QI Performance reporting
- Opportunities: Active stakeholder performance and risk management



- Established set for routine quarterly reporting and moving from activity reporting to performance reporting based on our core EMS system performance measures
- Need to build data management and risk management skills among stakeholders to address wide variability in comfort levels with this performance based approach

Patient Safety

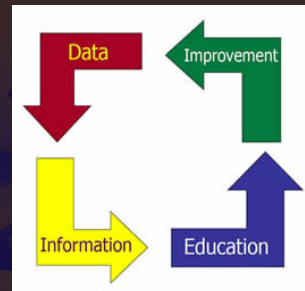
☀ Performance Criteria:

● EMS Event Reporting

- Started June 2007
- Quarterly EMS event reporting to stakeholders
- Support stakeholder implementation

☀ Opportunities:

- Expanded patient safety management with recognition of prehospital excellence



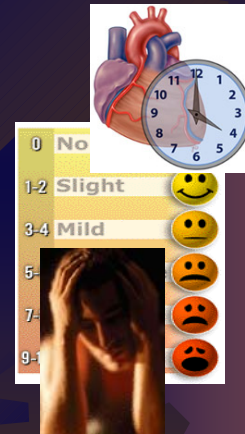
- We have continued with our strong focus on patient safety
- EMS event reporting processes and data review in place
- Stakeholder participation variable but active

EMS Patient Care Improvement

- **Performance Criteria: EMS Clinical issues (pedi/adult) monitoring and protocol enhancement**

- PHCG Field Manual
- STEMI System Management
- Pain Assessment and Treatment
- Behavioral Emergencies and Restraint
- Unexpected death scene support
- Helicopter task force protocol implementation
- SBAR handoff implementation
- Heart Safe Communities
- Pediatric Disaster Preparedness

- **Opportunities: Development of Stroke System**



- Patient care improvement is an area has strong commitment from EMS leadership and stakeholders in all areas to support competency and accountability.
- These are some of the highlights of what EMS System stakeholders are currently working on.
- 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:**
 - **Standard Building and Curriculum Development**
- * **Current Initiatives**
 - Documentation & SBAR handoff implementation
 - Pain Assessment & Reduce False STEMI Activations
- * **Fire-EMS Training Consortium Partnership**
 - Q1: OB Emergencies & Helicopter Utilization
 - Q2: Neuro Emergencies & Street Drugs
 - Q3: Pediatric Pain and Field Decontamination
 - Q4: EMS Update: Field manual, New protocols, STEMI
- * **Opportunities:** Promote culture of learning

•Education and training is essential to an effective QI program and the Fire EMS Consortium has been a leader in this area.

- Quarter I: OB Emergencies, Helicopter Utilization
- Quarter II: Neuro Emergencies and Street Drugs
- Quarter III: Pediatric Pain and Field Decontamination
- Quarter IV: EMS Update: STEMI

•Need to find increasingly more effective and efficient ways to support high level of competency within our EMS workforce.

•Time, money, personnel resources, and motivation are barriers in the area.

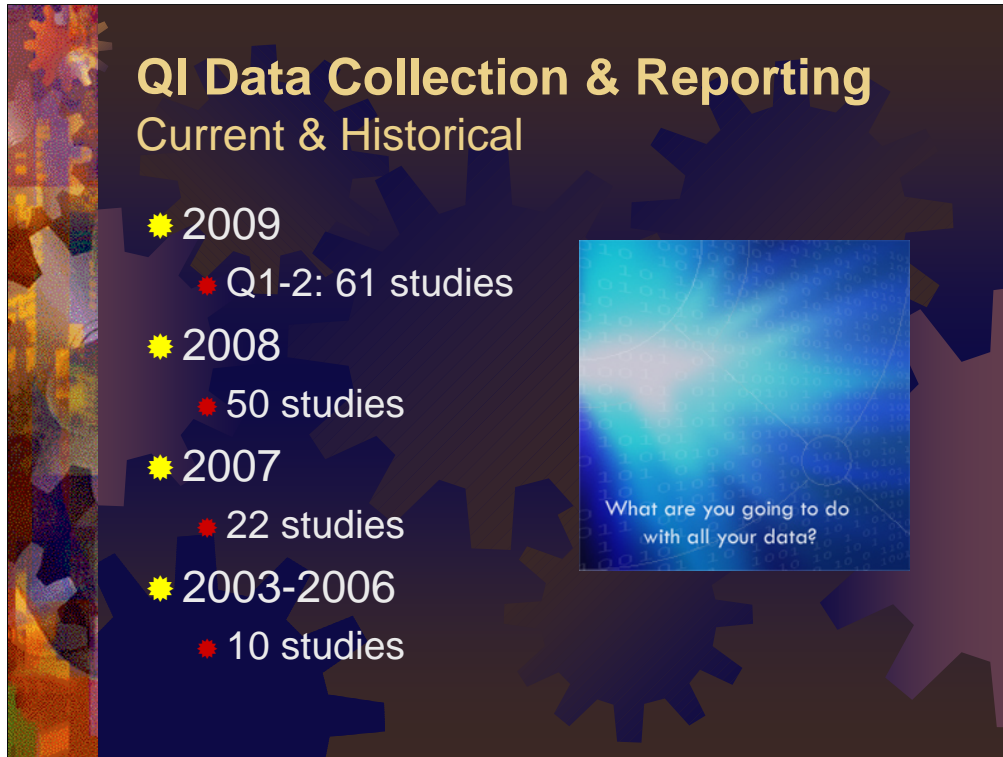
•One solution expand use of web and self paced learning. Create a culture of professional EMS development....this will take time.

EMS Performance Update



**Performance
Monitoring**
Performance Monitoring

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



- Even with limited resources we are starting to explore with data the four corners of our EMS system.
- This increased accessibility to data is facilitating decision making.
- When we have a system or patient care decision we now rely more and more on identifying and validating the issues.
- It helps us understand workflow, process and opportunities to improve.
- The challenges ahead are associated with appropriate analysis, prioritizing what is important to look at.
- We will need to be disciplined in our approach so that we can effectively manage the information the data can bring us.

EMS System Customer Satisfaction

Customer Satisfaction Survey Results					
Q1 to Q2 2009					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I had the trust and confidence in the paramedic ambulance crew's professional skills.	169	49	6	2	3
The paramedic ambulance crew explained the care / treatment in a way you could understand.	145	59	17	3	4
The paramedic ambulance crew took steps to ensure comfort and minimize pain.	167	44	12	0	6
Overall, the service received from the paramedic ambulance company was excellent.	174	43	7	1	4
Total Percentage	93%		5%	1%	2%
<i>Based on 230 individual responses</i>					

AMR survey data 2009

- Customer Satisfaction remains consistently high at 93%
- This is consistent with the satisfaction rate reported in 2008
- Survey return rate reflects approximately 0.9% of all patient transports (about 26,000 between Jan-June 2009)

EMS Event Reporting- Q1-2: 2009

- **27 events out of approximately 26,000 transports**
 - 0.1% of all prehospital contacts
 - 7 Exemplary Care
 - 20 reports requiring QI review
- **Ave: 13 days to close case**
 - > 50% required 2.5 days to close
 - 45% reoccurring type events
 - 78% being monitored for similar events
 - No Safety Code 1798.200 violations
- **Key Intervention: 70% education**
 - Primarily human error (the honest mistake) amenable to training

- Vast majority of events reflect decision making issues between providers based on ineffective communication and/or training issues
- This patient safety reporting system is still evolving.
- Midyear events represent 0.1% of all prehospital patient contacts (consistent percent)
- We are beginning to get better at reporting excellence in our system to keep things in balance and give the proper perspective on these issues.
- One report of maltreatment not substantiated. Communication issue was root cause.
- EMS events are the system's red flags for every event there are many more that go unreported.
- Need to continue to support culture of non-punitive positive corrections.
- This year Contra Costa EMS was contacted in June by Carol Hafley, MHA, BSN, RN, Assistant Director, Missouri Center for Patient Safety tasked with developing a reporting system for the state of Missouri EMS, looking at our EMS Event Reporting model as a best practice approach to patient and provider safety reporting.

Top EMS Event Characteristics

Event Characteristics	#	%
Interagency Event	16/20	80%
Affected Patient Care	14/20	70%
Communication	14/20	70%
Unexpected complication	9/20	45%
Destination	8/20	40%
Assessment	7/20	35%
Response	6/20	30%
Pediatrics	5/20	25%

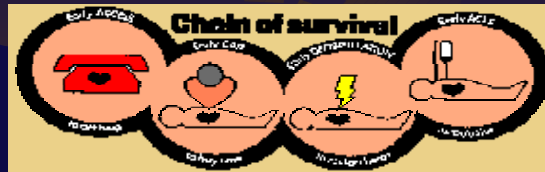
Event characteristics are descriptive data points

- Event characteristics are just descriptive data points that when pulled retrospectively can give us some insight into areas that may need improvement.
- Events reported are evaluated and scored.
- One EMS event can have numerous event characteristics.
- Reportable events continue to have communication related characteristics.
- Because these are small numbers interpretation of percentages and trends is limited

Cardiac Arrest Registry to Enhance Survival (CARES)

Cardiac Survival Measure	Contra Costa	National
Overall Cardiac Arrest Survival	7.2%	6.9%
Bystander Witnessed Arrest Survival	11.3%	10.1%
VF/VT Survival (Utstein)	24%	23.3%
Unwitnessed Arrest Survival	2.7%	3.5%
VF/VT with Bystander CPR/AED	26%	21.4%

CARES data Jan-June 2009



- Cardiac Arrest Survival is one of the most well established and important measures of EMS System Performance
- In January 2009 Contra Costa EMS joined the CDC/AHA internet-based registry.
- The goals of CARES are to help local EMS agencies identify who is affected, when and where cardiac arrest events occur and how changes can be made to improve survival.
- Opportunity for improvement in survival – Increase Bystander CPR and use of AED in our community
- Our new Heart Safe Community Program led by Prehospital Care Coordinator Pam Dodson and Medical Director Joe Barger helps focus efforts to improve these areas.

Documentation Completion Rate

- **QI Expectation: 2 and 24 hours**
- **Time (in hours) to completion rates (Zoll):**

Jan - Jun 2009	Average
Overall ePCR completion rate	84%
Average time to completion	11.9 hrs

- **Completed ePCR (MEDS) delivery to ED**
 - 58-69% print stamp (3-5% decrease)
 - 99-100% with fax
- **Opportunity:**
 - Improved draft ePCR printing



- **EMS Agency Expectations: Transport:** Preliminary paper or ePCR on arrival to ED. Includes preliminary First Responder PCR. **First Responders:** ePCR complete within 24 hours
- What we have learned over the last year is that compliance with documentation completion and printing is an issue that requires active management and feedback to providers who are not performing to the level expected. With this active management improvement is not only possible but can be maintained at a high level.
- We also know that the documentation compliance for the system are not where they need to be. This provides an opportunity for us to improve our processes and training in the quality and compliance with documentation.
- Draft paper ePCR primary mechanism for Fire agencies to pass onto transport or to ED.
- Zoll ePCR implementation making significant improvements but still a long way to go.
- Major challenge is documentation accuracy....next large quality effort to move forward.
- With the upcoming upgrades in both MEDS and Zoll there is an opportunity for us to improve documentation quality by effectively communicating documentation expectations.

Field Competency: Skills

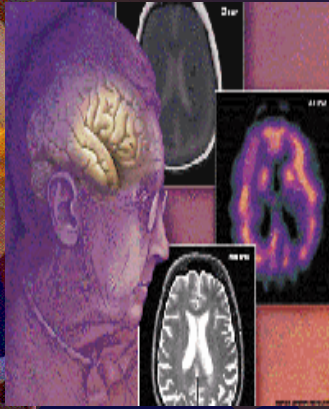
Zoll /MEDs data Jan-Jun 2009

Skill	Number attempts	Success per Attempt (%)	Historical 2003-2007
IV-Zoll	2,234	79%	82%
IV- MEDs	10,182	78%	82%
Intubation-Zoll	174	78%	70-83%
Intubation-MEDs	217	64%	70-83%
IO-Zoll	44	93%	80-100%
IO-MEDs	162	95%	80-100%
King-Zoll	60	92%	80-83%
King-MEDs	52	100%	80-83%

Question: Is procedure success rate = competency?

- Procedure success rate is a simple and common way for EMS Systems to look at competency. Our current reports to capture this data still need work. The data is not perfect but gives us an idea of what is happening.
- With advent of King tube management of advanced airway success is more complicated and needs to be looked at comprehensively considering both King and ETT intubation.
- Procedure success depends on numerous factors including many that are out of control of the EMS provider e.g. environmental conditions, difficult patient anatomy etc.
- Competency based simulation and manikin training in helps but not the same as “the real thing”.

High Frequency High Risk Elderly (>65) Head Trauma



- **The culprit...FALLS!**
- **4,200-4,600 EMS calls per year**
- **Leading cause of accidental death in Contra Costa**
- **11% of all trauma center patients yet 34% of trauma center deaths**
- **Question:** Is it possible to improve outcomes by triaging these patient differently?

- Falls in the elderly is an excellent example of how Contra Costa is looking at patient care in partnership with treating facilities.
- What we do know is that falls in the elderly make up a substantial portion of our EMS response in Contra Costa County and are a source of significant mortality and morbidity
- 50% of elders who fall do not return to their previous level of independence
- Contra Costa EMS is a partner with the Contra Costa County Fall prevention program
- This year Dr. Barger and the trauma center leadership will be doing a study to look at opportunities to improve outcome in this population
- The use of data like this provides EMS systems with opportunities to participate in the growing trend of prehospital and receiving center partnerships to improve patient care.

Base Contact Volume Decreasing Question: Is this a good thing?



- **2,889 calls in 2008**
- **Ave: 7 calls/day**
 - Trauma 78%
 - Medical 18%
 - Arrest 3%
- **Trend : Steady reduction in base call daily volume**
 - 2002: 12/day
 - 2008 7.9/day

- Understanding our EMS system workflow trends over time can help us ask questions we would ordinarily not ask if we did not have this information
- What we do know is that high risk communication is a skill that can be learned and evaluated for effectiveness.
- Our base call review gives us the ability to give feedback to parties when communication goes sideways
- The recently adopted SBAR communication standard is a tool to support effective communication in high risk situations

EMS Patients in Pain

☀ Painful conditions and EMS interventions

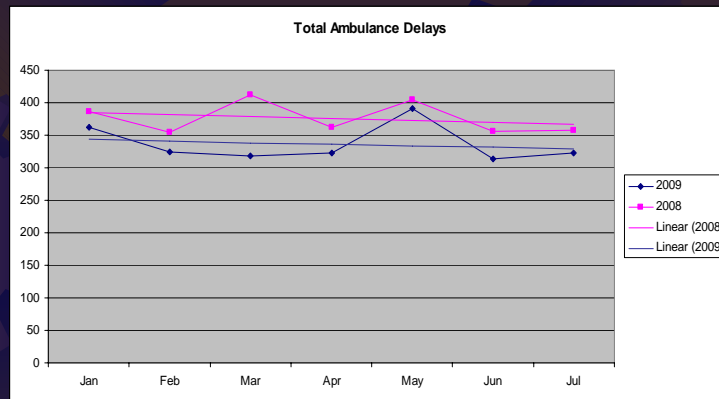
Primary Impression	Pain Scale	Total	%
Chest Pain & NS-Chest Pain	1,309	2,426	54%
Burn	8	43	19%
Abdominal Pain	542	542	25%
Non-traumatic Pain	471	2,079	23%
Blunt Injury	1,225	6,089	20%
Penetrating Injury	60	60	14%
Headache	95	466	20%
Totals	3,710	13,711	28%

MEDs Jan-Jun 2009

- In Qtr 1 2009 we identified the need for improved pain assessment.
- A survey was conducted and an educational program was developed by the Fire EMS Training Consortium which has been recently distributed as a self study module.
- Our survey found that poor performance in this area was a reflection of numerous factors including documentation failure, provider biases, and training.
- Not all providers have been educated to the expectations for pain assessment is the 5th vital sign and how important it is to the quality of patient care.
- That training is now available and agencies are moving forward with implementation.
- Over time we will see how this performance measure improves, but it will not improve unless we make it a priority.
- EMS system needs to prioritize pain assessment and management the same way we do in the assessment and management of Chest Pain.

EMS Patient Off-Load Times

National EMS System Goal < 20 minutes



- Local Trigger > 45 minutes
- 2008 to 2009 Comparative Data (MEDs)
 - Overall Field to Facility calls down slightly
 - Delays > 45 min reduced overall
 - EMS call volume not always correlated with delays

- Why measure? Patient Safety, 911 System Impacts, EMTALA, Paramedic Scope
- Small reduction in EMS Volume (Calls) at our high volume facilities representing of our Eds. EMS transport volumes at other facilities similar to previous year.
- Overall delays > 45 minutes have been reduced
- Increased EMS volumes not necessarily associated with off-load delays but high volume hospitals do have consistently higher frequency of events
- ED patient through put a complicated issue with significant quality focuses within each facility and requires hospital leadership to resolve
- EMS controls few of the factors that contribute to off-load delays

Our High Performance STEMI System

“Some of the best metrics in the country”

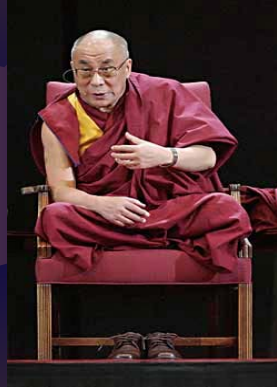
Society of Chest Pain Accreditation Director July 2009

National Benchmark	
EMS to Intervention < 90 minutes	
Local Performance 2009 Q1	
EMS to Intervention	75 minutes
EMS Scene Time	12 minutes
911 to Intervention	83 minutes



- Contra Costa has a “true” STEMI System recognized by the Society of Chest Pain Accreditation Director in July during their survey of the JMMC Concord and Walnut Creek Campuses
- Congratulations to JMMC on their Society of Chest Pain Center Recommendation for accreditation!
- Sutter Delta joined our system on Aug 17th 0800 adding a strategic location for our East County Community
- The location of our STEMI System now spread out throughout the county helps us to achieve these outstanding outcomes
- We are now receiving STEMI patients from out of county locations like Solano (2-3 in the last few months)

Contra Costa EMS System QI Program....Lessons Learned!



- Performance variations never disappear....they are managed.
- We need to learn and lead at the same time!
- Training and timely feedback improves performance.

Building a Culture of Process Improvement
Can Be Exciting! (e.g. STEMI)

- There are some clear knowns.....EMS provider performance is linked directly to training and feedback
- Performance area variations are not problems that are ever solved permanently....they are managed
- Goal needs to be decreasing the variability in performance
 - Clear messages throughout the EMS system
 - Needs and data based curriculum development
 - Increased resources in data management and analysis
- Effective collaboration to target performance improvement.

Moving Forward....What We Need to Know!



- No slam dunks
- Barriers always exist
- Data skills take time to learn
- Simplification improves success
- Respectful communication
- Emphasize positive corrections
- Technology is a two-edged sword
- Stress/fatigue affects capacity to improve e.g. H1N1

Mutual Support and Persistence

Keys to Long Term Success!

- Over the last 3 years working together Contra Costa EMS Stakeholders have accomplished some amazing outcomes.
- This Fall with the advent of H1N1 we are likely entering a period that will test our system to the max.
- We will need to constantly re-prioritize our goals and objectives and be prepared to make slower progress on some fronts.
- However over time we will be able to continue to make progress fully building out our system performance measures



- Contra Costa EMS System Stakeholders have effectively built a system of EMS CQI infrastructure to support an accountable program of quality Prehospital care.
- We have demonstrated excellence and have been recognized by national experts in STEMI, CARES, AHA, Society of Chest Pain, Quality, Risk Management that we have come up with some great programs.
- We need to recognize and celebrate these accomplishments and the teamwork that has been required to get there.
- There are much work still to be done and the work requires expanded skills in data management.
- We are all in this together to build a EMS System QI Program of real excellence!



Questions?
Contact Pat Frost, EMS Assistant Director
pfrost@hsd.cccounty.us

- If you have questions about this presentation please contact Pat Frost EMS Assistant Director at pfrost@hsd.cccounty.us