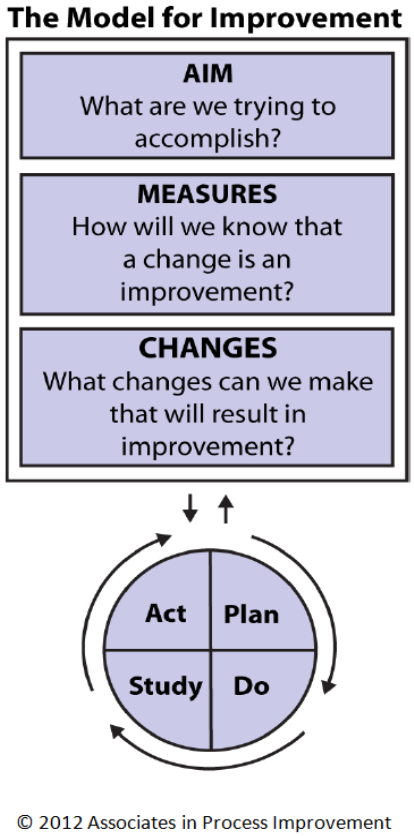

Alameda County Emergency Medical Services Quality Improvement Program Plan

9/21//2017

California Code of Regulations
TITLE 22. SOCIAL SECURITY
DIVISION 9. PRE-HOSPITAL EMERGENCY MEDICAL SERVICES
CHAPTER 12. EMS System Quality Improvement

The URL for the ***EMS Quality Improvement Program (EQIP) Template from EMSAAC*** is:

http://www.emsa.ca.gov/Media/Default/Word/EMSAACQITemplate.doc

"Our purpose is to reduce pain and suffering and improve the health of our patients."

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Introduction

The Alameda County EMS Agency is a patient centered Local Emergency Medical Services Agency. With this patient centered perspective, Alameda County EMS understands that the practice of medicine is dynamic. We are committed to adapting the service we provide to our continually changing community. We believe in continuous education and Quality Improvement of ourselves, our providers and our community. Input from field providers and the public we serve is essential in developing and improving this plan.

From ***The Institute of Medicine***, Alameda County EMS has adopted a shared vision of six specific aims for Quality Improvement. These aims are built around the core need for health care to be:

***Safe*:** Avoiding injuries to patients from the care that is intended to help them

***Effective*:** Providing services based on scientific knowledge to all who could benefit, and refraining from providing services to those not likely to benefit

***Patient-centered*:** Providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions

***Timely*:** Reducing waits and sometimes harmful delays for both those who receive and those who give care

***Efficient*:** Avoiding waste, including waste of equipment, supplies, ideas, and energy

Equitable: Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status

About This Plan

This plan is a guideline for each Alameda County EMS provider's Quality Improvement (QI) Plan. Each EMS provider is required to submit its QI Plan to the EMS Agency for review and approval.

All pragmatic improvement plans, and each improvement activity within the plan, work best when they are simple and focused.

The Alameda County EMS Quality Improvement Plan integrates Quality Improvement models from a wide variety of sources including Results Based Accountability, Baldrige, Deming and Six Sigma. While these Quality Improvement models, on the surface, seem to vary in their methodologies, they all focus on answering fundamental questions. ***(Mike Taigman)***

This Quality Improvement Plan is structured to answer 5 fundamental questions:

"Why do we do what we do?"

"How do we see ourselves in the future?"

"What governs our day to day decisions?"

"How are we doing?"

"What are we doing to make things better?"

I. Alameda County EMS Mission – Vision – Values

Mission *"Why do we do what we do?"*

The Alameda County EMS mission is to ensure the provision of quality emergency medical services and prevention programs to improve health and safety in Alameda County.

"Our purpose is to reduce pain and suffering and improve the health of our patients."

Vision *"How do we see ourselves in the future?"*

The Alameda County EMS vision is to explore new frontiers while creating an environment where collaboration and consensus building thrive among staff and stakeholders.

*"We look to **measurably** reduce pain and suffering and improve the health of our patients."*

Values *"What governs our day to day decisions?"*

Alameda County EMS values a caring environment sustained by empowerment, honesty, integrity, and mutual respect. We embrace excellence through innovation, teamwork, and community capacity building.

STARCARE is a values based checklist developed by paramedic author/EMS educator ***Thom Dick***. It has been adopted by the current largest ground transport provider in Alameda County, Paramedics Plus. STARCARE promotes a patient centered; values based culture as a guide for providers for decision making.

- ***Safe -- Were my actions safe for me, for my colleagues, for other professionals and for the public?***
- ***Team-based -- Were my actions taken with due regard for the opinions and feelings of my co-workers, even those from other agencies?***
- ***Attentive to human needs -- Did I treat my patient as a person? Did I keep him or her warm? Was I gentle? Did I use his or her name throughout the call? Did I tell him or her what to expect in advance? Did I treat his or her family and / or relatives with respect?***
- ***Respectful -- Did I act toward my patient, my colleagues, my first responders, the hospital staff and the public with the kind of respect that I would have wanted to receive myself?***
- ***Customer accountable -- If I were face-to-face right now with the customers I dealt with on this response, could I look them in the eye and say, "I did my very best for you."***
- ***Appropriate -- Was my care appropriate - medically, professionally, legally and practically, considering the circumstances I faced?***
- ***Reasonable -- Did my actions make sense? Would a reasonable colleague of my experience have acted similarly under the same circumstances?***
- ***Ethical -- Were my actions fair and honest in every way? Are my answers to these questions honest with integrity?***

II. Structure, Organizational Description, Responsibilities

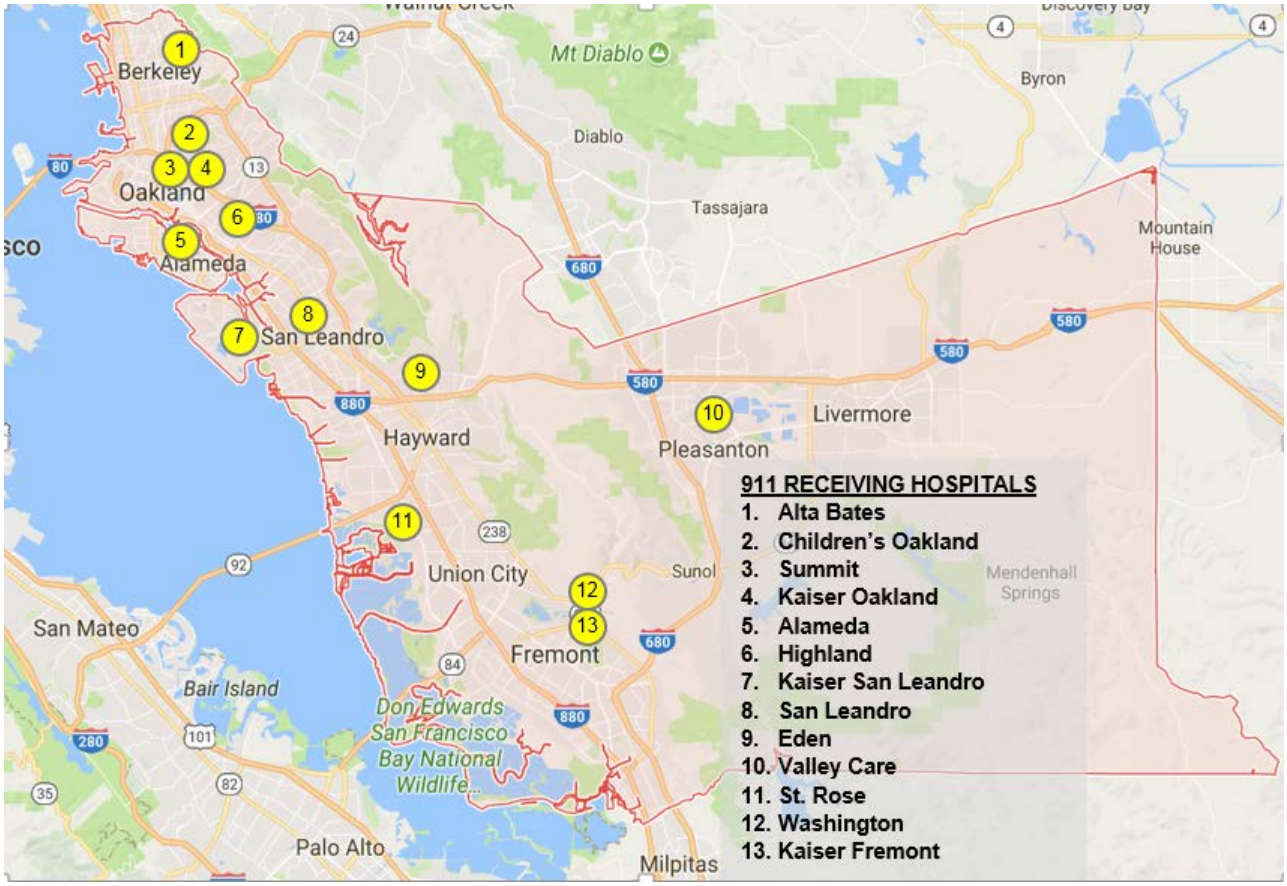
"Why do we do what we do?"

"What are we doing to make things better?"

Alameda County Demographics

Alameda County is both geographically and demographically diverse. The entire county covers 739 square miles and includes highly dense urban areas; the shoreline of San Francisco Bay is on the western border, low and high density residential areas, and a high concentration of industrial sites, and rural, wilderness and parks areas that stretch to the east. More than 1.6 million people live in Alameda County.

The City of Oakland, in the north part of the County, is the largest city with a population of 412,000+. Other large cities include Fremont in the south (210,000+), the City of Hayward in the mid-part of the County (146,000+), and the City of Berkeley in the northern sector of the County (105,000+). Approximately 160,000+ people reside in the cities of Livermore, Dublin and Pleasanton that are located in eastern Alameda County.



EMS Overview

The Alameda County EMS system responds to approximately 160,000 calls annually for medical emergencies. Generally a fire department unit and a Paramedics Plus ambulance responds to emergency medical calls. Alameda, Albany, Berkeley and Piedmont fire departments provide ambulance transport services in addition to first response. In the remaining areas of the county, fire departments respond with ALS fire units and Paramedics Plus provides emergency transport services under contract with the County. Below is a list of the EMS providers in Alameda County.

EMS System Providers

ALS Ground Transport Providers

- Alameda City Fire Department
- Albany Fire Department
- Berkeley Fire Department
- Piedmont Fire Department
- Paramedics Plus

First Responder ALS (FRALS)

- Alameda County Fire Department
- Albany Fire Department
- Camp Parks Fire Department
- Berkeley Fire Department
- Piedmont Fire Department
- Fremont Fire Department
- Hayward Fire Department
- Livermore-Pleasanton Fire Department
- Oakland Fire Department
- East Bay Regional Parks Fire Department

*ACFD at Livermore Lab transports patients from its facility with fewer than 100 responses

Air Transport Providers

- REACH
- CALSTAR
- Lifeflight
- East Bay Regional Parks

Interfacility Transport (IFT) Providers

- AMR
- Arcadia
- Bay Medic
- Bayshore
- Falck
- Falcon
- Norcal
- Pro Transport-1
- Royal
- Westmed

Receiving Facilities

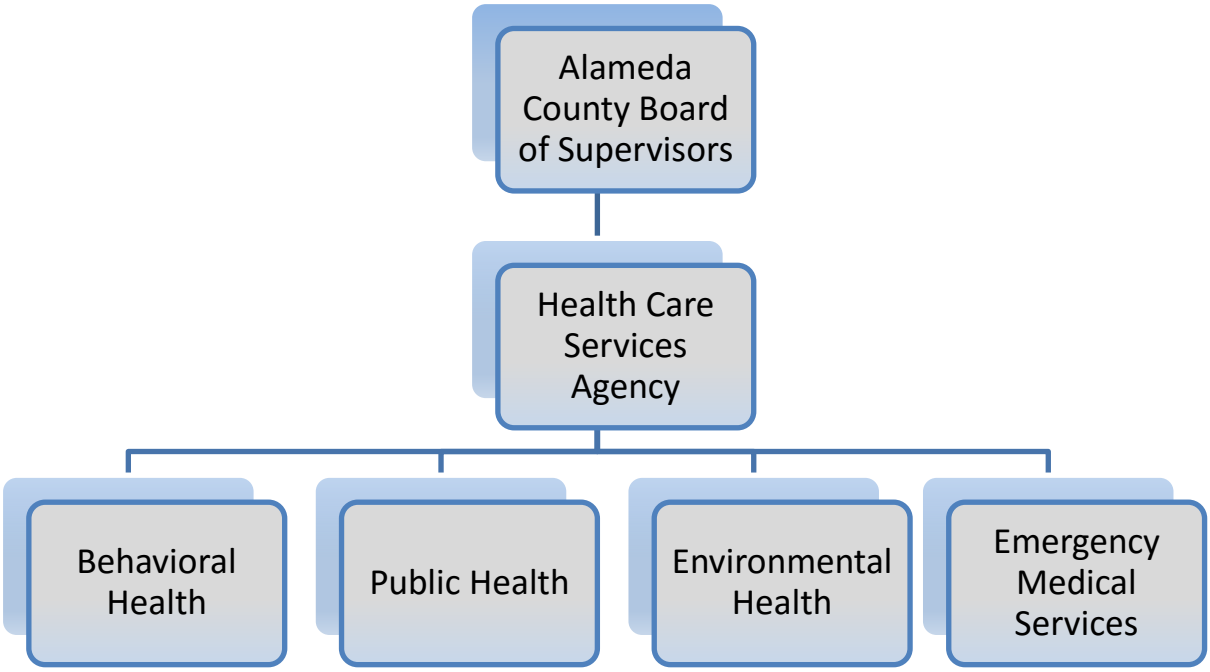
- Alta Bates Hospital
- Summit Hospital
- Childrens Hospital Oakland
- Kaiser Oakland Hospital
- Alameda Hospital
- Alameda County Medical Center (Base Hospital)
- San Leandro Hospital
- John George Pavilion
- Willow Rock
- Eden Hospital
- Valley Care Hospital
- Kaiser San Leandro Hospital
- Kaiser Fremont Hospital
- Washington Hospital

EMS System Partners

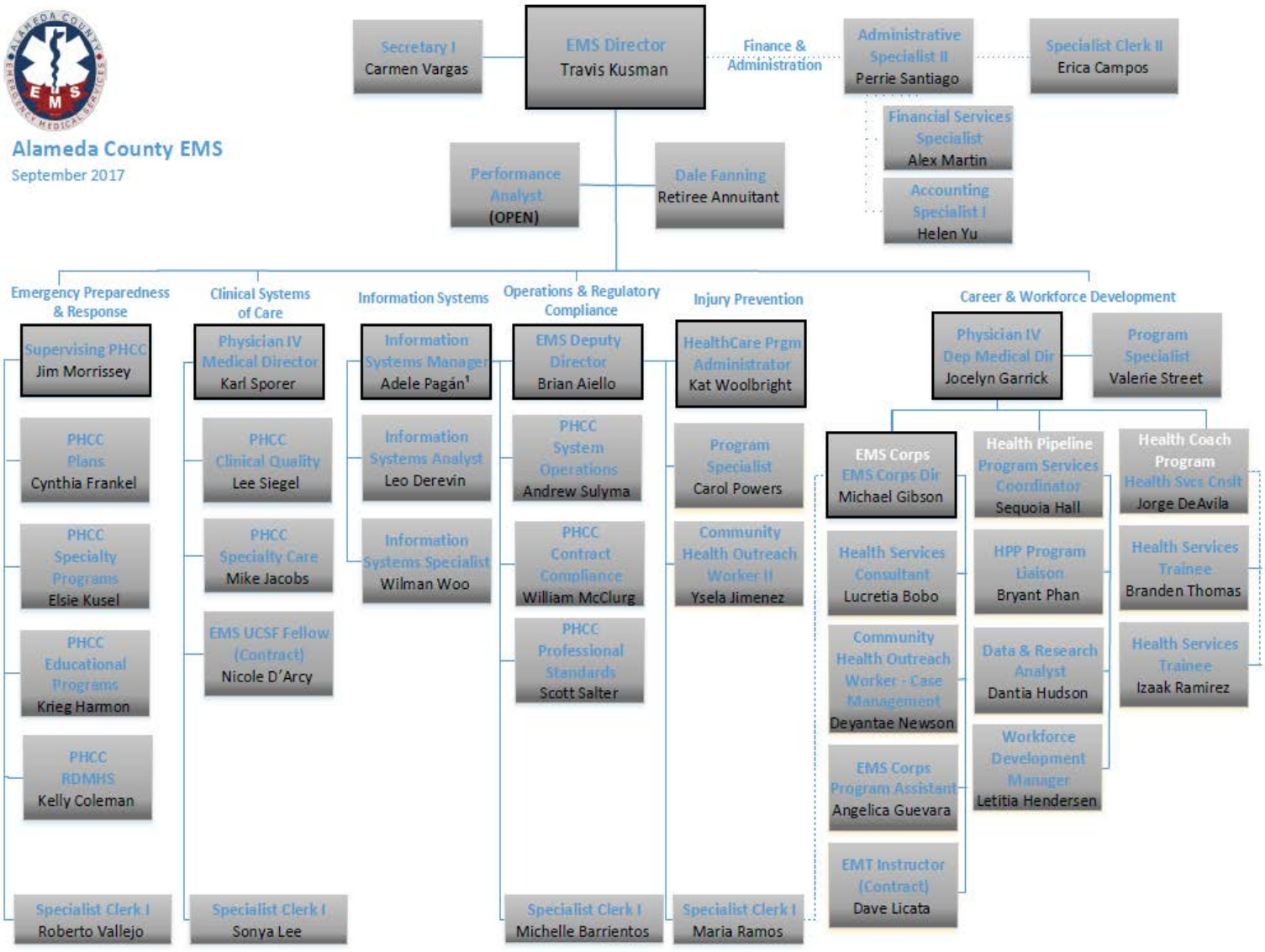
- Patients
- Patient Families
- The Community
- All Providers
- All Receiving Facilities
- County Board of Supervisors and City Councils
- Insurance companies and other third party payers
- Vendors
- Education/Training Organizations
- Other Regulatory Agencies

ORGANIZATIONAL STRUCTURE

The EMS Agency is a division of the Alameda County Health Care Services Agency. The EMS Agency coordinates EMS activities in Alameda County. The Board of Supervisors (five members) makes general policy decisions affecting health care. The Director of the Health Care Services Agency reports to the Board of Supervisors. The EMS Director reports to the Health Care Services Agency Director. Medical control of the prehospital medical care within the system is the responsibility of the EMS Medical Director who reports to the EMS Director.



EMERGENCY MEDICAL SERVICES



[Boxes with **bolded** borders, indicate managers/supervisors.]
[Supervisor[1], Specialist Clerk positions.]

"Our purpose is to reduce pain and suffering and improve the health of our patients."

QUALITY IMPROVEMENT RESPONSIBILITIES - GENERAL GUIDELINES

1. The EMS Agency shall establish and facilitate a system wide quality improvement program to monitor, review, evaluate and improve the delivery of prehospital care services.

   1.1 The program shall involve all system participants and shall include, but not be limited to the following activities:

      1.2.1 **Prospective** - designed to prevent potential problems.

      1.2.2 **Concurrent** - designed to identify problems or potential problems during the course of patient care.

      1.2.3 **Retrospective** - designed to identify potential or known problems and prevent their recurrence.

      1.2.4 **Reporting/Feedback** - all quality improvement activities will be reported to the EMS Agency in a manner to be jointly determined. As a result of Q.I./Q.A. activities, changes in system design may be made.

2. Each agency shall submit a Quality Improvement Plan, based on the appropriate policy to the EMS Agency for approval. The time frame for submission will be determined by the EMS Agency.

3. Appropriate revisions shall be made as requested by the EMS Agency.

4. Each agency shall conduct an annual review of their Q.I. plan.

5. The EMS Agency will evaluate the implementation of each agency's Q.I plan.

QUALITY IMPROVEMENT RESPONSIBILITIES - EMS

Authority: ***Division 2.5 of the Health and Safety Code, Chapter 4.***

1. **Prospective**

1.1 Comply with all pertinent rules, regulations, laws and codes of Federal, State and County applicable to emergency medical services.
1.2 Coordinate prehospital quality improvement committees.
1.3 Plan, implement and evaluate the emergency medical services system including public and private agreements and operational procedures.
1.4 Implement advanced life support systems and limited advanced life support systems
1.5 Approve and monitor prehospital training programs.
1.6 Certify/authorize prehospital personnel.
1.7 Establish policies and procedures to assure medical control and oversight, which may include dispatch, basic life support, advanced life support, patient destination, patient care guidelines and quality improvement requirements.
1.8 Facilitate implementation by system participants of required Quality Improvement plans.
1.9 Design reports for monitoring identified problems and/or trends analysis.
1.10 Approve standardized corrective action plan for identified deficiencies in prehospital and base hospital personnel.

2. **Concurrent**

2.1 Site visits to monitor and evaluate system components.
2.2 On call availability for unusual occurrences, including but not limited to:
2.2.1 Multicasualty Incidents (MCI)
2.2.2 Ambulance Rerouting and Hospital Bypass

2. Retrospective

3.1 Evaluate the process developed by system participants for retrospective analysis of prehospital care.
3.2 Evaluate identified trends in the quality of prehospital care delivered in the system.
3.3 Establish procedures for implementing the Certificate Review Process for prehospital emergency medical personnel.
3.4 Monitor and evaluate the Incident Review Process.

4. **Reporting/Feedback**

4.1 Evaluate submitted reports from system participants and make changes in system design as necessary.
4.2 Provide feedback to system participants when applicable or when requested on Quality Improvement issues.
4.3 Design prehospital research and efficacy studies regarding the prehospital use of any drug, device or treatment procedure where applicable.

QUALITY IMPROVEMENT RESPONSIBILITIES - DISPATCH

1. **Prospective**
   - 1.1 Participation on committees as specified by the EMS Agency.
   - 1.2 Education
     - 1.2.1 Orientation to the EMS system
     - 1.2.2 Continuing education activities to further the knowledge base of the dispatcher, to include but not limited to:
       - 1.2.2.1 Tape review
       - 1.2.2.2 Educational programs based on problem identification and trend analysis
       - 1.2.2.3 Discussion of selected calls
     - 1.2.3 Participation in certification and training of the EMD
     - 1.2.4 Establish procedure for informing all EMDs of system changes
   - 1.3 Evaluation - Develop criteria for evaluation of individual EMDs to include, but not limited to:
     - 1.3.1 Tape review or other documentation as available
     - 1.3.2 Evaluation of new employees
     - 1.3.3 Routine
     - 1.3.4 Problem-oriented
     - 1.3.5 Design standardized corrective action plans for individual EMD deficiencies.
   - 1.4 Certification
     - 1.4.1 Initial certification
     - 1.4.2 Recertification

2. **Concurrent Activities**
   - 2.1 Establish a procedure for evaluation of EMDs utilizing performance standards through direct observation

3. **Retrospective Analysis**
   - 3.1 Develop a process for retrospective analysis of dispatched calls, utilizing audio tape and dispatcher report form, to include but not limited to:
     - 3.1.1 High-risk
     - 3.1.2 High-volume
     - 3.1.3 Problem oriented calls
     - 3.1.4 Any call requested to be reviewed by EMS or other appropriate agency.
     - 3.1.5 Specific audit topics established through the Quality Improvement Committee.
   - 3.2 Develop performance standards for evaluating the quality of care delivered by the EMD through retrospective analysis.
   - 3.3 Participation in the incident review process
   - 3.4 Comply with reporting and other quality improvement requirements as specified by the EMS Agency.
   - 3.5 Participation in prehospital research and efficacy studies requested by the EMS Agency and/or the Quality Improvement Committee.

4. **Reporting/Feedback**
   - 4.1 Develop a process for identifying trends in the quality of dispatch care
     - 4.1.1 Report as specified by the EMS Agency
     - 4.1.2 Design and participate in educational offerings based on problem identification and trend analysis
     - 4.1.3 Make approved changes in internal policies and procedures based on trend analysis

PSAP and Dispatch Call Handling Structure in Alameda County				
Call Location	**Primary PSAP Receive 9-1-1 Call**	**Fire 1st Response Dispatch**	**Ambulance Dispatch**	**EMD* Provided By**
Alameda City	Alameda Police PSAP	Call transferred from PD PSAP to ACRECC who dispatches fire units/ambulances	ACRECC dispatches city ambulances	ACRECC
Alameda County (and areas served by County Fire)	County Sherriff (unincorporated and Dublin); San Leandro Police PSAP; Livermore Lab PSAP	Calls transferred from various PD PSAPs to ACRECC who dispatches fire units	ACRECC dispatches Paramedics Plus ambulances	ACRECC
Albany	Albany Police PSAP	Albany PD dispatches fire units	Albany PD dispatches city ambulances	None
Berkeley	Berkeley PD PSAP (dual police and fire)	Berkeley PD dispatches fire units	Berkeley PD dispatches city ambulances	ACRECC
Camp Parks	City of Dublin Police PSAP	Call transferred from Dublin PD PSAP to ACRECC who dispatches fire units	ACRECC dispatches Paramedics Plus ambulances	ACRECC
Emeryville	Emeryville Police PSAP	Call transferred from Emeryville PD to ACRECC who dispatches fire units	ACRECC dispatches Paramedics Plus ambulances	ACRECC
Fremont	Fremont Police PSAP	Call transferred from PD PSAP to ACRECC who dispatches fire units	ACRECC dispatches Paramedics Plus ambulances	ACRECC
Hayward	Hayward Police PSAP	Hayward PD PSAP dispatches fire units and transfers call to ACRECC	ACRECC dispatches Paramedics Plus ambulances	ACRECC
Livermore	Livermore Police PSAP	Call transferred from Livermore PD PSAP to ACRECC who dispatches fire units	ACRECC dispatches Paramedic Plus ambulances	ACRECC
Pleasanton	Pleasanton Police PSAP	Call transferred from Pleasanton PD to ACRECC who dispatches fire units	ACRECC dispatches Paramedics Plus ambulances	ACRECC
Newark	Newark Police PSAP	Call transferred from PD PSAP to ACRECC who dispatches fire units	ACRECC dispatches Paramedics Plus ambulances	ACRECC
Oakland	Oakland Police PSAP	Call transferred from PD PSAP to Oakland Fire Dispatch who dispatches fire units	Oakland Fire Dispatch transfers call to ACCREC who dispatches Paramedics Plus ambulances	Oakland Fire Dispatch
Piedmont	Piedmont Police/Fire (joint PSAP)	Piedmont PD/Fire dispatches fire and city ambulances	Piedmont PD/Fire PSAP	None
East Bay Regional Parks	EBRP PSAP and dispatch	EBRP dispatches Parks units and transfers call to ACRECC or to the transport city PSAPs	ACRECC dispatches Paramedics Plus ambulances; local PSAPs dispatch fire units/ambulances	ACRECC
Union City	Union City Police PSAP	Call transferred from PD PSAP to ACRECC who dispatches fire units	ACRECC dispatches Paramedics Plus ambulances	ACRECC
Cellular Calls	CA Highway Patrol	Per response jurisdiction	Varies by jurisdiction	Varies by jurisdiction

QUALITY IMPROVEMENT RESPONSIBILITIES - ALS Provider Agencies

1. **Prospective**
   - 1.1 Participation on committees as specified by the EMS Agency.
   - 1.2 Education
     - 1.2.1 Orientation to EMS system
     - 1.2.2 Continuing Education
     - 1.2.3 Participate in certification courses and the training of prehospital care providers.
     - 1.2.4 Offer educational programs based on problem identification and trend analysis.
     - 1.2.5 Establish procedure for informing all field personnel of system changes
   - 1.3 Evaluation - Develop criteria for evaluation of individual paramedics to include, but not limited to:
     - 1.3.1 PCR review/Tape review or other documentation as available
     - 1.3.2 Ride-along
     - 1.3.3 Evaluation of new employees
     - 1.3.4 Routine
     - 1.3.5 Problem-oriented
     - 1.3.6 Design standardized corrective action plans for individual paramedic deficiencies
   - 1.4 Certification/Accreditation - establish procedures, Based on Alameda County policies, regarding:
     - 1.4.1 Initial certification/accreditation
     - 1.4.2 Recertification/Continuing Accreditation
     - 1.4.3 ITLS, PHTLS or ATT certification
     - 1.4.4 ACLS, ECC certification
     - 1.4.5 PALS or PEPP
     - 1.4.6 Preceptor authorization
     - 1.4.7 Other training as specified by the EMS Agency.

2. **Concurrent Activities**
   - 2.1 Ride-along - Establish a procedure for evaluation of paramedics utilizing performance standards through direct observation
   - 2.2 Provide availability of Field Supervisors and/or Quality Improvement Liaison personnel for consultation/assistance.
   - 2.3 Provide patient information to the base hospital to facilitate obtaining patient follow-up information from receiving hospitals.

3. **Retrospective Analysis**
   - 3.1 Develop a process for retrospective analysis of field care, utilizing PCRs and audio tape (if applicable), to include but not limited to:
     - 3.1.1 High-risk
     - 3.1.2 High-volume
     - 3.1.3 Problem-oriented calls
     - 3.1.4 Any call requested to be reviewed by EMS or other appropriate agency.
     - 3.1.5 Specific audit topics established through the Quality Council.
   - 3.2 Develop performance standards for evaluating the quality of care delivered by field personnel through retrospective analysis.
   - 3.3 Participate in the Incident Review Process
   - 3.4 Comply with reporting and other quality improvement requirements as specified by the EMS Agency.
   - 3.5 Participate in prehospital research and efficacy studies requested by the EMS Agency and/or the Quality Improvement Committee

QUALITY IMPROVEMENT RESPONSIBILITIES - ALS Provider Agencies

4. **Reporting/Feedback**

   4.1 Develop a process for identifying trends in the quality of field care.
   - 4.1.1 Report as specified by the EMS Agency.
   - 4.1.2 Design and participate in educational offering based on problem identification and trend analysis.
   - 4.1.3 Make approved changes in internal policies and procedures based on trend analysis.

QUALITY IMPROVEMENT RESPONSIBILITIES - EMS Aircraft Provider Agencies

1. Assign a liaison to interact with other EMS provider agencies, base hospital(s), and EMS Agency

2. Assure Agency's EMS personnel and pilots are currently and appropriately credentialed at all times

3. Assure Agency's personnel are fully oriented to EMS system prior to assigning to EMS response duties

   3.1 Orientation to include pertinent policies, protocols, hospital locations, map reading, documentation requirements, etc.
   3.2 Establish procedure for informing agency personnel of EMS system changes and updates

4. Provide the EMS Agency with clinical and response time data necessary for monitoring and evaluating the EMS system, particularly for trauma patients as part of the EMS trauma audit process

5. Participate in EMS Agency Quality Improvement activities

HOSPITAL RESPONSIBILITIES

1. A Receiving Hospital is a hospital designated as such by the Alameda County Health Officer and is licensed as a Basic Emergency Service or has in-house physician coverage 24 hours per day

2. A Receiving Hospital shall:

   2.1 Accept all emergency patients transported by EMS system units unless ambulance diversion has been initiated in accordance with Alameda County Ambulance Diversion Policy and the facility's approved internal diversion protocol.

   2.2 Admit emergency patients to the Hospital if appropriate, the patient accepts admission and the Hospital has space available. If transfer to another hospital is appropriate, the patient shall be transferred according to Alameda County Interfacility Transfer Guidelines.

   2.3 Procure and maintain an operational radio for two way voice communication on the County MEDNET, meeting County specifications, and place this equipment in the emergency department.

   2.4 Cooperate with the Alameda County Emergency Medical Services Agency and the Alameda County Health Care Services Agency in gathering and providing statistics and information needed for monitoring and evaluating prehospital programs.

   2.5 Cooperate with designated Alameda County Base Hospitals and ALS Provider Agencies in providing follow-up information regarding patient diagnosis, disposition and outcome.

   2.6 Follow and abide by the standards established for ALS programs and for Receiving Hospitals, including those standards pertaining to professional staffing.

   2.7 Ensure that the emergency department staff and other appropriate hospital personnel possess sufficient skill and knowledge in field procedures that are continued within the emergency department.

   2.8 Participate in the Receiving Hospital Committee and Trauma Audit Committee (TAC) meetings as requested.

   2.9 Participate in training of prehospital personnel, in cooperation with and as coordinated by the EMS Agency Medical Director or designee.

   2.10 Provide hospital census and bed availability information to the EMS agency through the “Reddinet” system daily by 7:00 a.m.

   2.11 Participate in “HAvBED” drills/exercises as directed by the Alameda County EMS Agency.

QUALITY IMPROVEMENT RESPONSIBILITIES – Base Hospital

1. **An ALS Base Hospital** is a hospital designated by the Alameda County Emergency Medical Services Agency and has:

   1.1 A written contractual agreement with Alameda County
   1.2 Primary responsibility for the direct, on line medical control of calls received from the field.

2. **The Hospital shall agree to:**

   2.1 Utilize voice communications and be available to field personnel through a consistent channel, frequency, or telephone number twenty-four (24) hours a day, three hundred sixty-five (365) days a year.

   2.2 Provide physician response within sixty (60) seconds of receipt of call. Physician orders and consultation shall be provided directly by the physician.

   2.3 Initiate a Base Hospital Report Form completed by the Base Coordinator each time that the Base Hospital is contacted by an ALS unit with patient data.

   - The document is a medical record, and as such, should meet criteria for all medical records, (e.g. must be in ink, be retained for seven (7) years, etc.).

   2.4 The form must list all communications in chronological order by time and include a brief description of all communications received or transmitted. Each form shall include:

   - Patient's run number
   - Patient's chief complaint/problem
   - Unit number
   - The Base Hospital Physician
   - Patient destination
   - Pertinent comments

   2.5 Record all communications between Base Hospital and ALS units.

   2.5.1 Tape recordings are considered to be part of the patient's medical record and will be retained for a minimum of 100 days.
   2.5.2 Tape recordings may be copied (in writing or by duplicating the tape) for teaching purposes. The patient's name should be omitted.
   2.5.3 The Base Hospital shall provide a copy of any tape requested by the EMS Agency.

   2.6 Abide by all standards, protocols, policies, procedures and contracts established by the County relating to prehospital ALS guidelines.

EMS Leadership/Quality Council (QC)

The EMS Agency Director works with the EMS Medical Director, EMS QI Coordinator and the Quality Council to oversee the Alameda County EMS QI program.

Quality Council Purpose:

- Serves as the Technical Advisory Group (TAG) for Alameda County EMS
- Identifies Quality Improvement needs
- Charter (and/or serve as) Quality Task Force(s) to improve system-wide processes (also known as Process Improvement Teams)
- Provides input for the EMS System Quality Improvement Plan
- Develops Quality Indicators
- Contributes to the development of a consistent approach to developing quality indicators and gathering and analyzing data
- Contributes to the development of a consistent approach to research
- Monitors and evaluates system data reports to identify opportunities for improvement and training needs

Quality Council Membership:

- EMS Medical Director (Chair)
- EMS Director
- EMS Quality Improvement Coordinator
- EMS Quality Improvement Coordinators from each fire department
- Private 911 ambulance transport provider Quality Manager
- Base Hospital Paramedic Liaison Nurse
- One Paramedic and one EMT representing fire department in each of the North, South and East zones of Alameda County (6 total members)
- One Paramedic and one EMT from the 911 private medical transport provider agency
- One representative from an air transport provider
- Two representatives from Receiving Hospitals
- One representative each from OFD dispatch and ACCREC

Quality Council Chairperson: EMS Medical Director

Meetings:

- Monthly
- Two hours with a planned agenda

Committees

Various committee collaborations are set up in specific areas of Quality Improvement focus. These committees have at least one EMS agency representative attending and preferably the EMS medical director in attendance

- EMS Quality Council - (See previous page)
- Emergency Medical Oversight Committee EMOC -The committee shall serve in an advisory capacity to, and report to, the Alameda County EMS Medical Director. The meetings are public and chaired by the EMS Medical Director. The committee is responsible for assisting in the development and/or implementation of:
  - Medical policies or procedures
  - Medical standards for prehospital care providers
  - Quality improvement standards
- Receiving Hospital Committee
- STEMI Committee
- Stroke Committee
- Trauma Audit Committee
- Regional Trauma Committee
- Research Committee
- Equipment QI Committee - The committee reviews and makes recommendations for changes to the standardized supply list found in the field manual. The committee serves in an advisory capacity to, and reports to, the EMS Medical Director. The Procedures/Objectives of the Committee are :
  - To only evaluate new equipment after study
  - To evaluate for adoption new equipment after significant field input
  - To evaluate new equipment using an objective format. (See: New Equipment Evaluation Form)
- Data Steering Committee
- ePCR Change Committee
- Preceptor Committee
- EMS Section Chiefs Committee
- Alameda County Fire Chiefs Association
- EMSAAC/EMDAAC
- LEMSA Coordinators Committee
- Various other ad-hoc committees

ALAMEDA COUNTY EMERGENCY MEDICAL SERVICES AGENCY
NEW PRODUCT EVALUATION FORM

Product Evaluated:	**Date:**
Evaluated by:	
Type of Incident:	**Run #/PCR #:**
Describe how you used the product:	
Describe any problems associated with using the product: ☐ none	
What was the outcome of the product use?	
Describe what you liked about the product:	
Describe what you didn't like about the product:	
How many times have you used this product in the past day?_____ week?_____	
Do you think this product would improve patient care or make your job easier or better? ☐ **yes** ☐ **no** **why?**	
Crew members (print names) 1.	2.
3.	**Your unit #:**
Additional Comments:	

III. Data Collection, Evaluation of Indicators and Reporting

"How are we doing?"

"MEASURE – IMPROVE, MEASURE – IMPROVE, MEASURE – IMPROVE ….." Mickey Eisenberg, MD

Various data systems in the Alameda County EMS system, including CAD, ZOLL ePCR, Reddinet, and First Watch, contain relevant data. Electronic PCR data elements are NEMSIS 3.4 compliant. The implementation of all these data systems into user friendly data entry and reporting formats is essential to ensure that clean usable data is obtained. Integration of these data systems between dispatch, EMS providers, receiving facilities and state and national data systems is essential in opening up communication necessary to facilitating Quality Improvement.

These data systems are used to:

- Prospectively identify areas for improvement and enable data driven decisions
- Monitor system changes after QI interventions have been implemented
- Monitor individual and group performance in the EMS system
- Support research
- Provide benchmarks with other EMS systems

Data Quality Improvement activities include:

- Implementation of a user friendly Zoll ePCR program for all 911 providers
- Implementation of a user friendly data reporting tool - Tableau
- Integration and continuing maintenance of all data systems
- Establishing health information bi-direction exchanges with receiving facilities and public health- All specialty receiving facility MOUs include language requiring participation in a bi-directional data exchange.

EMS Provider Quality Indicators and Activities

Fitch Consultant Report, Alameda County, California, EMS System Review, January 31, 2008

Alameda County EMS engaged Fitch & Associates to conduct a review of the Alameda County EMS system and make recommendations for system design improvements. Many of those recommendations for Provider Quality Indicators and Activities, with some updates, are listed in the next table.

While the EMS Agency is responsible for creating and coordinating the overall Quality Improvement Plan for the EMS system, each EMS provider agency involved is responsible for developing their own EMS QI plan to monitor internal quality indicators and perform quality improvement activities. While quality improvement procedures for clinical aspects of the organization are important, they are not exclusive. The EMS agency should also include quality improvement activities and measures for all aspects of the organization as it relates to EMS.

It would be overwhelming to attempt to list each activity and quality indicator that each system provider was responsible for accomplishing to maintain its ability to provide quality service to the EMS system users. The next table lists core quality activities and quality indicators for PSAPs, Dispatch, First Responders, Transport Agencies and Receiving Hospitals. These core activities and quality indicators are to be used as guidelines for specific EMS providers. Input from EMS providers comes to EMS through the Quality Council and other forums in determining the specific indicators and activities necessary in assessing, monitoring and improving the quality of the EMS system.

It is important to note that the purpose of Quality Indicators and Activities is to "turn up the volume" on the things the EMS system is doing well as well as identify processes that require improvement. **The focus of EMS performance improvement is non-punitive**

Summary of Provider Quality Indicators and Activities

PSAPs	Dispatch Centers	First Responders	Ambulance Services	Receiving Hospitals
Personnel/Resource Management				
Activities • Workload Management • Matching schedules to demand • Resource deployment practices • Risk Management • Employee welfare **Indicators** • Workload Management • Employee Satisfaction • Employee Turnover Rate	**Activities** • Workload Management • Matching schedules to demand • Resource deployment practices • Risk Management • Employee welfare **Indicators** • Workload Management • Employee Satisfaction • Employee Turnover Rate	**Activities** • Workload Management • Matching schedules to demand • Resource deployment practices • Risk Management • Employee welfare **Indicators** • Workload Management • Employee Satisfaction • Employee Turnover Rate	**Activities** • Workload Management • Matching schedules to demand • Resource deployment practices • Risk Management • Employee welfare **Indicators** • Workload Management • Employee Satisfaction • Employee Turnover Rate	**Activities** • Workload Management • Matching schedules to demand • Resource deployment practices • Risk Management • Employee welfare **Indicators** • Workload Management • Employee Satisfaction • Employee Turnover Rate
Equipment/Supplies				
Activities • Maintaining and upgrading equipment and information systems • Inventory Control • Sharing of Resources **Indicators** • Provider surveys/feedback • Ease of use • Resources involved in personnel skills training • Resources involved equipment acquisition, associated equipment costs, maintenance, resupply and consumables • Equipment durability/failures	**Activities** • Maintaining and upgrading equipment and information systems • Inventory Control • Sharing of Resources **Indicators** • Provider surveys/feedback • Ease of use • Resources involved in personnel skills training • Resources involved equipment acquisition, associated equipment costs, maintenance, resupply and consumables • Equipment durability/failures	**Activities** • Maintaining and upgrading equipment and information systems • Inventory Control • Sharing of Resources **Indicators** • The effect of the equipment on patient pain/suffering and outcome • Patient surveys/feedback • Provider surveys/feedback • Ease of use • Resources involved in personnel skills training • Resources involved equipment acquisition, associated equipment costs, maintenance, resupply and consumables • Equipment durability/failures	**Activities** • Maintaining and upgrading equipment and information systems • Inventory Control • Sharing of Resources **Indicators** • The effect of the equipment on patient pain/suffering and outcome • Patient surveys/feedback • Provider surveys/feedback • Ease of use • Resources involved in personnel skills training • Resources involved equipment acquisition, associated equipment costs, maintenance, resupply and consumables • Equipment durability/failures	**Activities** • Maintaining and upgrading equipment and information systems • Inventory Control • Sharing of Resources **Indicators** • The effect of the equipment on patient pain/suffering and outcome • Patient surveys/feedback • Provider surveys/feedback • Ease of use • Resources involved in personnel skills training • Resources involved equipment acquisition, associated equipment costs, maintenance, resupply and consumables • Equipment durability/failures
Documentation				
Activities • Integration of Data Systems and Reporting **Indicators**	**Activities** • Integration of Data Systems and Reporting **Indicators**	**Activities** • Integration of Data Systems and Reporting • Documentation reviews (especially non-transports, critical patients, under-triages) **Indicators** • PCR data field compliance • PCR Printing compliance	**Activities** • Integration of Data Systems and Reporting • Documentation reviews (especially non-transports, critical patients, under-triages) **Indicators** • PCR data field compliance • PCR Printing compliance	**Activities** • Integration of Data Systems and Reporting • Documentation reviews (especially non-transports, critical patients, under-triages) **Indicators** • PCR data field compliance • PCR Printing compliance

PSAPs	Dispatch Centers	First Responders	Ambulance Services	Receiving Hospitals
Operations/Clinical Care/Patient Outcome				

Activities
• Training link to QI
• Unusual occurrence investigations
• Error Management
  ◦ Error reporting system (including self-reporting)
• Correct assignment of resources
• Call Reviews
• Peer Reviews
 	
Indicators
• Time increments
• Call volume
• Calls per call taker
• Correct prioritization
• Accuracy of location identification
• Correct provision of prearrival instructions
• Correct transfer
• Time of day distribution
• Equipment failures
• Unusual occurrence tracking
• Complaint and Commendation tracking
	Activities
	• Training link to QI
	• Unusual occurrence investigations
	• Error Management
	  ◦ Error reporting system (including self-reporting)
	• Correct assignment of resources
	• Call Reviews
	• Peer Reviews
	
	Indicators
	• Time increments
	• Call volume
	• Calls per call taker
	• Correct prioritization
	• Categorization accuracy
	• Correct patient condition code
	• Accuracy of location identification
	• Correct provision of prearrival instructions
	• EMD compliance
	• Correct transfer
	• Time of day distribution
	• Equipment failures
	• Unusual occurrence tracking
	• Complaint and Commendation tracking
		Activities
		• Training link to QI
		• Unusual occurrence investigations
		• Error Management
		  ◦ Error reporting system (including self-reporting)
		• Correct assignment of resources
		• Call Reviews
		• Peer Reviews
		
		Indicators
		• Tracking critical procedures
		• Pain reduction Indicators
		• Patient centered outcomes and changes
		• Patient satisfaction surveys
		• Verifiable and accurate data collection
		• Over triage/Undertriage
		• Unusual occurrence tracking
		• Complaint and Commendation tracking
			Activities
			• Training link to QI
			• Unusual occurrence investigations
			• Error Management
			  ◦ Error reporting system (including self-reporting)
			• Correct assignment of resources
			• Call Reviews
			• Peer Reviews
			
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			• Patient satisfaction surveys
			• Verifiable and accurate data collection
			• Over triage/Undertriage
			• Unusual occurrences
			• Complaints and Commendations
				Activities
				• Training link to QI
				• Unusual occurrence investigations
				• Error Management
				  ◦ Error reporting system (including self-reporting)
				• Correct assignment of resources
				• Call Reviews
				• Peer Reviews
				
				Indicators
				• Patient diagnosis
				• Pain reduction Indicators
				• Time to definitive treatment
				• Pt length of stay
				• Pt morbidity/mortality
				• Verifiable and accurate data collection
				• Over triage/Undertriage
				• Unusual occurrence tracking
				• Complaints and Commendations

Education and Skills Competency				
Activities • Training link to QI • Continuing education • Skills competencies • New procedures and technology • Emergency Medical Dispatch training and continuing ed. • Field Training/Evaluations • Mass casualty/disaster drills • Research Studies **Indicators** • Skills performance measures	**Activities** • Training link to QI • Continuing education • Skills competencies • New procedures and technology • Emergency Medical Dispatch training and continuing ed. • Field Training/Evaluations • Mass casualty/disaster drills • Research Studies **Indicators** • Skills performance measures	**Activities** • Training linked to Quality Improvement findings • Continuing education • New procedures and technology • Skill competencies • Recertification • Driver training • Mass casualty/disaster drills • Annual EMS training requirements • Protocol Development • Field Training/Evaluations • Research Studies • Establish patient outcome feedback loop to field providers **Indicators** • Skills performance measures	**Activities** • Training linked to Quality Improvement findings • Continuing education • New procedures and technology • Skill competencies • Recertification • Driver training • Mass casualty/disaster drills • Annual EMS training requirements • Protocol Development • Field Training/Evaluations • Research Studies • Establish patient outcome feedback loop to field providers **Indicators** • Skills performance measures	**Activities** • Training linked to Quality Improvement findings • Continuing education • New procedures and technology • Skill competencies • Recertification • Mass casualty/disaster drills • Protocol Development • Field Training/Evaluations • Research Studies • Establish patient outcome feedback loop to field providers **Indicators** • Skills performance measures

PSAPs	Dispatch Centers	First Responders	Ambulance Services	Receiving Hospitals
Transport/Facilities				
Activities • Facility management • Disaster Resources/Caches	**Activities** • Facility management • Disaster Resources/Caches	**Activities** • Fleet management • Facility management • Resource deployment practices • Disaster Resources/Caches **Indicators** • Response times • Call time increments • Time on task • Call volume • Mutual aid requests • Accident rates • Vehicle/equipment failure rates • Simultaneous demand	**Activities** • Fleet management • Facility management • Resource deployment practices • Disaster Resources/Caches **Indicators** • Response times • Call time increments • Time on task • Call volume • Mutual aid requests • Accident rates • Vehicle/equipment failure rates • Simultaneous demand	**Activities** • Facility management • Disaster Resources/Caches • Reddinet Updates **Indicators** • Number and distribution of base contacts • Time to answer communications from field • Quantity of patients received • Frequency and duration of diversion • Number of patients received at wrong facility • Quantity of secondary transfers • Wait Times (drop times)
Public Education and Prevention				
• Community CPR • AED Programs • Bay Area Journal Club • Disaster Preparedness • Injury Prevention	• First Aid • When to call 911 • Vials of Life type programs • Referrals to other social and health care services (211)		• End of Life Care., POLST, Hospice • Neighborhood Safety • Violence Prevention • Illness Prevention • Stroke/Cardiac	
Risk Management				
Activities • Specialized safety and risk training • CAL OSHA training and policy compliance • Unusual Occurrence investigations • Patient/Customer complaint Investigations **Indicators** • Illness/Injury rates and their severity • Unusual Occurrence tracking including "near misses"	**Activities** • Specialized safety and risk training • CAL OSHA training and policy compliance • Unusual Occurrence investigations • Patient/Customer complaint investigations **Indicators** • Illness/Injury rates and their severity • Unusual Occurrence tracking including "near misses"	**Activities** • Specialized safety and risk training • CAL OSHA training and policy compliance • Unusual Occurrence investigations • Patient/Customer complaint investigations **Indicators** • Illness/Injury/Exposure rates and their severity • Vehicle accident rate • "Near misses" • Unusual Occurrence tracking including "near misses" • Patient/Customer complaint tracking • Medication/Treatment error identification and tracking	**Activities** • Specialized safety and risk training • CAL OSHA training and policy compliance • Unusual Occurrence investigations • Patient/Customer complaint investigations **Indicators** • Illness/Injury/Exposure rates and their severity • Vehicle accident rate • Unusual Occurrence tracking including "near misses" • Patient/Customer complaint tracking • Medication/Treatment error identification and tracking	**Activities** • Specialized safety and risk training • CAL OSHA training and policy compliance • Unusual Occurrence investigations • Patient/Customer complaint investigations **Indicators** • Illness/Injury/Exposure rates and their severity • Unusual Occurrence tracking including "near misses" • Patient/Customer complaint tracking • Medication/Treatment error identification and tracking
Transparency				
Activities • Periodic and consistent reporting to policy-makers and governing entity • Timely, accurate, and complete data and information delivered to County EMS Agency • Open Communication • Development of an Non-Punitive Error Reporting Process	**Activities** • Periodic and consistent reporting to policy-makers and governing entity • Timely, accurate, and complete data and information delivered to County EMS Agency • Open Communication • Development of an Non-Punitive Error Reporting Process	**Activities** • Periodic and consistent reporting to policy-makers and governing entity • Timely, accurate, and complete data and information delivered to County EMS Agency • Open Communication • Development of an Non-Punitive Error Reporting Process	**Activities** • Periodic and consistent reporting to policy-makers and governing entity • Timely, accurate, and complete data and information delivered to County EMS Agency • Open Communication • Development of an Non-Punitive Error Reporting Process	**Activities** • Periodic and consistent reporting to policy-makers and governing entity • Timely, accurate, and complete data and information delivered to County EMS Agency • Open Communication • Development of an Non-Punitive Error Reporting Process

Developing Specific Quality Indicators ------ *Structure + Process ~ Outcome*
"If you don't measure, you don't know."

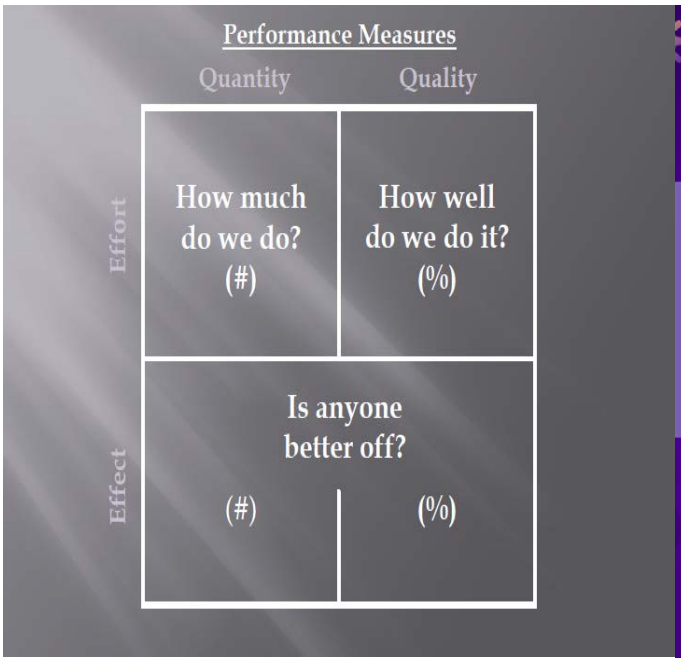
Three Quality Indicator Attributes:

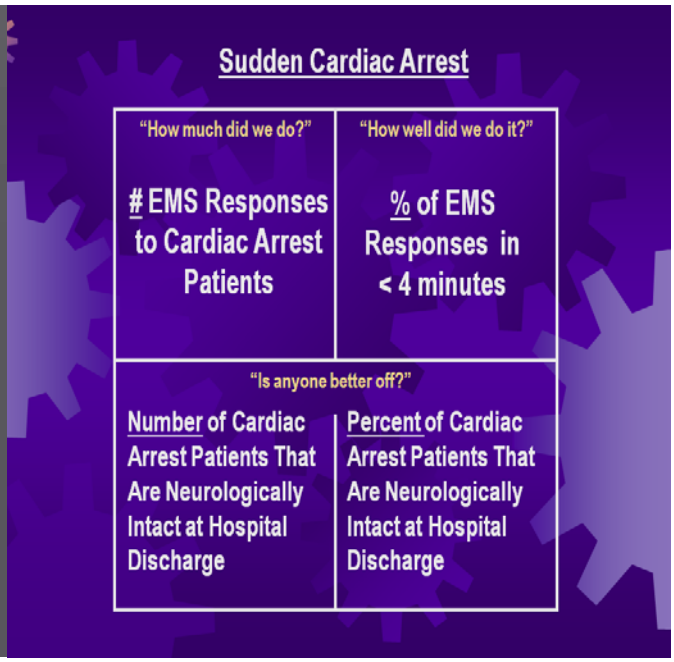
- Structure – "Things" in the system (# of paramedics per population, # of ambulances, resources)
- Process – "Activities" or procedures (Response times, % of pts with pain > 7 receiving Fentanyl)
- Outcome – "Effects" (% of cardiac arrest patients that survive to hospital discharge)

RESULTS BASED ACCOUNTABILITY (RBA) – ***Mark Friedman - "Trying Hard Is Not Good Enough: How to Produce Measurable Improvements for Customers and Communities"***

RBA uses a practical model for developing meaningful performance measures (quality indicators) by asking 3 simple questions:

- **"How much do we do?"** Input resource components (such as leadership, workforce, suppliers, equipment, etc.) are measured. These are the least important performance measures but the easiest to obtain. These performance measures assess the quantity of effort we put in.
- **"How well do we do it?"** The efficiency of design and delivery of work processes, productivity and operational performance are measured. These performance measures assess the quality of effort we put in.
- **"Is anyone better off?"** The result or outcome of patient care, support services, and fulfillment of public responsibilities are measured. These are the most important performance measures and the most difficult to obtain. These performance measures assess the quality effect of our efforts.





Three Step Indicator Development Process:

1. Engage stakeholders and subject experts for consensus on where and how to get the data.
2. Identify the data sources and elements and then query the data.
3. Review the report and validate results. Determine best data display format.

Bi-Variable Indicator Specification Sheet

Performance Measure (Indicator) ID		
Performance Measure (Indicator) Name		
Description		
Type of Measure		
Reporting Value Units		
Denominator Statement (population)		
Denominator Inclusion Criteria	Criteria	Data Elements
Numerator Statement (sub-population)		
Numerator Inclusion Criteria	Criteria	Data Elements
Exclusion Criteria	Criteria	Data Elements
Indicator Formula Numeric Expression		
Example of Final Reporting Value (number and units)		
Benchmarks		
References		

For more on Quality Indicator Development and Use:
Developing and Using Quality Indicators for EMS Evaluations and Improvement
Craig Stroup
www.cemspi.org

California EMS System Core Measures

The purpose of the EMS system core measures project is to increase the accessibility and accuracy of pre-hospital data for public, policy, academic and research purposes to facilitate EMS system evaluation and improvement. Ultimately, the project highlights opportunities to improve the quality of patient care delivered within an EMS system.

Alameda County EMS reports core measures yearly to state the Emergency Medical Services Authority. Each Alameda County EMS provider can track core measure data real time using Tableau Reporting.

CCR Title 22, Div 9, Chap 12 100404	SET NAME	SET ID	PERFORMANCE MEASURE NAME
Clinical Care and Patient Outcome	Trauma (n=2)	TRA-1	Scene time for severely injured trauma patients
		TRA-2	Direct transport to trauma center for severely injured trauma patients meeting criteria
	Acute Coronary Syndrome (n=4)	ACS-1	Aspirin administration for chest pain/discomfort
		ACS-2	12 lead ECG performance
		ACS-3	Scene time for suspected heart attack patients
		ACS-5	Direct transport to designated STEMI receiving center for suspected patients meeting criteria
	Cardiac Arrest (n=3)	CAR-2	Out-of-hospital cardiac arrests return of spontaneous circulation
		CAR-3	Out-of-hospital cardiac arrests survival to emergency department discharge
		CAR-4	Out-of-hospital cardiac arrests survival to hospital discharge
	Stroke (n=3)	STR-2	Glucose testing for suspected stroke patients
		STR-3	Scene time for suspected stroke patients
		STR-5	Direct transport to stroke center for suspected stroke patients meeting criteria
	Respiratory (n=1)	RES-2	Beta2 agonist administration for adults
	Pediatric (n=1)	PED-1	Pediatric asthma patients receiving bronchodilators
	Pain Intervention (n=1)	PAI-1	Pain intervention
Skills Maintenance and Competency	Performance of Skills (n=2)	SKL-1	Endotracheal intubation success rate
		SKL-2	End-Tidal CO2 performed on any successful endotracheal intubation
Transportation and Facilities	Response and Transport (n=3)	RST-1	Ambulance response time by ambulance zone (Emergency)
		RST-2	Ambulance response time by ambulance zone (Non-Emergency)
		RST-3	Transport of patients to hospital

Alameda County Local Quality Indicators

Multiple factors impact the validity and analysis of this data including:

- **Data collection/measurement quality**
- **Random variances**
- **Patient population dynamics**
- **Clinical care quality**

*** EMSA Core Measure**
**** Evidenced based performance measures recommended by the 2007 *Consortium U.S. Metropolitan Municipalities' EMS Medical Directors*)**

AIRWAY, BREATHING, CIRCULATION					
Clinical Area	**Element**	**Quality Indicators / Performance Measures**	**QI Indicator Status**	**Key Findings / Indicator Values**	**Improvement Activities (planned or in progress)**
Airway	ETT*/ King Tube	• % success*, SKL-1 • King/ETT ratio	Active, Core Measure	• ETT is a relatively infrequent skill • Between 3/9/15 and 3/9/16, 53% of 827 accredited paramedics did not perform ETT • 2015 King Tube Success Rate 90.8% • 2015 ETT (≤ 1 attempt) "First Pass" Success Rate 54.1% • 2016 ETT Success (≤ 2 attempts) 71.96%, SKL-1 • ETT/King tube ratio increasing • 2016 - intervention # ETT = 756 King Tube = 343	• Protocol emphasis on ETT as first line advanced airway in CA pts has reduced King Tube Intervention # • Video Laryngoscopy trials by FFD/ACFD/BFD (no apparent change in ETT success rate) • Tableau Reporting Analytics • "First Pass" success rate • Develop overall advanced airway success measure • 2017 Protocol Update – "An Intubation attempt is defined as insertion of laryngoscope blade into patient's mouth"
Airway *, **	ETCO2 *,**	% pts with advanced airways receiving ETCO2 monitoring *,**, SKL-2	Active , Core Measure	2016 - 91.22%, SKL-2	• "Workflows" in Zoll ePCR • Focused education • Tableau Reporting Analytics • ePCR data collection improvements made
Breathing Pulmonary Edema **	NTG/CPAP **	% receiving NTG,CPAP CPAP	Acitve	2013-2016 CPAP Analysis • ~110 patients/month • 51% female (avg 72 y.o.) ,49% male (avg. 70 y.o.) • On average, patients have increased SPO2, decreased P, BP and RR • 86% documented as "Improved" • 12% "Unchanged" • 2% "Worse" • Literature Search NIV Metaanalysis Prehospital CPAP can reduce mortality and intubation rates compared to standard care, while the effectiveness of prehospital BiPAP is uncertain.	Upgraded from Mercury Flow-Safe – II to Mercury Flow-Safe –II EZ (with attached nebulizer)
Breathing Bronchospasm *,**	Albuterol / Atrovent *,**	% of Pts with Resp. Distress /Bronchospasm receiving Alb/Atr combo, RES-2	Active, Core Measure	2016 - 80.31% RES-2,	

Breathing Anaphylaxis	• Epi		Active		Develop QI Indicator Perform Audit 2016 – Epinephrine Adult IM dose modified from "0.3 mg" to "0.3 mg-0.5 mg"
Cardiac Arrest *,**	ROSC / Survival to Discharge *.**	% Survival to Hospital Discharge, CAR-4	Active, Core Measure	• 2016 Witnessed VF/VT (non-trauma) Survival to Hospital Discharge, 33% • 2016 All Rhythms (non-trauma) Survival to Hospital Discharge, 9.16%, CAR-4 • For patients that received therapy-specific resuscitation bundle of care (ITD, Mechanical CPR, Therapeutic Hypothermia), there was a 77% increase in CPC scores ≤2 among surviving patients with OHCA, from 4.7% to 8.3% (p<0.001)	• ITD implemented in 2009 • Lucas Implemented System Wide in 2011 • Field Policies updated to current AHA guidelines • Field re-education in 2015 policy update video • 2016 - uploading data to CARES • In hospital TH screening criteria requires standardization • Improved Cardiac Receiving Facility Data Collection
Cardiac Arrest **	Time to Defib **	Median time from PSAP first ring to defib	Proposed		
Cardiac Arrest	CPR	• Cardiac Compression Fraction (CCF) • CC Rate • Vent Rate • Peri-Shock Pauses	Limited - Code Stat Active, BFD- Zoll CPR Analytics	Limited data available	• Expand Code Stat • 2017 - BFD implementing Zoll CPR Performance Reviews
Cardiac Arrest	Res-Q-Pod	• % of Pts receiving Res-Q-Pod (ITD) • Mean time to Res-Q-Pod	Active Proposed	• 70%	ePCR data collection improvements
Cardiac Arrest	Sodium Bicarb	Sodium Bicarb administrations	Active	After 2017 update training, Sodium Bicarb administrations were reduced	Cardiac Arrest data and audit indicated Sodium Bicarb was be administered when not indicated prior to 2017 Annual Policy Update Training
Cardiac Arrest	Death in Field	% of pts with Death Determination in Field (Cardiac Arrest Transport Rate)	Active	Cardiac Arrest Transport Rate reduced from 68% (2012) to 60% (2016)	Death in Field Policy updated Discontinuation of CPR extended from 20 to 30 minutes
Cardiac STEMI/ACS *,**	12 lead/ASA*,**	% of Pts with CP-Suspected ACS Impression receiving ASA. ACS-1	Active, Core Measure	2016- 87%, ACS-1	Tableau Reporting Analytics
Cardiac STEMI*	Time*	• 2014 Q1/Q2, Avg. D2D (Door to Device) time (All STEMI Centers) • % of D2D ≤ 90 minutes • EMS on scene time, 90th percentile, ACS-3 • E2D (EMS to Device) Time • STEMI ALERT Analysis	• Active • Active • Active • Proposed	• 2014-52 mins, 2016-56 mins • 2014 98%, 2016 97% • 2014 24.1 mins 2016, 23.45 mins, ACS-3 • 2014 STEMI ALERT Analysis o Sensitivity 91.5% o Specificity 98.8% o PPV 40% o NPV 97.7%	• Improve ECG Transmission Process • Expand CPR Analytics • Develop E2D time measure • Improved STEMI Center Data Collection
CVA *	Blood Glucose*	% of Pts with CVA/TIA Impression receiving Glucose Monitoring*, STR-2/CPSS Assess	Active, Core Measure	2016- 95.28%, STR-2	Daily monitoring in Tableau

CVA *	Time*	• Avg. D2D time (All Stroke Centers) • % of D2D ≤ 60 mins. • EMS On Scene Time, 90th Percentile*, STR-3 • E2D Time	• Active • Active • Active • Proposed	• 2014 - 39 mins. 2016 - ~41 mins. • 2014- 71% 2016- 87% • 2014 24.1 mins, STR-3 2016 25.2 mins, STR-3	• Improved Stroke Center Data Collection • Improved Stroke Center Processes including telecommunication between neurologist and patients at Kaiser facilities • Education regarding transport of family member and obtaining phone #s of
PAIN MANAGEMENT					
Clinical Area	**Element**	**Quality Indicators / Performance Measures**	**QI Indicator Status**	**Key Findings / Indicator Values**	**Improvement Activities (planned or in progress)**
Pain Management*	Pain Management *	% of pts receiving Fentanyl when pain >7, PAI-1	Active	2016, 22.42%, PAI-1 Fentanyl admins declining since 2015 Root Cause Analysis • Opioid Crisis Awareness • Reverse Distribution process complexities with increased documentation demands • Training emphasis on providing least invasive to most invasive pain management tx	• Fentanyl replaced Morphine in 2014 policy • Pain Scale documentation required on all patients in 2014
Pain Management	Pain Scale	Pain Scale, VS pre/post Fentanyl administration	Active	<u>2015 Pain Management Analysis</u> •2014-2015 More patients are being treated for pain with opiates after the introduction of fentanyl •Among patients with severe pain (pain score of 7-10), approximately 24% of them receive opiates. Most receive other measures (Splinting, ice, etc.) or it is not considered clinically appropriate. •The intranasal route for fentanyl is rarely used. •Fentanyl has a modest improvement in decreasing pain as compared to morphine. •The complication rate is similar between fentanyl and morphine.	Continued Monitoring/Analysis Ketamine trial discussed

BURNS, TRAUMA					
Clinical Area	**Element**	**Quality Indicators / Performance Measures**	**QI Indicator Status**	**Key Findings / Indicator Values**	**Improvement Activities (planned or in progress)**
Burns	IV Fluid	Amount of fluid critical burn pts receive	Active	2015 - Burn patient fluid admin reduced an avg. of 59% after 2014 Alfred protocol fluid formula Implementation	• 2014 - Alfred Formula introduced • 2015 - Parkland Formula (more fluid restrictive) replaced Alfred Formula • Assess Parkland Formula impact on fluid administration
Trauma	Spinal Immobilization	• #/% of Pts receiving spine motion restriction interventions	Active	Long Backboard intervention continues to significantly decline since 2013 SMR policy implementation Sep-2012 - 662 July-2017 - 129	• 2013 - Spine Motion Restriction Policy Implemented • 2016- Vacuum Mattresses required on all first responder apparatus and transport provider ambulances
Trauma	IV Fluid TXA	• % of pts/volume of IV fluid received when BP < 90 • TXA Data	•Proposed •Active	2016 - 24 admins 2017 to August 8, 24 admins	TXA Policy implemented Jan. 2016 TXA Trail Study with ICEMA TXA re-education late 2016
Trauma*	Time*	• Time intervals, Start with total time, time of incident to trauma center arrival • On Scene Time 90th%, TRA-1	•Proposed •Active	2016 - 26.33 mins, TRA-1	Reassess core measure data collection methodology
Trauma*, **	• Trauma ** • Trauma *	• Pts with ISS > 15 to trauma center ** • Pts meeting critical trauma criteria to tc* TRA-2	•Proposed •Active	2016- 95%, TRA-2	Develop measure
Trauma **	Pts > 65 with ISS > 21 to trauma center **		Proposed		Proposed
OTHER MEDICAL EMERGENCIES					
Clinical Area	**Element**	**Quality Indicators / Performance Measures**	**QI Indicator Status**	**Key Findings / Indicator Values**	**Improvement Activities (planned or in progress)**
Status Seizure **	Versed **	% of pts with status seizures receiving Versed	Proposed		Audit Status Seizures
Sepsis	Sepsis Alerts	• # of Sepsis Alerts • % of pts with Impression of Sepsis and Sepsis Alerts • % of pts meeting SIRS criteria that have Sepsis Alerts	• Active	• Sepsis Alert monthly # has seasonal variation • Sepsis Alert median #/month trend increasing 2012 – 64/mo. median 2016 - 92/mo. median	• 2018 Sepsis Policy Update o Modify fluid admin - 30ml/ml NS in pts with Septic Shock o Monitor ETCO2 • Develop Sepsis Quality Indicators Fluid administration
PROCEDURES					
Clinical Area	**Element**	**Quality Indicators / Performance Measures**	**QI Indicator Status**	**Key Findings / Indicator Values**	**Improvement Activities (planned or in progress)**
Assessment	Ntg, Fentanyl, Versed	• % of pts receiving repeat VS	Proposed		
IO	GCS > 3, IO	#/% of IO when GCS > 3	Audited in 2013	Audit revealed appropriate performance in both cardiac arrest and non-cardiac arrest pts	2018 IO Policy Update Add Humeral IO site
IV	IV, Saline Lock, NS Drip	• % Success Per Attempt IV Fluid vs. SL use	Active	• 82% success per attempt • SL use increased while NS drip decreased	• Policy Update emphasized saline lock use

Sedation	Versed pt responses, VS		Proposed		Assess adverse effect of sedation
OPERATIONS					
Clinical Area	**Element**	**Quality Indicators / Performance Measures**	**QI Indicator Status**	**Key Findings / Indicator Values**	**Improvement Activities (planned or in progress)**
Aircraft	Transports	Transport #	Active	2012 – 255 Launches 59 Transports 2016 – 189 Launches 21 Transports	Monitor
Call Response *	Response Time *	• Response Time Compliance* (TCR to On Scene Arrival)	Active	• P+ response compliance has real time dashboard monitoring in First Watch • All provider's response times are compliant with contractual requirements	• P+ has ongoing ambulance flexible deployment analysis • Reassess core measure data collection methodology • Measure from first ring time at PSAP
Continuity of Patient Care	Ambulance Patient Offload Time (APOT)	• Offload times o Ambulance arrival time at facility to in service time (Active) o APOT Arrival to TOC (by nurse signature at TOC)	• Active • Active	Median ambulance available time reduced • 2015 48 min • 2017 39 min • 90th Percentile APOT reduced • Jan 2016 – 48 min • July 2017 – 32 min	• APOT Data analysis IAW EMSA guidelines • Real-time monitoring of hospital wait times • Monthly data reporting to hospitals • Data reporting to EMSA • Engagement of EMS and hospital leadership and care providers in APOT improvement
Data Compliance	LP-15 data	• % of 12 lead, all ECG and CPR uploads from LP-15 to Zoll ePCR and Code Stat	Active	• 5-10% • Current upload process using cables is cumbersome	• Upload trial of cardiac arrest pt data to CodeStat in progress • Investigating wireless uploads • P+ implementing monitor uploads
Dispatch	MPDS	• Time response analysis • Critical intervention analysis for determinants • EMD compliance/correct categorization	Active	See ALCO EMS Blog http://www.alcoems.org/blog/	• Time Sensitive Intervention analysis tied to MPDS determinants to determine dispatch priority • 27B response priority changed to post intervention analysis • 6E analysis and MPDS Guideline changes
Dispatch	Dispatch Time Increments	Time response analysis	Proposed	PSAP data is unavailable	• Develop QI indicator for PSAP first ring time to first EMS response time • ACRECC time interval analysis in progress
Dispatch	Pre-Arrival Instructions	% of callers receiving proper pre-arrival instructions (ASA, CPR etc…..)	Proposed	PSAP data is unavailable	• Develop QI indicator for PSAP first ring time to first EMS response time • Audit pre-arrival instructions
Patient Satisfaction	Time Pain Discomfort		Active		Paramedics Plus is surveying patients
Transport	Transport Rate	• Transport Rate* • ROS Rate • ROC Rate	• Active • Proposed • Proposed	• 66%	• ePCR ROC/ROS data entry simplified for better data collection

Process, Data and Quality Indicator Analysis

DATA COMMUNICATION -- CHARTS

The use of charts is essential in the analysis of processes, data and quality indicators. While many different types of charts exist, the following charts provide the best process analysis. These charts are also easy to create and use.

CONTROL CHARTS measure process improvement.

Process Improvement = Quality Improvement

"Our current processes are perfectly designed to produce the results we are getting." ***Davis Balestracci***

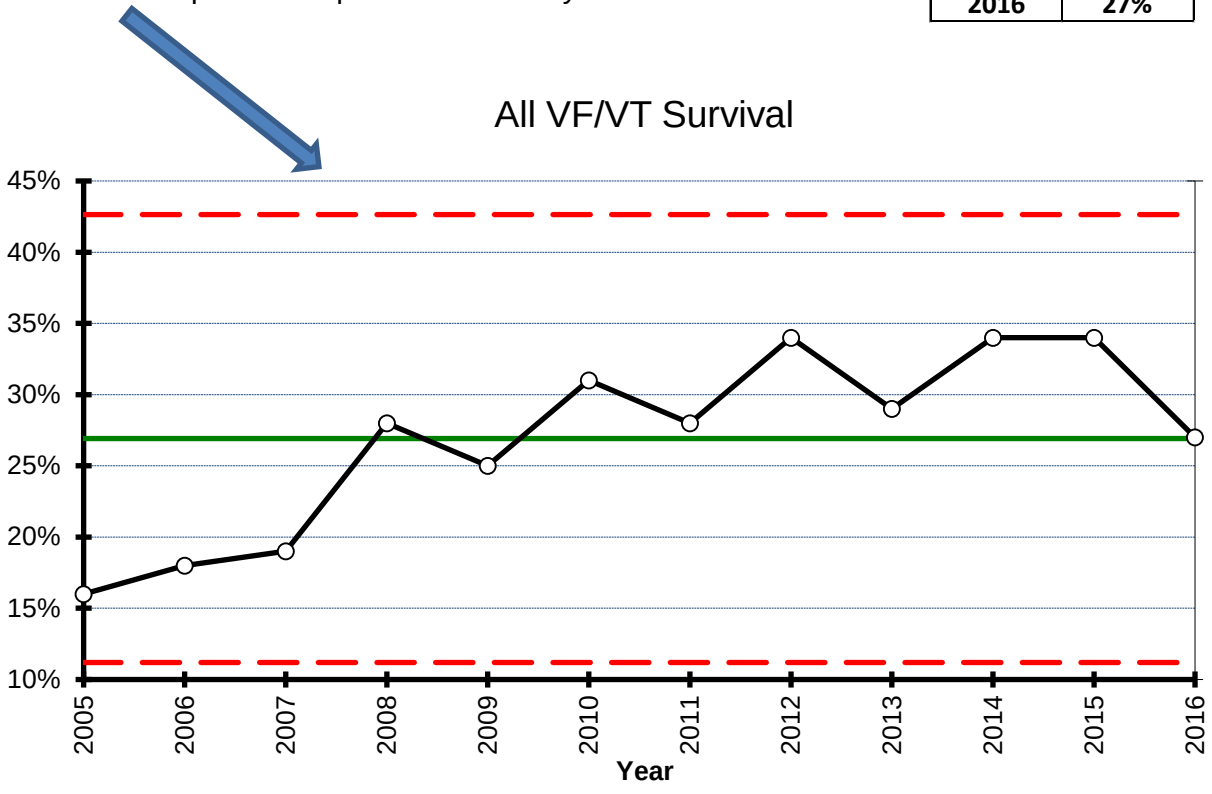
If given two different numbers, one will be bigger than the other. However, if given a series of numbers over a period of time and then "plotting the dots", a picture of a process starts to emerge.

All data has a time component of some sort. While many charts analyze process improvements, Control charts provide the best illustrations of process improvement over time. These charts are simple to create and easy to understand. Control charts in particular are a necessary tool all organizations **must** use to determine whether a process is improving or merely operating within some variation.

A chart of numbers is just a chart of numbers.

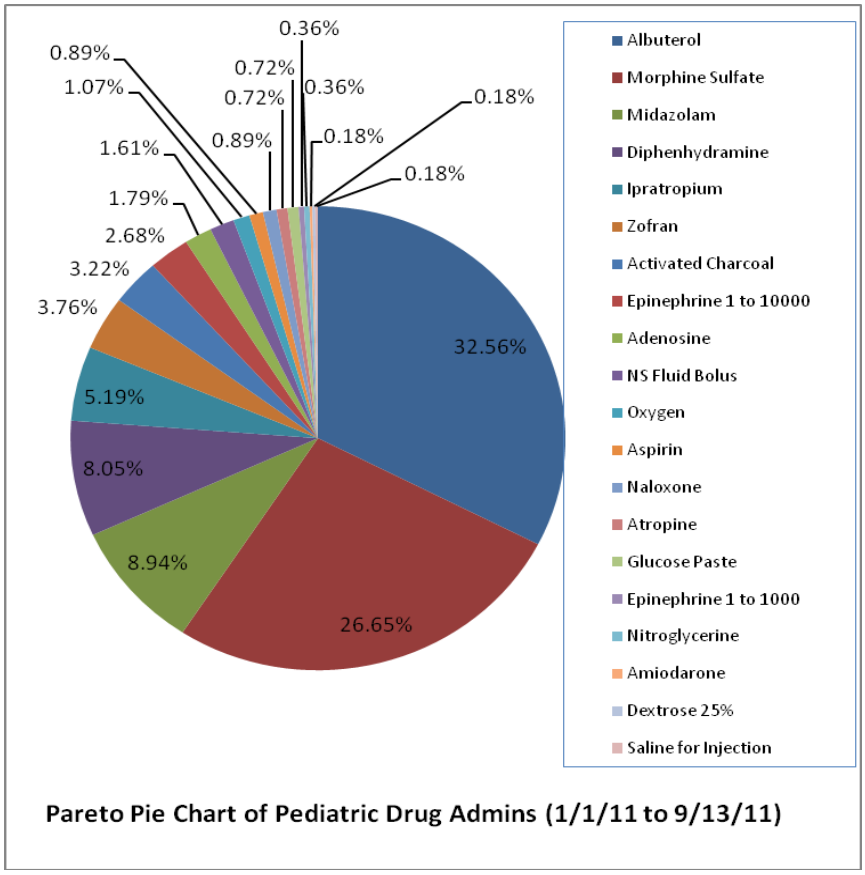
Year	All VF/VT Survival
2005	16%
2006	18%
2007	19%
2008	28%
2009	25%
2010	31%
2011	28%
2012	34%
2013	29%
2014	34%
2015	34%
2016	27%

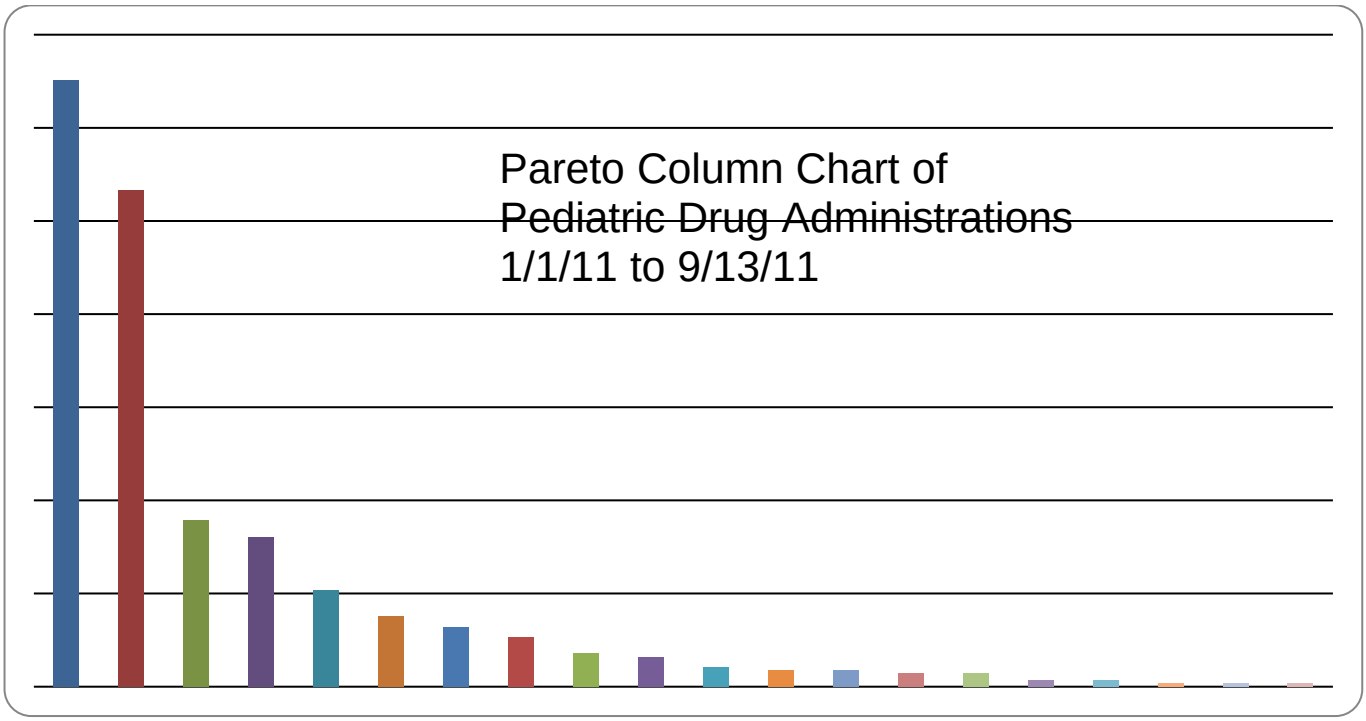
A Control Chart presents a picture of the story.



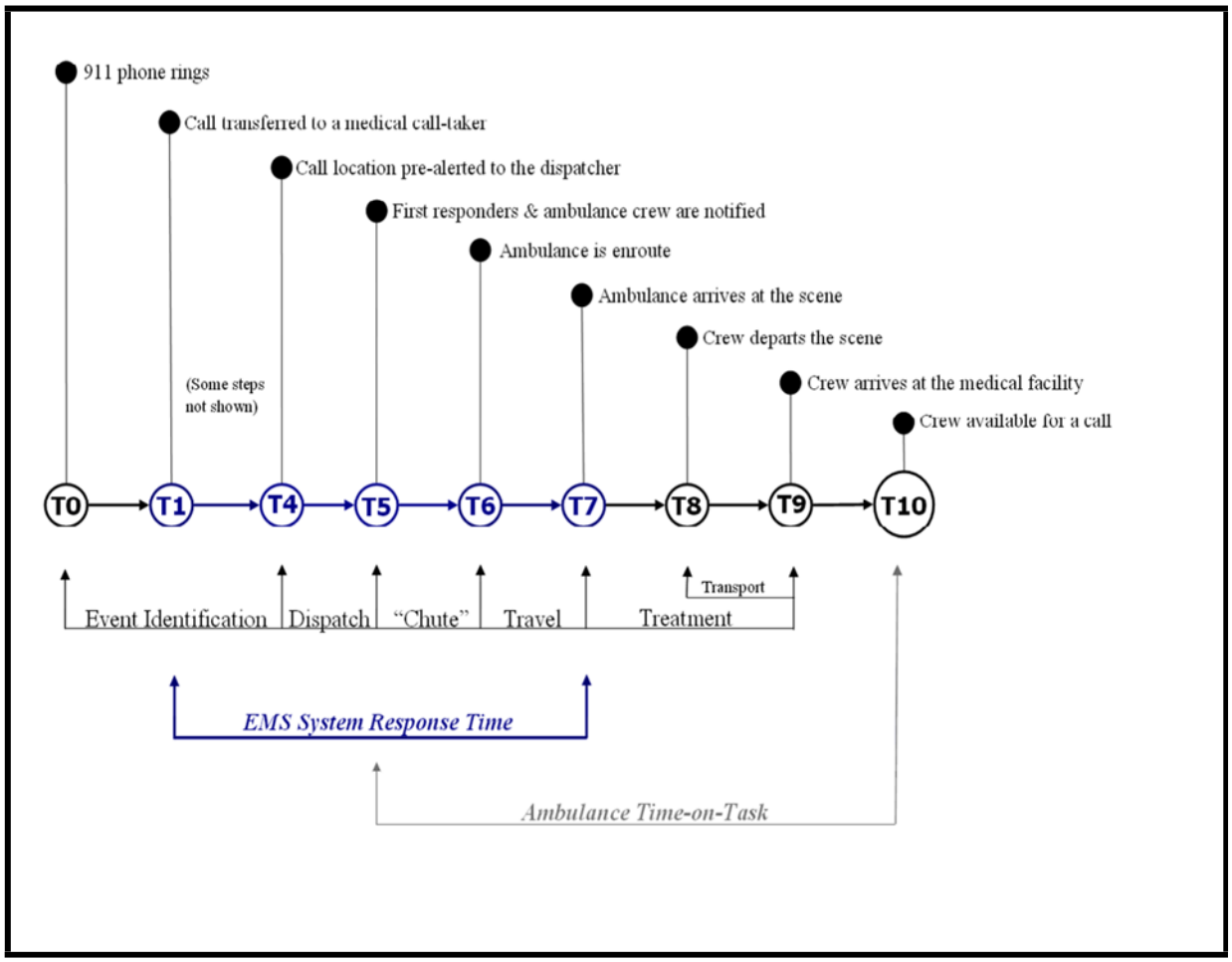
PARETO CHARTS / PIE CHARTS identify the most common contributing factors to a process. For example, regarding pediatric medication safety, first focusing efforts in analyzing and reducing errors in Morphine and Midazolam administrations makes sense.

	% of Total Pediatric Med. Administrations
Albuterol	32.56%
Morphine Sulfate	26.65%
Midazolam	8.94%
Diphenhydramine	8.05%
Ipratropium	5.19%
Zofran	3.76%
Activated Charcoal	3.22%
Epinephrine 1 to 10000	2.68%
Adenosine	1.79%
NS Fluid Bolus	1.61%
Oxygen	1.07%
Aspirin	0.89%
Naloxone	0.89%
Atropine	0.72%
Glucose Paste	0.72%
Epinephrine 1 to 1000	0.36%
Nitroglycerine	0.36%
Amiodarone	0.18%
Dextrose 25%	0.18%
Saline for Injection	0.18%
TOTAL	100.00%





FLOW CHARTS provide a picture of the structure of an organization or the work flow of a process over time.



Anatomy of an EMS Call
Fitch Consultant Report, Alameda County, California, EMS System Review, January 2008

IV. Action to Improve

"What are we doing to make things better?"

The EMS Agency shall establish and facilitate a system wide quality improvement program to monitor, review, evaluate and improve the delivery of prehospital care services.

The program shall involve all system participants and shall include, but not be limited to the following activities:

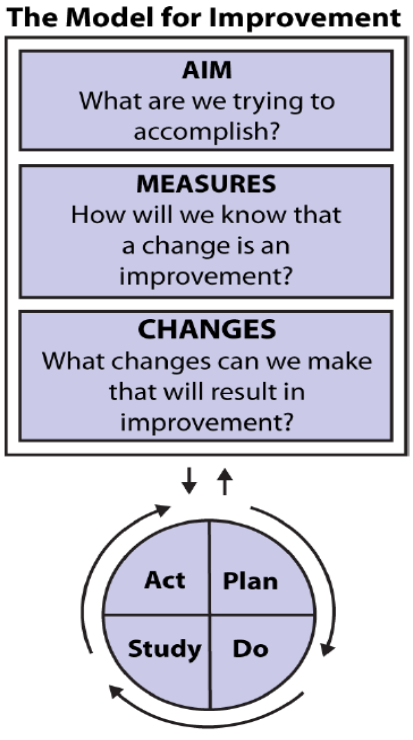
- Prospective - designed to prevent potential problems.
- Concurrent - designed to identify problems or potential problems during the course of patient care.
- Retrospective - designed to identify potential or known problems and prevent their recurrence. Reporting/Feedback - all quality improvement activities will be reported to the EMS Agency in a manner to be jointly determined. As a result of Q.A. activities, changes in system design may be made.
- Reporting/Feedback - all quality improvement activities will be reported to the EMS Agency in a manner to be jointly determined. As a result of Q.A. activities, changes in system design may be made.

In developing QI activities, various models and methodologies such as The Model for Improvement, PDSA, DMAIC and The Program/Project Management Model can be used by any organization's quality improvement team.

The Model for Improvement – PDSA Cycle

Institute for Healthcare Improvement

- The **Aim:** *What are we trying to accomplish? How good? By when? For whom?*
- The **Measures:** *How will we know a change is an improvement? What are the process and outcome measures?*
- The **Changes:** *What change can we make that will result in improvement?*



The PDSA cycle gives us a way to quickly test changes on a small scale, observe what happens, tweak the changes as necessary, and then test again—before implementing anything on a broad scale.

- **Plan** – State objective of the test, make predictions, Develop an improvement plan to carry out the test (who, what where, when)
- **Do** - Carry out the test or trial, document problems and unexpected observations, begin analysis of the data
- **Study** - Complete the analysis of the data, compare the test data to predictions, and summarize what was learned
- **Act** - What changes are to be put into policy and institutionalized? What will be the objective of the next cycle? What, if any, re-education or training is needed to effect the changes?

Six Sigma

Institute For Healthcare Improvement

The focus of Six Sigma is reducing variation or the defect rate, measured by Sigma level, or "Defects per Million Opportunities." The Six Sigma improvement framework consists of six basic steps, known as DMAIC for short:

- **Define.** Define the problem in detail.
- **Measure.** Measure defects (in terms of "defects per million," or Sigma level).
- **Analyze.** In-depth analysis using process measures, flow charts, defect analysis to determine under what conditions defects occur.
- **Improve.** Define and test changes aimed at reducing defects.
- **Control.** What steps will you take to maintain performance?

Once an Improvement Plan has been implemented, the results of the improvement will be measured. Changes to the system will be integrated and standardized. A plan for monitoring future activities will be established to ensure the change continues. Findings and plans are discussed and implemented through the EMS Quality Council.

Program/Project Management Model

Program/Project Title	A short title that labels the program/project should be concise and clear.
Purpose	A clear program/project purpose related to the overall EMS Purpose to improve health and reduce pain and suffering should be clearly defined in one sentence.
Vision	Where we see the program/project in the future related to the overall EMS Vision should be clearly defined in one sentence.
Values	The main concerns and cares of the program/project related to the overall EMS Values of STARCARE should be stated.
Program/Project Scope	The parameters of the program/project, what's included and/or not included, "what's in or out", should be defined.
Program/Project Members	The program/project leader and members should be listed. The roles and responsibilities of the leader and each member should be clearly defined.
Measurements, Outcome	Established benchmarks and measures as well as other innovative data measures that are pertinent to the improvement program/project should be established. Results and measurements from the patient's perspective are essential.
Improvement Projects	Define the specific work being done within the Quality Improvement program/project.
Schedule	The difference between a wish and a goal is that a goal contains a deadline. Intermediate and final project deadlines should be determined and followed.

POLICY REVIEW PROCESS

(See Addendum - 2016-2018 Policy Update Summaries)

1. INTRODUCTION

1.1 The policy review process is an advisory process to the EMS Medical Director for the formulation of medical protocols. Policy suggestions and/or draft policies are accepted from committees, system participants, individuals, and/or interested parties.

1.2 Policies will be evaluated on an annual basis with adequate time allowed for training and distribution. Specific recommendations for additions, deletions and/or revisions should be forwarded to the EMS Agency.

2. POLICY PROCESS

2.1 Written Public Comment Draft

2.1.1 The EMS office will distribute draft policies to the appropriate system participants and/or interested parties for written comments.

2.1.2 Policies under consideration that affect the EMS system as a whole will be sent out for review by all systems participants. A policy under consideration that applies to a limited group will only be sent to those who would be directly affected.

2.1.3 The time frame allowed for the return of comments will be 60 days. Comments may be mailed or faxed to the EMS office, but must be received no later than 4 p.m. on the deadline date.

2.1.4 All comments will be reviewed by the EMS Medical Director. All suggestions will be taken into consideration.

2.2 Public Testimony

2.2.1 Public comments will be heard at the next most appropriate Emergency Medical Oversight Committee (EMOC) meeting (usually in August)

2.2.2 A final draft of the policy will be distributed prior to the meeting.

2.2.3 Time will be allotted at the meeting for public testimony and discussion. All recommendations will be taken into consideration during the finalization of the policy.

3. ANNUAL POLICY REVIEW PROCESS TIMELINE:

Policy Review Process	Timeline
Deadline for policy ideas	**April**
Written public comment draft released	May
Written comments due back to EMS	**June**
Public Testimony at EMOC	July
Finalized policies released	**August**
Update training	August/September
Effective date of new policies	**January 1 of Policy Year**

Specific dates set annually. Subject to change.

Ongoing EMS Agency Quality Improvement Activities

QI Project/Programs	Primary QI Partners	QI Activities
Cardiac Care/STEMI	• The STEMI Committee with STEMI centers and EMS providers • Take Heart America • CPR 7 with Schools • Equipment Vendors	• October 2015 Cardiac Arrest Registry to Enhance Survival (CARES) • CPR training • System Based Approach • Improving STEMI Triage • Reduce time from onset to definitive care • Community AEDs • CPR 7 (7th graders trained in CPR) • 12 Lead Program/Transmission • Feedback to providers on Pt outcomes • MOU Renewals • Kaiser Oakland STEMI/Cardiac Arrest Center Jan. 2017 • Code Stat Trial
Stroke Care	• Stroke Committee with Stroke Centers and EMS providers	• MOU Renewals • Improving Stroke Triage • Reducing time from onset to definitive care • Public Stroke Education • Feedback to providers on Pt outcomes
Trauma Care	• Trauma Audit Committee (TAC) with Trauma Centers and Providers • Regional TAC with other counties • Air Transport Providers	• Trauma Case Reviews • Improve Triage • Improve Spinal Immobilization Triage and Care • Efficient Aircraft Utilization • Feedback to providers on Pt outcomes • 2017 TXA Trial Study • Trauma Re-Triage Procedure o (Adult) - New January 2017 o (Pediatric) – New January 2017 • American College of Surgeon Trauma Center Verifications o Children's - Level I o Highland - Level I o Eden - Level II
Pain and Suffering Reduction	• All	• Reduce pain and suffering • Analyze pain scales before and after treatments • Analyze causes of pain and suffering • Analyze non-invasive pain reduction treatments in all demographics • Analyze analgesic and anti-nausea treatments in all demographics • Implementation of comfortable patient movement measures such as vacuum mattress use • Patient Satisfaction Surveys
Disaster Planning, Response, Readiness	• All partners, local and statewide	• Improved communication strategies between local, state and federal agencies • Improved surge capacity • Improved disaster caches • Development of standard MCI forms • Urban Shield and other disaster drills and training • ReddiNet expansion and training • EBRICSA - ALCO Permitted BLS providers to have EBRICSA radio in each permitted ambulance by year end 2017. • Pediatric Readiness Project - Strengthen Pediatric Readiness Contract with UCSF Benioff Site Visits and follow-up reports with recommendations for improvement conducted between April 2016-2018

Contracts	• Contracted Providers and Partners	• Contract compliance monitoring of all line items • Development of new agreements
Unusual Occurrences, Investigations, Enforcement	• All providers and receiving facilities	• Ems Duty Officer Notification Policy –January 2017 • Development of an EMS investigation/enforcement unit with CLEAR training (or equivalent) • Identify sentinel events • Development of a standard intake and investigation process • Transparent reporting
Data Collection, Flow and Analysis	• EMS Providers • Data Steering Committee with all partners/provider • First Watch • Zoll • Medtronics • DNI	• Improving the flow of data between all partners and EMS • Single Zoll ePCR for FRALS and ALS Transporters implemented • Tableau reporting analytics used by all EMS providers • Improved data communications via wireless, internet, intranet and landlines • Use of data expertise • Use of local data for EMS system analysis and interventions if necessary • Definitive Networks Incorporated Data Hosting / Training Services contract extension to June 2019 • Establishing bi-directional data exchanges • Upgrade to NEMSIS 3.4, 2017 • Surveys
EMT Certification, Paramedic Accreditation	• EMS Providers • EMSA	• EMS to update certification and accreditation policies • Providers to develop new hire employee education and continuing education plans including field training and evaluation • Updating Policy 2000, Policy/Skills Competencies
EMT/ Paramedic Training Programs	• All In-County Training Programs • All providers	• Update Training Program Policies • Preceptor Program Improvement including new graduate survey • Ensuring provider and training programs are compliant with EMS state and local policies • EMS Core
Policy/Protocol Development	• Quality Council • Stroke Committee • STEMI/CARC Committee • TAC • ePCR Committee • EMS Section Chiefs • Receiving Hospital Committee • Field Providers Input	• Continuous update of policy/protocols to address system improvement needs • Simplification of existing policies • Increase flexibility in protocol development and implementation to include online training and electronic protocol distribution • Implemented Mobile Field Manual Application
EMS Operations	• Maintain current EMS Administration Policies and Procedures	• Bypass Policy – A new ALCO EMS “Extended Wait Times” and “Bypass Policy” was added in May 2015 to mitigate ambulance patient offload delays. • Ambulance Rerouting Policy 2015. • Ed Closure Policy 2015

Research	All	• Studies o Cardiac Arrest o Sepsis o TXA o MPDS o Responder Resilience o Chest Pain o Acute Stroke o Superuser Transport o MPDS/Non-Transport Rates o SMR o Altered Mental Status o ASA for ACS o Hypoglycemia/EMS Transport o Laryngoscopy • King Vision Trial • Bay Area Journal Club • Analysis of latest medical research related to EMS
Injury Prevention	• All	• Bicycles Helmets • Car Restraints • Senior Injury Prevention
Aircraft Utilization	• CALSTAR, REACH, CHP, Lifeflight ,EBRPD	• Monitor appropriate aircraft utilization
Emergency Medical Dispatch	• All Providers and Dispatch Centers • All PSAPS	• Timely dispatch of appropriate resources • MPDS QI/QA Critical Interventions
Community Paramedicine	• Trial with Alameda City Fire Department	•

Emergency Medical Services for Children (EMSC)

"Emergency Medical Services for Children (EMSC)" is a program that addresses the specific care of children within the EMS system to include the prevention, prehospital, emergency department, in-patient and rehabilitation services. This includes planning, implementation, management, policy development, evaluation, and education consistent with California / National EMSC standards/ guidelines.

Hospital Preparedness Program (HPP)

The administration of the Hospital Preparedness Program (HPP) grant continues under the Alameda County Public Health Department. The HPP EMS Coordinator continues to coordinate the HPP workplan deliverables with the HPP Coordinator in Public Health. ALCO EMS staff support activities of the HPP workplan (such as the 700 megahertz radio programs and the annual statewide exercise). The HPP EMS Coordinator is the co-project lead for the statewide exercises in 2016 and 2017.

Regional Disaster Medical Health Specialist/Disaster Preparedness

The RDMHS provides 24/7 response to Region II emergencies; emergency mutual aid coordination for medical and health including processing situation reports and resource requests from the Region II Operational Areas; management of the Alameda county MHOAC directory including the metrics resource directory; participation in Urban Shield including the organization of the Ambulance Strike Team mass casualty scenario. The RDMHS also leads the regional Ebola and Infectious Disease Transportation project.

ALCO AED Project HeartSAFE works with Alameda County departments for assignments of department contacts, site coordinators, people to be trained, placement of AEDs, and ongoing promotion and maintenance of the AEDs.

Community Paramedic Program

The City of Alameda Fire Department was selected to participate in a pilot study to develop one of the very first Community Paramedic Programs in the State of California. Community Paramedics provide follow-up care for selected individuals with chronic illnesses who have been recently discharged from the hospital. Additionally, Community Paramedics will connect at-risk populations to appropriate resources, including those who frequently use emergency services.

VI. Training and Education

EMERGENCY MEDICAL SERVICES CORPS

Alameda County EMS Agency works with the Alameda County Health Pipeline Partnership to provide ethnically diverse youth of the county with academic, social, and professional development to build a successful career in all areas of the health industry. The vision is to have a healthy workforce that reflects the rich ethnic and cultural diversity of our community.

INJURY PREVENTION PROGRAM

The Injury Prevention Program primarily targets children, older adults and organizations that provide services to these populations.

The **Child Passenger Safety (CPS) Work Group** educates service providers on child passenger safety seat laws and proper use and installation of car seats. As part of an Alameda County Court Diversion program, the workgroup provides CPS education for people cited for car seat or seat belt violations. The workgroup also conducts annual CPS technician and educator courses.

The **Helmet Safety Program** provides age appropriate and interactive presentations focused on rules and best practices for using non-motorized wheeled vehicles (bikes, scooters, skateboards) for children ages eighteen and under.

The **Senior Injury Prevention Program (SIPP)** partners with community organizations to provide public education and assistance to reduce preventable injuries to older adult. All fall prevention research shows that the most effective fall prevention programs are multi-faceted and include these components:

- Physical Activity Training Sessions to train lay people who are conducting exercise classes
- SIPP partners with the Area Agency on Aging to provide home modifications, medication management assistance, and physical activity classes geared towards fall prevention.
- Fall Prevention Discussion Groups –These sessions began as focus groups in 1999 to help us collect data and understand when, where, and how falls occur in our community.
- Driving Safety
    - Driving Safety Discussion Groups –
    - CarFit – Helps mature drivers learn how to adjust their car “fit” them in a way that provides the best visual ability, safety and access to controls.
- Bone Density Screenings are conducted by EMS/SIPP staff using the densitometer purchased with Measure A funding.
- Hospice “Getting the Most Out of Life” – This program’s vision is to increase enrollment of hospice eligible patients into hospice care by educating caregivers, patients and the public on what hospice has to offer and improving the current image of hospice

DISASTER TRAINING - DRILLS - EXERCISES

- Urban Shield
- EOM Training
- Active Shooter Training
- TEMS
- Ambualnce Strike Teams
- Annual CA EMSA Medical / Health Exercise Planning, Table-Top and Functional Exercise / AAR
- EMSA statewide medical health disaster exercise
- Golden Guardian Exercise
- BLS Transport Surge Tabletop
- EBOLA/Infectious Disease Training
- ALCO annual disaster exercise, and other large scale drills and exercises
- Child Care Emergency Plan – Train the Trainer

CONFERENCES

- Annual California Neonatal/Pediatric Disaster Coalition Conference
- Senior Injury Prevention Conference
- Operation Independence Emergency Preparedness Training
- "Getting the Most Out of Life" Hospice Outreach

PARAMEDIC AND EMT TRAINING PROGRAMS

Paramedic and EMT Training Programs are approved and monitored in accordance with California Code of Regulations, ***Title 22***. Training programs receive EMS education initiatives associated with treatment protocol updates and quality improvement activities.

CPR 7

Emergency Medical Services with School Health Services trains 7th graders and utilizes them to train the community to create a multiplier effect to increase Alameda County's bystander CPR rate.

CPR-7 Education	School Year 2016-2017	School Years 2010-2017
CPR Educated 7th Grade Students	6599	51845
CPR Educated Community	11103	98344
Total CPR Educated	17602	150189

CONTINUING EDUCATION (CE) *Title 22. DIVISION 9. CHAPTER 11*

Training and Education is fundamental to the success of quality improvement and is addressed in collaboration with quality and training experts from all of our partners throughout the EMS system. CE training program objectives are designed to:

- Meet State licensure/certification requirements and/or County accreditation requirements
- Be developed with educational content to address Alameda County specific needs
- Provide standards-based training for all fire and ambulance personnel
- Integrate prehospital skills/CE training into a county-wide system
- Utilize patient simulator training countywide to achieve training objectives
- Improve and integrate "partners" in ALS/BLS training
- Facilitate increased interagency training to promote cooperation and respect

EMS will work in strong partnership with CE training programs to communicate and educate EMS providers throughout the system in the following ways:

- Identification, development and implementation of EMS best practices
- Skills and protocol focused indicator reports monitoring field practice and success
- Annual EMS updates on protocol changes and quality initiatives
- Support in the development of standardized curriculum and resources to support training activities
- Review of educational needs assessment
- Recommendations for training on clinical and patient care issues

VII. Annual Update

ALAMEDA COUNTY ANNUAL REPORT

The EMS Medical Director evaluates the QI Program with the EMS QI Council at least annually. This group is tasked with ensuring that the QI Plan is in alignment with our strategic goals, and reviews the plan to identify what did and did not work. From this information, an Annual Update is provided to the CQI Team and will include the following:

- Indicated monitors
- Key findings and priority issues identified
    - Identification of any trends
- Improvement action plans and plans for further action
    - Description of any in-house policy revisions
    - Description of any continuing education and skills training provided as a result of Improvement Plans
- Description of whether the goals were met and whether follow up is needed
- Description of next year's work plan based on the current year's indicator review

The Annual Update is a written account of the progress of an organization's activities as stated in the EMS QI Program. Refer to the previous year's update and work plan describing how, how often and who (job title) in your organization evaluates the QI Program (annually at minimum). This include the indicators monitored, key findings/priority issues identified, improvement action plan/plans for further action, and state whether goals were met. If goals were not met, what follow-up is needed, if any? The update shall include, but not be limited to a summary of how the provider's EMS QI Program addressed the program indicators.

The EMS QI Program shall be reviewed by the LEMSA or the EMSA at least every five years.

Description of Organizations
The description should include an organizational chart showing how the QI Program is integrated into the organization.

Statement of EMS QI Program goals and objectives
Describe processes used in conducting Quality Improvement activities.
Were goals and objectives met?

List and define indicators utilized during the reporting year

- Define state and local indicators
- Define provider specific indicators
- Define methods to retrieve data from receiving hospitals regarding patient diagnoses and disposition
- Audit critical skills
- Identify issues for further system consideration
- Identify trending issues
- Create improvement action plans (what was done and what needs to be done)
- Describe issues that were resolved
- List opportunities for improvement and plans for next review cycle
- Describe continuing education and skill training provided as a result of Performance Improvement Plans
- Describe any revision of in-house policies
- Report to constituent groups
- Describe next year's work plan based on the results of the reporting year's indicator review

Sample Work Plan Template (see Quality Indicators on page 27)

Indicators Monitored	Key Findings/Priority Issues Identified	Improvement Action Plan Plans for Further Action	Were Goals Met? Is Follow-up Needed?

ADDENDUM / 2016-2018 POLICY UPDATE SUMMARIES

2018 POLICY UPDATE SUMMARY

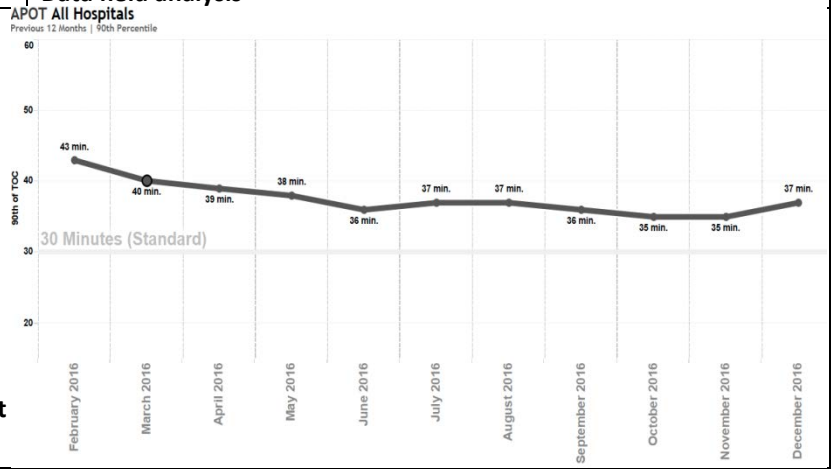
POLICY/PROTOCOL	2018 SUMMARY OF UPDATES PPT/VIDEO/SKILL TRAINING	REASON FOR CHANGE / OTHER NOTES
Misc.		
Inside Back Cover	• Remove Alta Bates as a stroke center	
General Section		
Assault / Abuse / Domestic Violence (Pg. 4,5)	• If patient is NOT transported - and if safe, appropriate and feasible - perform a DV Lethality Screen o If patient screens HIGH RISK, refer patient to the Family Violence Law Center (FVLC) by calling the FVLC 24/7 hotline # 800-947-8301 (BIG-BOLD). o Briefly describe the DV circumstances to the FVLC advocate without providing any patient identifying information o If patient consents to speaking with FVLC advocate, hand patient the phone o If patient does not consent to speaking with FVLC advocate, give patient discreet FVLC resource information and advise that he/she can call 24/7 o Repeat basic safety planning tips that the FVLC advocate provides • If patient is transported, inform receiving facility of DV incident and presence of law enforcement on scene • Added DV Algorithm (PPT/VIDEO)	IF DV is suspected AND if feasible, perform a DV Lethality Screen on Non-Transported Patient
Burn Pt Care (Pg.8)	• Remove Base Contact Requirement PPT…..	
CPR (Pg. 10)	• Updated CPR Matrix to 2015 guidelines	
CPR (Pg. 11)	• Removed Hypoglycemia as one of the causes of persistent arrest Added AutoPulse Contraindications • ≤ 17 years of age • Patients with traumatic injury (wounds resulting from sudden physical injury or violence) Added Lucas 2 Contraindications • If it is not possible to position LUCAS safely or correctly on the patient's chest. • Too small patient: If you cannot enter the PAUSE mode or ACTIVE mode when the pressure pad touches the patient's chest and LUCAS alarms with 3 fast signals. • Too large patient: If you cannot lock the Upper Part of LUCAS to the Back Plate without compressing the patient's chest.	Clearly defines mechanical CPR device contraindications
Crush Syndrome (Pg.13)	Removed Base Contact Requirement (PPT)	
Hyperkalemia (Pg. 15)	• Added Albuterol (PPT) • Removed Base Contact Requirement (PPT)	Albuterol promotes cellular reuptake of potassium resulting in reduced blood serum potassium levels
Local Optional Scope (Pg.21)	Pulse Oximetry, Glucometer, ASA, Epinephrine Adult/Pedi Auto Injectors, Naloxone training (and supplies) required for BLS 911 Transport >>> Optional, with EMS MD approval, for BLS IFT (PPT, BLS SKILL)	Modified to reflect updated Title 22 regulations
Sepsis (Pg. 53)	• Initiate IV Fluids (VIDEO/PPT) If patient has sign and symptoms of shock, administer 500-1000ml NS IV/IO. If unresponsive to fluids, consider Epinephrine diluted to 0.01mg/ml (10mcg/ml), 0.5ml (5mcg) slow IV/IO every 3 minutes, titrate to a SBP > 90. (VIDEO/PPT)	Emphasizes fluid administration in Sepsis patients

POLICY/PROTOCOL	2018 SUMMARY OF UPDATES PPT/VIDEO/SKILL TRAINING	REASON FOR CHANGE / OTHER NOTES
Shock (Pg.55)	• Epinephrine diluted to 0.01mg/ml (10mcg/ml), 0.5ml (5mcg) slow IV/IO every 3 minutes, titrate to a SBP > 90 (VIDEO/PPT/SKill) • Removed Dopamine (VIDEO/PPT)	
BRUE (Pg. 66)	Modify title to BRUE (Formerly ALTE) (PPT)	ALTE (BRUE) title is consistent with Impression list and PALS
Neonate (Pg. 68)	In healthy full-term newborns, routine bulb syringe suctioning is not indicated. (PPT)	Multiple studies have found no benefit to routine suction of health full-term neonates.
Operations Section		
ALS Responder (Pg. 87)	"First Responder and transport personnel providing patient care are responsible for accurately documenting all available and relevant patient information on the electronic health record." (PPT)	
Procedures		
Airway Management (Page removed)	Pg. 118 Airway Management Policy removed (See ETCO2 Indications)PPT	If used as designed, Airway Checklist does have value
Intraosseous (Pg. 134-135)	Added Humeral Site IO (VIDEO/PPT/SKILL). Tibial Site IO may be used Updated IO Contraindications: • Fracture in target bone. • Previous, significant orthopedic procedure at the site, prosthetic limb or joint. • IO catheter use in past 48 hours of the target bone. • Infection at the area of insertion. • Excessive tissue (severe obesity) and/or absence of adequate anatomical landmarks.	• Evidence suggests the humerus may be a superior site for flow rates, drug delivery, and management of infusion pain. • Clarifies IO Contraindications
Administration Policies		
Policy #2000 Policy and Skills Competency	In conjunction with paramedic and EMT skills and policy competency evaluations, use Quality Improvement indicators as a guideline for analysis of skills and policy competencies	
CLINICAL PATIENT CARE	**Supplemental Training**	**REASON FOR UPDATE OR CHANGE**
Trauma Assessment	Central Cord Syndrome (VIDEO/PPT) Trauma Doc….	
Cardiac	STEMI	
VAD	(VIDEO/PPT) Dr. Jason Chan	
12 Lead	Indicated patients should receive a prehospital 12 lead ECG within 10 minutes of EMS arrival (PPT)	
Overdose/Poisoning	"Toxidrome" reference (HANDOUT, PPT?)	
ETCO2 Indications	►Cardiac/Respiratory Arrest (PPT) ►Shortness of breath with visible distress ►Significant tachypnea/bradypnea <10 >30 (adults) ►Patients who cannot protect their own airway ►ALTE ►Respiratory depression after receiving sedation or pain management ►Patients treated with an airway adjunct, BVM, suctioning or CPAP for airway compromise	

2017 POLICY UPDATE SUMMARY

POLICY/PROTOCOL	2017 SUMMARY OF UPDATES (01/20/2017)	Quality Improvement Measures
Inside Back Cover	Added STEMI Centers [HACH, KFre, KOak (added KOak to EKG Policy)]	STEMI #s to all STEMI Centers
General Section		
Assault/Abuse / Domestic Violence	• Added APS Website URL (APS Reporting can be done online) • Added Domestic Violence (DV) to Assault/Abuse Policy o If feasible (and with patient consent), conduct DV Lethality screen AND call Family Violence Law Center (FVLC) hotline and hand patient the phone. (800) 947-8301 o If patient is NOT transported, provide basic safety planning o If patient is transported, inform receiving facility of DV advocacy steps taken o Please document thoroughly	2016 APS 37 CPS 5 DV 9 (7 in Interventions) 2017 DV 1 Search Narrative
Transport Guidelines / Patient Destination	• Removed "without regard to county lines" in 1.1.1 • 1.1.1 "Patients should be transported to the closest hospital appropriate for their medical needs within a reasonable transport time, or as specified in the patient care protocols "	OOC Transports Destinations and OOC % of Total Transports
Adult/Pedi Sections		
Anaphylaxis (Adult/Pedi)	Moved "IV/IO NS" to Fluid Bolus Text Box	None
Acute Stroke	Please "Make sure to either: ►►transport the witness to the stroke center in the ambulance (PREFERRED); OR, ►►if driving, tell him/her to leave immediately and meet you at the stroke center; AND, ►►obtain a contact number where the witness can be reached by the attending physician"	1-1-17 to 1-18-17 Stroke Witness Disposition Ambulance 21 Enroute 31 (Missing 10 phone #s) N/A 48 Undertriage
Asystole/PEA Adult	• Removed hypoglycemia from reversible causes	0 Change in Blood Glucose…..?? Search D10 in CA
Asystole / Anaphylaxis / Resp Distress/ V-Fib./ etc……	• Simplified Epinephrine concentration unit to "mg/ml" • Modified 1:1,000 to 1 mg/ml • Modified 1:10,000 to 0.1 mg/ml	Pedi Dosing (Audit Method Used)
VF/VT (Adult/Pedi)	Witnessed/Unwitnessed Cardiac Arrest • Perform high quality CPR until defibrillator available/charged	Cardiac Arrest Survival – Time to Defibrillation P+ and BFD working ECG uploads to ePCR
Operations Section		
Death in the Field	• Removed "and asystole" for EMT in 2.1.3 • Added "End of Life Act" (AB 15). Resuscitation should be withheld if there are DNR orders or evidence (e.g. Final Attestation Form) that the patient is exercising their rights under the End of Life Act." • Added 2016 POLST Form	• End of Life Act # • POLST # Add Pulseless

Equipment / Supplies	• Added Vacuum Mattress (VM) requirement • Added Mechanical CPR Device (optional) • Added POW Kit mandatory requirement for FRALS and ALS units • Add Triage Tape requirement • HAZMAT TEAMS - Dual-chamber autoinjectors (e.g. - DuoDote®) may be substituted for individual doses of atropine and pralidoxime • Modified Syringes to Luer Lock, Added Filter Needle	• VM treatment # Date / # / % of Total SMR • May 2016 26 4.93% • June 2016 25 4.61% • July 2016 32 6.41% • August 2016 28 5.35% • September 2016 25 4.57% • October 2016 35 6.21% • November 2016 32 5.47% • December 2016 24 4.45% • January 2017 19 6.91% (to 1/18) • Central Cord Syndrome Training
POLICY/PROTOCOL	**2017 SUMMARY OF UPDATES (01/20/2017)**	**REASON FOR UPDATE OR CHANGE (Why are we doing this?)**
PROCEDURES		
Advanced Airway Management	• "An intubation attempt is defined as the insertion of the laryngoscope blade into the patient's mouth" • "A supraglottic airway attempt is defined as the insertion of the supraglottic airway device into the patient's mouth"	• Intubation Success Rates
MCI		
MCI	• Either SALT or START triage can be used • Standardized Triage Colors are Red Yellow Green Black • During initial pt contact, use triage tape////At CCP, use triage tags • ACRECC (with ICS structure) will track patients in ReddiNet • Receiving hospitals will track patients in ReddiNet (& inc. tag # in tracking) IC & ACRECC will reconcile patient tracking during and at the end of the MCI	Reddinet Use in MCI
CLINICAL PATIENT CARE	**2017 SUMMARY OF SUPPLEMENTAL TRAINING**	**REASON FOR TRAINING (Why are we doing this?)**
Falls	Added Fall Risk Assessment Training • Have you fallen in the past year? • Do you feel unsteady when standing or walking? • Do you worry about falling?	At risk fall # "Clunky"
Cardiac Arrest	• Sodium Bicarb should be administered If renal failure or hyperkalemia is suspected • If traumatic arrest (from GSW or other traumatic etiologies) is suspected, do NOT use ACLS medications (including Epinephrine) • If time permits, obtain a BP. This measure should NOT influence or affect patient treatment decisions.	• Bicarb ~20% of all CA….# Unknown change • Epi in Trauma Arrest 40yo GSW arrest in Nov 2016, non-transport • VS analysis
Tachycardia (SVT)	"Modified Valsalva Maneuver"	• 0/2 Data Validation Required
TXA Indications	• Trauma with signs and symptoms of hemorrhagic shock (BP < 90) • Trauma with risk for significant hemorrhage o EBL > 500 AND HR > 120 o Bleeding not controlled by direct pressure or tourniquet o Amputation above wrists or ankles	• TXA #s, study data including undertriage • 2016 25 (7 in Dec) • 2017 1 "Got TXA" PSA

Documentation	**PLEASE ensure accurate VS documentation (including repeated BP and RR). VS data accuracy is important because it is used by ALCO EMS and other researchers to assess patients responses to various treatments**	**Data field analysis**
Ambulance Wait Times	**The Transfer of Care (TOC) Time Definition** **• The patient is physically transferred from the ambulance gurney to hospital equipment** **AND** **• The hospital staff have received a report concerning the transfer of the patient** **Please obtain the hospital staff signature at the TOC Time**	

2016 POLICY UPDATE SUMMARY

Policy/Protocol	2016 Summary of Changes Rev. 9-29-15	QA/QI	Update Reason / Best Evidence Basis
Ambulance Rerouting Criteria (This policy is an abbreviated field version of the admin policy already in effect)	"In the event a hospital is holding two or more ambulances for more than thirty (30) minutes, incoming ambulances may be rerouted and facility placed on bypass by an EMS transport provider supervisor for all non-critical patients until ED resolves transfer of care issues with ambulance service provider(s). "	• Bypass # / Duration • Wait Times	Purpose: To reduce ambulance wait times at hospitals **The Transfer of Care (TOC) time** is defined as the time when: o The patient is **physically transferred** from the ambulance gurney to hospital equipment AND o The hospital staff have received a **report** concerning the transfer of the patient
General Section			
Trauma Patient Care	Added Tranexamic Acid (TXA)	See below	See below
TXA	**INDICATIONS:** Patients >= 18 y.o. with sustained blunt or penetrating trauma within three (3) hours with: • Blunt or penetrating trauma with signs and symptoms of hemorrhagic shock. o Systolic blood pressure of less than 90 mmHg at scene of injury, during ground medical transport, or on arrival to designated trauma centers • Patients who are considered to be high risk for significant hemorrhage: o Estimated blood loss (EBL) of 500 milliliters in the field accompanied with heart rate (HR) greater than 120. o Bleeding not controlled by direct pressure or tourniquet. o Major amputation of any extremity above the wrists and above the ankles **CONTRAINDICATIONS:** • Penetrating cranial injury • Traumatic brain injury with brain matter exposed • (See TXA Field Policy for other contraindications) **DOSE:** Administer TXA 1 gm in 100 ml of NS/D5W via IV/IO over 10 mins. (Do not administer IVP. This will cause hypotension.) Place an approved wristband on patient prior to transport	• TXA admin for indicated patients • Morbidity/Mortality • Blood Transfusions • Fluid Admin • Adverse Effects (including DVT)	**2011 CRASH 2 Trial :** 10 096 patients were allocated to tranexamic acid and 10 115 to placebo, of whom 10 060 and 10 067, respectively, were analysed. All-cause mortality was significantly reduced with tranexamic acid (1463 [14·5%] tranexamic acid group *vs* 1613 [16·0%] placebo group; relative risk 0·91, 95% CI 0·85–0·97; p=0·0035). The risk of death due to bleeding was significantly reduced (489 [4·9%] *vs* 574 [5·7%]; relative risk 0·85, 95% CI 0·76–0·96; p=0·0077). Interpretation - TXA safely reduced the risk of death in bleeding trauma patients in a study 10,96 patients allocated . Based on these results, TXA should be considered for use in bleeding trauma patients.
Adult / Pediatric Sections			
Acute Stroke	**Added KSL destination, Removed KHay and ABH**	N/A	N/A
Asystole / PEA	For Discontinuation of CPR, **ALS resuscitation extended to 30 mins**	See below	See Death in the Field below
Chest Pain	Added **"Patients who have oxygen saturations of greater than 94% without signs or symptoms of hypoxia or impending airway compromise should not receive oxygen."**	O2 Dosing	**2010 AHA Guidelines:** "Supplementary oxygen is not needed for patients without evidence of respiratory distress if the oxyhemoglobin saturation is ≥ 94%."
Pain Management	Add FLACC and PAINAID Scales to Policy Web App (in development)	Pedi/Geriatric Pain Mgmt	Provides easier access to pain scale references

Respiratory Distress	Added **"For patients with COPD, oxygen supplementation should be given to achieve an oxygen saturation of 88%-92%. Higher oxygen saturations in COPD patients have been shown to be harmful. "**	O2 Dosing	• **Effect of High Flow Oxygen On Mortality In Chronic Obstructive Pulmonary Disease Patients In Prehospital Setting: Randomised Controlled Trial** "O2 treatment, titrated by paramedics to achieve SPO2 between 88% and 92%, for patients with breathlessness and a history or risk of COPD, reduced the risk of death from respiratory failure by 58% for all patients and 78% for patients with confirmed COPD, compared with high flow O2." • **Hyperoxygenation can cause**: **(EMS World, Jan. 17, 2012**) o "Absorbative Atelactasis" associated with nitrogen washout o Cellular damage from accumulation of toxic oxygen molecules o Carbon Dioxide Narcosis/Oxygen-Induced Hypercapnia in patients with advanced COPD
ROSC	**"If appropriate, transport pediatric ROSC patients to Childrens"**	Pedi ROSC	Pediatric ROSC pts do not require a cardiac cath procedure
Severe Nausea Pedi/Adult	• Modified Note #3, **"If patient has s/s of anaphylaxis/allergic reaction, follow Anaphylaxis/Allergic Reaction policy."** • Removed former (2015) note #4 co-administration language • Added **"Zofran (Ondansetron) administration during first trimester of pregnancy is not recommended."**	• Audit # of Zofran + Fentanyl • Audit Zofran in pregnancy	• **Zofran should not be given prophylactically when Fentanyl is administered** • **Denmark Ondansetron Studies:** There is confounding (increased vs. none) evidence regarding fetal harm risk associated with Zofran administration during first trimester pregnancy
Operations Section			
Death in the Field	• For Discontinuation of CPR, **ALS resuscitation extended to 30 mins** • Removed 3.9.4. Resuscitation "may be withheld or stopped" IAW 1.3.	• Cardiac Arrest Transport Rate • Resus Times	**Wake County EMS Cardiac Arrest Study 2005-2012** "A large number of patients survived neurologically intact with durations of resuscitation greater than previous guidelines would suggest."
Equipment	• Added PPE IAW OSHA Standards • Added Adult/Pedi ETCO2 Sampling Nasal Cannulas • Added ND Kit components (3 1/4" Decomp. Needle, One Way Vent/Drain Valve) • Added Triage Tape (Optional) • Added IO needle weight criteria **(15mm pink needle is optional, 25 mm blue for pts >3 kg)** • Added County Approved Video Laryngoscopy (Optional)	• ETCO2 Use • IO Needle Use	N/A
Procedures Section			
IN	Added IN routes for Fentanyl(Pain Management) / Midazolam (Sedation)	IN route use	This aligns IN policy with Pain Mgmt. and Sedation policies