

Public Health - Seattle & King County



**Division of
Emergency
Medical Services**

2012 Annual Report
to the King County Council
September 2012

TABLE OF CONTENTS

INTRODUCTION	5
EXECUTIVE SUMMARY	6
SYSTEM OVERVIEW	7
EMS DIVISION PROGRAMS OVERVIEW	10
EMS DIVISION REGIONAL PROGRAMS	11
2008-2013 STRATEGIC INITIATIVES	33
SUMMARY OF 2011 EMS STATISTICS (Seattle & King County)	54
EMS FUNDING AND 2012 FINANCIAL PLAN	64
Appendix A: Regional Map of 2011 Total ALS Call Volume	75
Appendix B: Regional Map of BLS Provider Areas	76
Appendix C: Regional Map of ALS Provider Areas	77
Appendix D: Regional Map of Dispatch Center Service Areas	78
Appendix E: Regional Map of EMS Hospitals	79
Appendix F: Public Access AEDs - King County	80
Appendix G: 2012 EMS Advisory Committee Listing	81
Appendix H: EMS FUND 1190 Revenue/Expenditures Summary	82
Appendix I: EMS Division Bibliography and Citations	83
Appendix J: EMS Division Contact Information	84

Commonly Used Acronyms

EMS - Emergency Medical Services
ALS - Advanced Life Support
BLS - Basic Life Support
EMD - Emergency Medical Dispatch
EMT - Emergency Medical Technician

ACKNOWLEDGEMENTS

The Emergency Medical Services (EMS) Division would like to thank all of the individuals who contributed to the EMS 2012 Annual Report, including managers of the various EMS projects and programs included in the report, **Leonard Roberts** and the **Seattle Fire Department**, and the EMS Division data analysis team of **Linda Becker, Carol Fahrenbruch, Dan Henwood, and Dmitry Sharkov**.

The EMS Division would also like to thank **Dr. Leonard Cobb** and **Dr. Michael Copass** of the Seattle Medic One program for their collaborative efforts in partnering with the EMS Division.

CREDITS

Editors:	Helen Chatalas and Michele Plorde, EMS Division
Design:	Ann Doll, EMS Division
Financial Report:	Cynthia Bradshaw and the EMS Division Finance Team
Photos:	Jennifer Blackwood, Shelby Sprake, the Medic One Foundation, and the EMS Division

INTRODUCTION

We are pleased to present to you the Emergency Medical Services (EMS) Division 2012 Annual Report, as required by King County Ordinance #12849.

The report offers an excellent opportunity to learn about the many EMS programs and activities taking place throughout the region. Of particular interest this year was the extensive levy planning process that started in October 2011. As required by King County Ordinance #15862, an *EMS Advisory Task Force* was created to make programmatic and financial recommendations regarding EMS service during the 2014-2019 levy period. With its recommendations due to the King County Council by September 2012, the 19-member *Task Force* worked diligently to review and approve a financing package in support of the paramedic, fire department and regional programs that comprise the EMS system in King County. This process demonstrated how seamlessly the many EMS stakeholders in the region came together to show their support for the critical and well-regarded Medic One/EMS program.

During this intense levy planning process, each and every EMS program, both established and proposed, was evaluated and scrutinized for its inherent value-add to the EMS system. This aspect of program effectiveness is called out throughout the annual report, demonstrating how thoroughly every aspect of the system is assessed for potential efficiencies, standardization of patient care, and improved quality of care. Throughout it all, we hope you'll recognize the sense of collaboration and commitment that are the hallmarks of this renowned system.

This year's report conveys the excellence of the EMS service and the commitment of the people who plan and deliver it. We appreciate the opportunity to share this with you.



David Fleming, MD
Director & Health Officer
Public Health - Seattle & King County



Jim Fogarty
Division Director
Emergency Medical Services



EXECUTIVE SUMMARY

Over the last year, the Emergency Medical Services (EMS) Division has continued its mission of providing world renowned, high quality pre-hospital emergency care while successfully adapting to the financial constraints imposed by the lingering economic downturn. The EMS system in King County serves over 1.9 million people in over 2,134 square miles. In 2011, EMS agencies responded to over 164,000 calls for medical emergencies in under 5 minutes on average, including responses to 1,047 cardiac arrests and over 34,000 trauma calls.

One of the hallmark measures of a quality EMS system is the survival rate from cardiac arrest. The EMS system in King County broke the 50% barrier with a 52% cardiac arrest survival rate in 2011, an astounding achievement as most survival rates in the nation hover around 10%. This year's Cardiac Arrest Highlight discusses this amazing feat (see p. 62).

In addition, findings from the 2011 King County Auditor's annual review of EMS in King County were positive for the third year in a row. The report determined that the EMS Division appropriately managed levy resources and financial activities in accordance with the 2010 EMS Levy financial plan and policies. It found that dispatch fee schedules established by independent agencies were based on an acceptable methodology and reflected the dispatch agencies' respective operating costs.

Finally, planning for the next EMS levy period was a dominant focus throughout the region in 2011. As mandated by King County Council Ordinance #15862, an EMS Advisory Task Force convened to review and make programmatic and financial recommendations regarding "an updated EMS Strategic Plan and financing package for the next levy funding period." For eight months, the *Task Force* worked collaboratively with regional EMS stakeholders to review the needs of the system and develop programmatic and financial recommendations to ensure the integrity of our world-class Medic One/EMS system would be maintained. These recommendations, endorsed by the Task Force on July 26, 2012, are due to the King County Council by September 15, 2012 with the final EMS 2014-2019 Strategic Plan due January 1, 2013. The EMS Division played a central role in organizing, staffing and facilitating this process.

The common thread uniting each of these activities is the commitment by EMS agencies to regional partnership and consensus. Sustained cardiac arrest survival rates, successful audit reviews, and development of a regional strategic plan are the direct result of these dynamic partnerships. Our EMS partners in King County should be proud of their achievements and collaborative efforts in improving the health and quality of life for our region's residents.

SYSTEM OVERVIEW

The Medic One/ EMS System Design and Operation

Any time you call 9-1-1 for a medical emergency, you are using the Medic One/EMS system. This internationally renowned regional system provides service to the residents of Seattle and King County, responding to an area of 2,134 square miles and serving a population of over 1.9 million. The system is managed by the King County Emergency Medical Services (EMS) Division and relies on complex partnerships with fire departments, paramedic agencies, EMS dispatch centers, and hospitals to make the program seamless and successful.

The core of the King County EMS program is its medical model, which in essence insists that direction and practice must be derived from the highest standards of medical training and medical care. Thus, the EMS Division strives for emergency medical care that is founded on the highest standards of training, best medical practice, scientific evidence, and close supervision by physicians experienced in EMS.

It is the leadership of the Medical Program Director that ensures the success and the ongoing medical quality improvement of the EMS system. Mickey Eisenberg, MD, PhD, has filled this role for the past nine years. His substantial responsibilities include writing and approving medical protocols, approving all initial EMT and continuing EMT medical education, undertaking new and ongoing medical quality improvement activities, and initiating disciplinary actions when necessary.

Dr. Eisenberg relies on numerous partners to ensure uniformity and consistency across the entire EMS system. He coordinates policies and procedures among the Medical Directors of the region's six paramedic programs: Dr. Michael Copass of Seattle; Dr. Jim Boehl of Bellevue; Dr. Adrian Whorton of Redmond; Dr. Gary Somers of Shoreline; Dr. Tom Rea for south King County; and Dr. Sam Warren of Vashon. Quarterly meetings are held to discuss and take action on paramedic-related matters. Dr. Eisenberg also works closely with the Central Region Trauma Council and the EMS Advisory Committee which provides key counsel to the EMS Division on regional Medic One/EMS policies and practices in King County and reviews major governance issues, the implementation of strategic plans, and other proposals.

To support the best possible outcomes of care, Dr. Eisenberg oversees medical quality improvement. A classic example has been the management and oversight of cardiac arrest cases, and new measures are in the works. The EMS Division has recently initiated a stroke quality improvement effort in coordination with the recent Washington State Department of Health efforts that prioritize the timely and appropriate pre-hospital and hospital care of patients diagnosed with stroke to prevent disability and death (see p. 15 for details).



Paramedics consult with Medical Control doctors from the field.

SYSTEM OVERVIEW, continued

The response system in King County is tiered to ensure 9-1-1 calls receive medical care by the most appropriate care provider. There are five major components in the tiered regional Medic One/EMS system:

Universal Access: A patient or bystander accesses the Medic One/EMS system by calling 9-1-1 for medical assistance. Bystanders' reactions and rapid responses to the scene can greatly impact the chances of patient survival.

Dispatcher Triage: Calls to 9-1-1 are received and triaged by professional dispatchers who determine the most appropriate level of care needed. Dispatchers are trained to provide pre-arrival instructions for most medical emergencies and guide the caller through life-saving steps, including Cardiopulmonary Resuscitation (CPR) and Automated External Defibrillator (AED) instructions, until the Medic One/EMS provider arrives.

Basic Life Support (BLS) Services: BLS personnel are the "first responders" to an incident, providing immediate basic life support medical care that includes advanced first aid and CPR/AED to stabilize the patient. Staffed by firefighters trained as Emergency Medical Technicians (EMTs), BLS units arrive at the scene in under five minutes (on average).

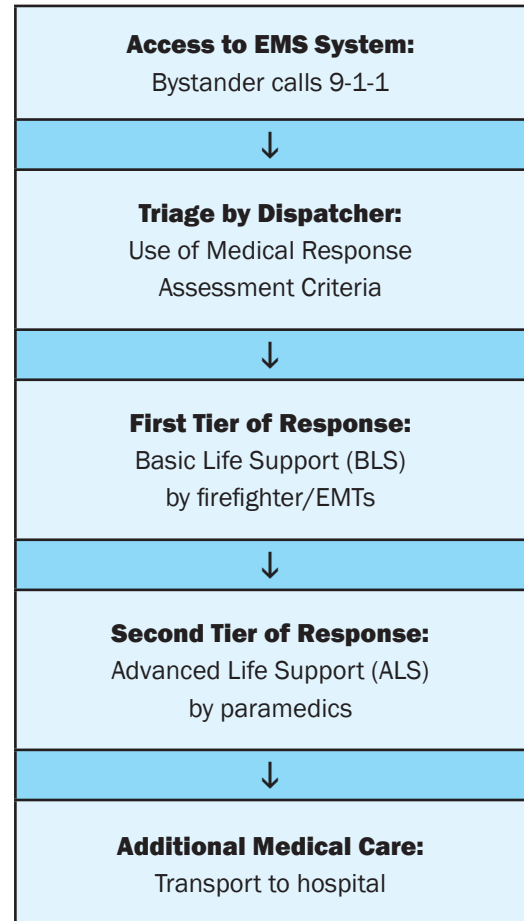
Advanced Life Support (ALS) Services: Paramedics provide out-of-hospital emergency medical care for critical or life-threatening injuries and illness. Paramedics respond on average to about 30% of all Medic One/EMS calls.

Transport to Hospitals: Once a patient is stabilized, it is determined whether transport to a hospital or clinic for further medical attention is needed. Transport is most often provided by an ALS agency, BLS agency, or private ambulance.

The Medic One/EMS system operates in a coordinated partnership among numerous stakeholders across King County to provide high quality pre-hospital medical care.

Dispatch 9-1-1 calls are received by one of five dispatch centers in Seattle and throughout King County. Following medically approved emergency dispatch triage guidelines, dispatchers determine the level of care needed. They are trained to provide pre-arrival instructions for most medical emergencies, and guide the caller through life-saving steps – including CPR) and Automated External Defibrillator (AED) instructions - until the Medic One/EMS provider arrives.

EMS Tiered Response System



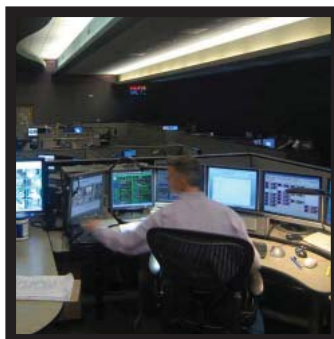
Basic Life Support (BLS) or rapid, first-on-scene medical care, is provided by over 4,000 Emergency Medical Technicians (EMTs) employed by 30 fire-based agencies throughout King County. EMTs receive more than 140 hours of basic training and hospital experience with additional training in cardiac defibrillation (electrical shocks) given to restore a heart rhythm. EMTs are certified by the State of Washington and are required to complete ongoing continuing education to maintain certification. As the first-on-scene provider, BLS contributes significantly to the success of the Medic One/EMS system.

Advanced Life Support (ALS) services, or regional paramedic services, are provided by six paramedic provider agencies in King County: Bellevue Fire Department (4 units), Redmond Fire Department (3 units), Seattle Fire Department (7 units), Shoreline Fire Department (3 units), King County Medic One (8 units) and Vashon Island Fire & Rescue (1 unit). In addition, a contract with Snohomish County Fire District 26 is in place to provide ALS services in the Skykomish/King County Fire District 50 area from Baring to Stevens Pass. Paramedics provide out-of-hospital emergency care for serious or life-threatening injuries and illness. As the second on scene for critically ill patients, paramedics provide airway control, heart pacing, dispensing of medicine, and other life saving out-of-hospital procedures. Paramedics receive over 2,500 hours of intensive training through the University of Washington/Harborview Medical Center Paramedic Training Program and are required to complete continuing medical education to maintain certification. There are currently 26 ALS units located throughout King County.

The EMS Division manages the core **Regional Services** that support the key elements of the system. They are essential to providing the highest quality out-of-hospital emergency care available. Regional coordination of these various activities is important to support a standard delivery of pre-hospital patient care, develop regional policies and practices that reflect the diversity of needs, and maintain the balance of local area service delivery with centralized interests. Examples include:

- Uniform training of EMTs and dispatchers
- Regional medical control and quality improvement
- Injury prevention programs
- Regional data collection and analysis
- Regional planning for the EMS system
- Financial/administrative management

The EMS Division also manages innovative projects and operations called **Strategic Initiatives** designed to improve the quality of Medic One/EMS services and manage the growth and costs of the system. Regional Strategic Initiatives have allowed the Medic One/EMS program in King County to maintain its role as a national leader in the field and have been key in the system's ability to manage its costs.



EMS DIVISION PROGRAMS OVERVIEW

The Emergency Medical Services (EMS) Division of Public Health - Seattle & King County is dedicated to increasing survival and reducing disability from out-of-hospital emergencies in the county by providing the highest quality patient care in the pre-hospital setting. To accomplish this, the Division adheres to a medical model of integrated regional Medic One/EMS services, a philosophy of cooperative decision making, and the development of innovative strategic initiatives that address the demand for services and encourage system efficiencies. All EMS Division programs are designed to enhance these efforts and are developed through strong partnerships with other regional EMS agencies and innovative leadership in the emergency medical field.

Directing the EMS Division in managing the regional system is the Medic One/EMS 2008-2013 Strategic Plan, approved by the King County Council in April 2007 and voters in November 2007. The recommendations in the Plan build upon the system's successful medical model and regional approach, establish policy directions, outline the development of new or enhanced programs and strategic initiatives, and present a financial plan to support the Medic One/EMS system through the span of the levy period.

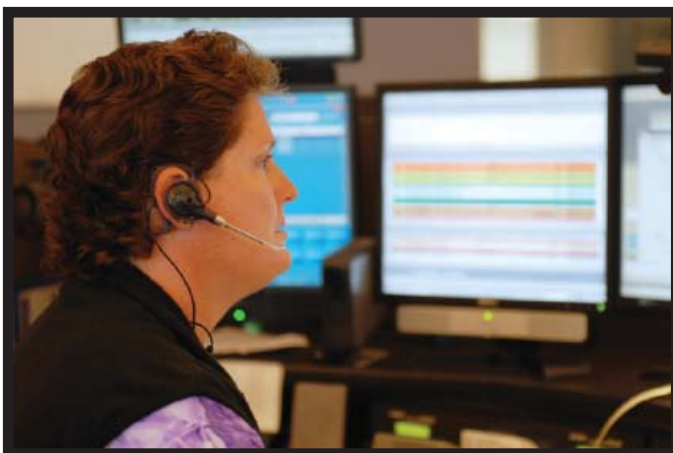
The EMS Division plays a significant role in developing, administering and evaluating critical EMS system activities. It provides the core support functions that emphasize the uniformity and standardization of direct services provided by the system's partners. These programs help tie the regional medical model together by providing uniform regional medical direction, standardized EMT training and continuing medical education, standard EMS training for emergency dispatchers, centralized data collection, paramedic service planning and analysis, and administrative support and financial management of the regional EMS levy fund. This section summarizes the EMS Division's primary programs and activities, including King County Medic One.



It is well known that the regional system depends on a complex partnership of providers, all of whom recognize the strong value for residents in maintaining the tiered response system. The EMS Division acknowledges the extraordinary efforts of all the EMS partners involved in implementing established programs and developing new programs. The time, expertise and collaborative efforts required of the EMS community demonstrate exactly why the EMS system in King County is so successful and serves as an international role model.

EMS DIVISION REGIONAL PROGRAMS

PROGRAM TABLE OF CONTENTS	11
MEDICAL QUALITY IMPROVEMENT	12
PROFESSIONAL STANDARDS	16
CENTER FOR THE EVALUATION OF EMS (CEEMS)	19
CPR AND PUBLIC ACCESS DEFIBRILLATION	22
CRITICAL INCIDENT STRESS MANAGEMENT	23
EMERGENCY MEDICAL DISPATCH	24
INJURY PREVENTION	28
ADMINISTRATION	29
KING COUNTY MEDIC ONE PROGRAM	30



MEDICAL QUALITY IMPROVEMENT

OVERVIEW: The Medical Quality Improvement (QI) section conducts programmatic, scientific, and case-based evaluation of the EMS system to improve the quality of EMS patient care in King County. To advance the science of resuscitation and EMS care, it partners with investigators in the EMS Division and at the University of Washington on research projects. This allows for productive and unique collaboration across the academic and operational EMS community, the results of which improve care, outcomes, and subsequently, the health of King County residents.

Throughout 2012, the Medical QI section has undertaken a range of activities to develop and expand critical evaluations of pre-hospital care. The following sections provide a brief background of the Medical QI section and detail core QI programmatic activities and research collaborations.

PROGRAM INDEX

- | | |
|---|--|
| 1. Cardiac Arrest Quality Assurance | 8. Limited English Proficiency (LEP) Callers Study |
| 2. Dispatcher Assisted Resuscitation Trial (DART) Study | 9. Socioeconomic Status Study |
| 3. Comprehensive Heart Attack Surveillance and Evaluation (CHASE) | 10. Long Term Outcome of Pediatric Cardiac Arrest |
| 4. Airway Quality Assurance Report/Safety of Central Venous Lines | 11. Cardiac Arrest in Exercise Facilities |
| 5. Supporting Public Health with Emergency Responders (SPHERE) | 12. Antiarrhythmics Used in Cardiac Arrest |
| 6. Resuscitation Academy | 13. Police Defibrillation |
| 7. EMT Advisory Council | 14. EMS Quality Improvement Audits - Highlight p. 14 |
| | 15. Stroke Surveillance - Highlight p. 15 |

1. Cardiac Arrest Quality Assurance

Out-of-hospital cardiac arrest, or sudden cardiac arrest, strikes upwards of 1,000 people each year in King County and is a leading cause of death in the United States. Since 1976, the EMS Division has tracked every out-of-hospital cardiac arrest that occurs in the county. Dispatch, BLS, ALS, defibrillator and hospital records are reviewed for each case to ensure that appropriate, timely and quality care is provided to each person who suffers a cardiac arrest. See EMS 2011 Annual Report for details.

2. Dispatcher Assisted Resuscitation Trial (DART) Study

Completed in 2010, the DART study examined cardiac

arrest outcomes when providing dispatch assisted CPR (see the EMS 2010 Annual Report for details).

3. Comprehensive Heart Attack Surveillance and Evaluation (CHASE)

Like cardiac arrest, ST segment elevation myocardial infarction (STEMI) is regarded as a cardiovascular emergency for which time to treatment is critical. The American Heart Association has established a goal of 90 minutes from the time of first medical (EMS) contact until surgical opening of the arteries in patients with a STEMI. See EMS 2011 Annual Report for details.

4. Airway Quality Assurance Report/Safety of Central Venous Lines

See EMS 2011 Annual Report for details.

5. Supporting Public Health with Emergency Responders (SPHERE)

In 2010, a SPHERE pilot project explored the feasibility of providing on-scene counseling by EMTs to elderly residents who fell. See EMS 2011 Annual Report for details.

6. Resuscitation Academy

The EMS Division and Seattle Medic One, in collaboration with the Medic One Foundation, developed the Resuscitation Academy curriculum to share local strategies for success and enable other communities to improve their cardiac arrest care and survival rates. For more information on the Resuscitation Academy, visit www.resuscitationacademy.org.

7. EMT Advisory Council

The success of the regional EMS system relies heavily on strong partnerships and collaboration between the EMS Division and EMS personnel. To strengthen these connections, the EMS Division created the EMT Advisory Council (EMTAC) in 2009 which engages field providers in shaping policies, programs, research designs, and day-to-day service interactions.

8. Limited English Proficiency (LEP) Callers Study

Completed in 2010, this study evaluated Limited English Proficiency (LEP) and the provision of bystander CPR to victims of cardiac arrest. The study described the frequency and impact of LEP callers on the recognition of cardiac arrest and the timeliness of CPR instruction and bystander CPR performance. See EMS 2011 Annual Report for details.

9. Socioeconomic Status Study

Completed in 2010, this study examined the relationship between traditional socioeconomic status characteristics and survival from cardiac arrest. See EMS 2010 Annual Report for details.

10. Long Term Outcome of Pediatric Cardiac Arrest

This study aimed to increase the understanding of the long term implications for children who survive to hospital discharge. Looking ahead, the study population is being expanded to include patients from Seattle. The results will help guide care and expectations for clinicians and families whose child suffers a cardiac arrest.

11. Cardiac Arrest in Exercise Facilities

This study examined cardiac arrest at exercise facilities to determine the frequency and characteristics of such events and includes an evaluation of the impact on-site AEDs have on survival from cardiac arrest. Final results are expected to be published in the near future. The EMS Division would like the data from this study to be used to assist planning efforts for medical emergencies at exercise facilities.



Paramedics transport a cardiac arrest patient.

MEDICAL QUALITY IMPROVEMENT, continued

12. Antiarrhythmics Used in Cardiac Arrest

In keeping with its long tradition of measuring the effect of interventions, making changes in practice and re-measuring the resulting outcome – or “measure, change, and re-measure”– the EMS Division recently embarked on a systematic evaluation of the effect of AHA guidelines on survival from cardiac arrest specifically due to non-shockable arrhythmias. This includes looking at outcomes of non-shockable cardiac arrest patients, and the administration of cardiac arrest medications during on-going uninterrupted CPR after defibrillation shock. See EMS 2011 Annual Report for details.

13. Police Defibrillation

Efforts to improve resuscitation primarily focus on providing CPR and defibrillation as rapidly as possible. Equipping police with automatic external defibrillators (AEDs) affords the ability to arrive sooner to an arrest patient than traditional EMS, and therefore may lead to improved survival. Pilot project findings were highlighted in the EMS 2011 Annual Report.

14. EMS Quality Improvement Audits - **HIGHLIGHT below**

15. Stroke Surveillance - **HIGHLIGHT facing page**

14. EMS Quality Improvement Audits

EMS responds to a wide variety of critical conditions. Delivering high quality patient care requires a systematic method to identify how EMS responses can be improved. In 2011, the Medical Quality Improvement (QI) section conducted focused QI audits to assess BLS and ALS responses to various critical conditions. These reviews are distributed to local fire chiefs and training officers to provide feedback on patient care and guide the development of effective training initiatives.

For example, a QI audit of EpiPen use in 2009 and 2010 showed that EpiPens were likely unnecessary in several instances. In response to this finding, the medical director and King County EMS worked with training officers to develop targeted trainings on appropriate EpiPen use. A follow up review in 2011 showed that EpiPens were administered correctly in all cases. Review and feedback to training officers on EpiPen use will help continually improve the care that EMS personnel provides.

The QI section has completed numerous audits including geriatric fever, hypothermia, hyperglycemia, non-cardiac chest pain, aspirin administration for suspected acute coronary syndrome and the documentation of EMS response times. Without a review of the care provided for a specific condition, it is impossible to identify areas for improvement. The Medical QI section will continue to provide feedback by monitoring these conditions and investigating EMS responses to other critical situations.



EFFECTIVENESS

Conducted on a wide range of topics, EMT QI audits focuses on the already exceptional care that King County EMTs provide to patients. The continuous review of specific medical conditions and treatments enhances efforts in areas that can result in improved patient care and a more effective EMS system.

PROGRAM HIGHLIGHT

15. Stroke Surveillance

Stroke is caused by an interruption in the flow of blood to the brain and is a serious medical event that requires immediate treatment in an appropriate hospital. In a transient ischemic attack (TIA), the symptoms are similar to those of stroke, but disappear without treatment. Because TIA is a powerful risk factor for a future stroke, it is important that the patient be urgently evaluated.

Early recognition of stroke/TIA and early initiation of treatment in an appropriate hospital are two necessities to optimize stroke recovery.

Understanding that a coordinated partnership between EMS and hospitals is crucial to receiving rapid treatment, recent state legislation has focused on the timely and appropriate pre-hospital and hospital care of patients diagnosed with stroke to prevent disability and death. The Washington State Department of Health will now support an emergency cardiac and stroke system, which requires standardized protocols for pre-hospital and hospital identification, triage, and treatment of suspected stroke patients.



EMTs assess a patient for stroke symptoms.

The Medical Quality Improvement (QI) section is prioritizing these legislative goals through its Stroke QI program which allows monitoring and improving EMT care provided to stroke patients. An emphasis has been placed on the use of the F-A-S-T* screening tool to identify stroke in patients, reducing on-scene time, transporting patients to qualified stroke hospitals, and notifying hospitals of the arrival of possible stroke patients. To further assess patient outcomes, the QI section is also working with King County hospitals to link stroke patient hospital data to EMS data. This QI program will help the EMS Division identify ways to improve patient care in the pre-hospital setting and improve coordination of patient care between EMS and hospitals. This will increase the chances of neurologically intact survival from stroke in our community.

*FAST is based on the Cincinnati Pre-hospital Stroke Scale (CPSS) and focuses on three symptoms: facial droop (F), arm drift (A) and speech problems (S), with “T” for “time” to emphasize the importance of recognition and early treatment following symptom onset.

PROFESSIONAL STANDARDS

OVERVIEW: The Training Section became the Professional Standards Section in 2012, when its staff, job responsibilities, and accountabilities were reorganized and new programs were incorporated. The section provides initial training, continuing education, instructor education and oversight of the recertification process for approximately 4,000 Emergency Medical Technicians (EMTs) in King County. Through considerable coordination and communication among EMS stakeholders, the Professional Standards section develops the curricula that ensure the training and education programs meet agencies' needs and Washington State and national requirements. As the liaison between the Washington State Department of Health and the 30 EMS/fire agencies in King County, the Professional Standards section relays continuing education, certification, and regulatory and policy changes to EMS agencies.

PROGRAM INDEX

- | | |
|--|---|
| 1. Patient Care Guidelines | 5. EMT Defibrillation Quality Assurance |
| 2. EMT Initial Training | 6. RETRO Database |
| 3. Competency Based Training (CBT) - HIGHLIGHT p. 18 | 7. Regional Purchasing Program |
| 4. EMS Online | |

1. Patient Care Guidelines

Guidelines, also known as protocols, are the foundation of EMS training for EMTs and medics. The EMT Patient Care Guidelines are referred to as the “Blue Book” and outline the standards for providing pre-hospital care of patients. The Paramedic Patient Care Guidelines, written in cooperation with the University of Washington/Harborview Medical Center Paramedic Training Program, offer a standardized countywide approach to paramedic-level use of medications.

2. EMT Initial Training

Initial training courses are offered in the spring and fall every year and are open to personnel from all fire/EMS agencies in King County. Each course consists of 132 hours of classroom and practical instruction in addition to 10 hours of hospital observation time to ensure EMT certification is in accordance with Washington State regulations. Scholarships will be offered to provide five individuals the opportunity to take and complete the initial EMT course and be EMT certified by Washington State.

3. Competency Based Training (CBT) [HIGHLIGHT p. 18](#)

4. EMS Online

Originally designed for local area training, EMS Online is now being used for continuing medical education/recertification in nine states and British Columbia. New this year was the first in a series of six paramedic courses. These enhancements are part of the EMS Online Strategic Initiative (see p. 47 for details).



EFFECTIVENESS

The **reorganization** of the Training Section into the Professional Standards Section combined programs and responsibilities into a more streamlined framework. The enhanced collaboration and line of accountability within the new structure will lead to better patient care and more effective operations.

5. EMT Defibrillation Quality Assurance

Early defibrillation, used in conjunction with cardiopulmonary resuscitation (CPR), is a key component in the treatment of individuals suffering a cardiac arrest. All King County resuscitations receive detailed evaluation, and the data is used for enhanced EMT resuscitation training that complements traditional hands on training. The web-based Cardiac Case Review tool, started in 2011, provides regular and consistent performance feedback to EMS personnel involved in a cardiac arrest resuscitation (see p. 21 for details).



Data recorded during a cardiac arrest is used to give EMTs and Paramedics feedback on their performance.

6. The RETRO Database

The RETRO database allows the EMS Division to store, track and access essential information related to EMS personnel across King County. To date, RETRO contains nearly 34,500 electronic record sets documenting dates and requirements related to certification and recertification, reciprocity, practical skill set completion certification, and teaching certification requirements.

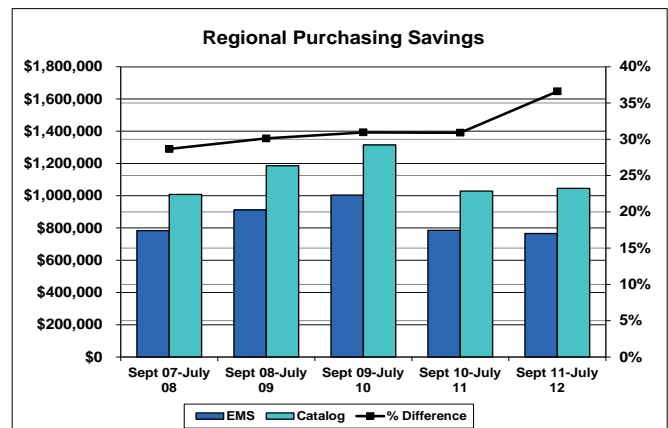


EFFECTIVENESS

RETRO has allowed such great efficiencies in the realm of data quality, management and retrieval that EMS is expanding its use to include documents associated with additional training classes held throughout the county.

7. Regional Purchasing Program

Since its development in 1998, the Regional Purchasing program has consistently provided cost savings to EMS agencies. The program relies on interagency purchasing agreements that allow any EMS agency in King County to purchase EMS supplies, equipment and medication using the regional contract. As reflected in the graph below, data comparing actual costs to catalog prices confirm the consistent cost savings to the region over the past five years.



PROGRAM HIGHLIGHT

4. Competency Based Training (CBT)

The State of Washington mandates that EMTs complete both didactic and practical skill continuing medical education and evaluation to maintain certification. In King County, the topics are prescribed by the Medical Program Director following state and national guidelines and include six annual modules on various emergency medical topics, for a total of eighteen modules in a three year recertification cycle. In aggregate, this program is referred to as Competency Based Training (CBT). The Professional Standards staff develops, writes, produces instructional training modules and implements the curriculum each year.

Every fall, the Professional Standards section hosts a number of CBT Instructor workshops to train the 500 instructor-evaluators who oversee the practical skills training. The topics for this year's CBT education include:

- Soft Tissue Injuries
- Abdominal Pain
- Altered Mental States
- Pediatric Emergencies
- SICK/NOT SICK
- Street Medicine - Care Under Fire



EMTs evaluate a patient.

The Medical Program Director outlined five goals for 2012. They include:

- Embrace high-performance CPR
- Attempt to minimize EMS on-scene time for patients with acute coronary syndrome (ACS)
- Attempt to minimize EMS on-scene time for patients with suspected stroke (cerebral vascular accident – CVA)
- Announce to dispatch the time of arrival at patient's side
- Synchronize AEDs clocks to a standardized time (dispatch center clock, atomic clock, or some other accurate clock) at least once a week



As part of the EMS Division's Equity and Social Justice effort, the Professional Standards section will be offering a scholarship program to encourage diversity in the EMT field. Five scholarships will be awarded to individuals to attend the Initial EMT Training class offered in fall 2012. These individuals will be given an opportunity take the class and be EMT certified by Washington State.

CENTER FOR THE EVALUATION OF EMS (CEEMS)

OVERVIEW: Established in 1987, the Center for the Evaluation of Emergency Medical Services (CEEMS) conducts research activities aimed at improving the delivery of pre-hospital emergency care and advancing the science of cardiac arrest resuscitation. CEEMS research activities are solely funded by grants from private foundations, state agencies, and federal institutions, such as the National Institutes of Health, National Institute on Aging, and the Centers for Disease Control and Prevention. CEEMS is a collaborative effort between the EMS Division and academic faculty from the University of Washington who are recognized nationally and internationally for their contributions in the care and treatment of cardiac emergencies. Achievements made by this collective effort continue to improve outcomes from sudden cardiac arrest and advance evidenced-based care and treatment.

PROGRAM INDEX

- | | |
|---|--|
| 1. Resuscitation Outcomes Consortium (ROC) | 5. Mentorship |
| 2. ROC - Pre-hospital Resuscitation Using an Impedance Threshold Device and Early versus Delayed Rhythm Analysis (PRIMED) | 6. VF Waveform Library |
| 3. Home Automated External Defibrillator Training of High-Risk Patients | 7. Heart Rescue Flagship Program |
| 4. Program to Integrate Technology and Cardiac Arrest Resuscitation | 8. Washington CARES |
| | 9. Cardiac Case Review - HIGHLIGHT p. 21 |
| | 10. ROC - Continuous Chest Compressions (CCC) |
| | 11. ROC - Amiodarone-Lidocaine-Placebo Study (ALPS) |

1. Resuscitation Outcomes Consortium (ROC)

The EMS Division continues to actively participate in the National Institutes of Health supported Resuscitation Outcomes Consortium (ROC).

ROC is a network of 11 regional clinical centers throughout the United States and Canada. The consortium conducts observational and randomized clinical trials for out-of-hospital treatments of cardiac arrest and trauma. See EMS 2011 Annual Report for details.



2. ROC – Pre-hospital Resuscitation Using an Impedance Threshold Device and Early versus Delayed Rhythm Analysis (PRIMED)

- Completed in 2010. See EMS 2010 Annual Report for details.

3. Home Automated External Defibrillator Training of High-Risk Patients

- Completed in 2010. See EMS 2010 Annual Report for details.



EFFECTIVENESS

Evidence-based research is the most accurate method for defining best practices in resuscitative care. Participating in the ROC clinical trials allows EMS in King County to apply the best available evidence gained from scientific research to current practices.

CENTER FOR THE EVALUATION OF EMS (CEEMS), continued

4. Program to Integrate Technology and Cardiac Arrest Resuscitation (PITCAR)

Now in its fourth year of funding by the Life Sciences Discovery Fund (LSDF), PITCAR



continues to explore, develop and enhance technologies to improve cardiac arrest resuscitation and outcome survival. The program spans all the links in the “chain of survival” (early activation of 9-1-1, increased bystander CPR, public access to defibrillation, and delivery of basic and advanced life support services) for cardiac arrest resuscitation. It encompasses several projects that incorporate strategies to investigate and disseminate improvements in resuscitation care. See EMS 2011 Annual Report for details.

5. Mentorship

The EMS Division remains actively engaged in mentoring EMS-affiliated clinicians, students, and researchers. A number of peer review publications and a wealth of analyzable data have resulted from this worthwhile program. This opportunity often advances scientific understanding, has implications for emergency care, and provides an instructive experience for all those who participate.



Faculty and attendees of the Resuscitation Academy discuss strategies for improving cardiac arrest outcomes.

6. Ventricular Fibrillation (VF) Waveform Library

VF is an abnormal heart rhythm that causes the heart to stop pumping blood, resulting in sudden cardiac arrest. The most effective treatment of VF is the delivery of an electrical shock to the heart, or defibrillation. Highlighted in the EMS 2010 Annual Report, the VF Waveform Library is a collection of recorded ECGs obtained from defibrillators during a cardiac arrest resuscitation that shows the heart to be in VF. This library provides a rich and growing repository of information that can be used to study and evaluate the relationship between ventricular fibrillation and elements of the cardiac arrest resuscitation.

7. Heart Rescue Flagship Program

The Heart Rescue Flagship Program is funded by a grant received in 2011



from the Medtronic Foundation. The program aims to improve survival from sudden cardiac arrest throughout King County and Washington state using a system-based approach to improve, strengthen and enhance the three levels of care: community response, pre-hospital response, and hospital response.

8. Washington Cardiac Arrest Registry (WACARES) to Enhance Survival

The EMS Division is partnering with other Washington EMS agencies to establish an integrated state-wide cardiac arrest registry. See EMS 2011 Annual Report for details.



The Washington CARES registry website.

PROGRAM HIGHLIGHT

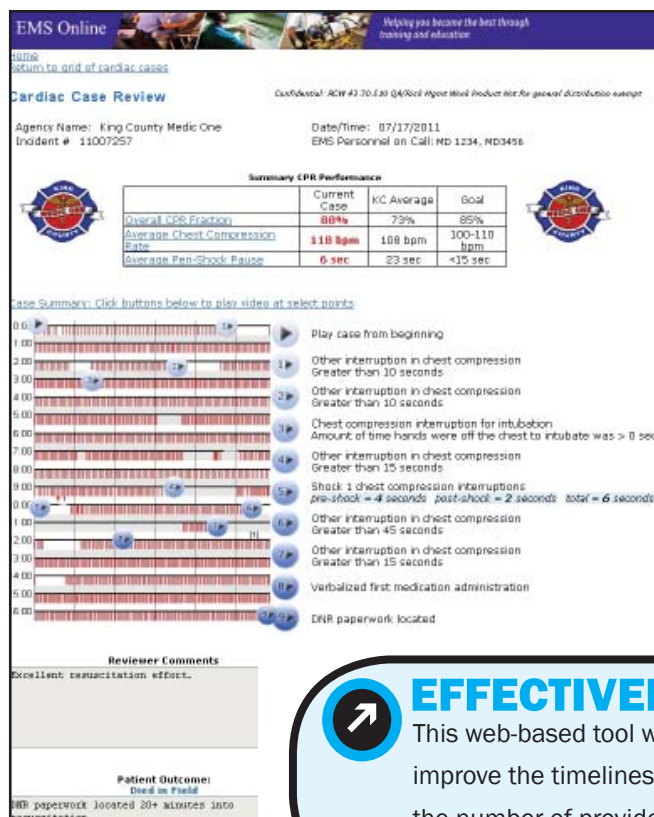
9. Cardiac Case Review

BACKGROUND

Cardiac case review is a web-based tool that provides regular and consistent performance feedback to EMTs and paramedics who participate in a cardiac arrest resuscitation. After a cardiac arrest incident, EMTs and paramedics download electronic recordings from a defibrillator for quality assurance review. Once a physician completes the review, EMTs and paramedics log into EMS Online and view comments, evaluation, and details of the resuscitation.

During the past year, over 300 cardiac arrest cases have been posted for both EMT and paramedic review. Key elements available for review include chest compression fraction (overall time hands were on the chest performing CPR), average chest compression rate (rate of chest compressions per minute), and average peri-shock pause (time CPR was interrupted for analysis and delivery of shock). Additionally, providers are able to view a video recording of the heart rhythm, chest compressions, audio recording, and shocks captured on the defibrillation download. Providers are able to compare their statistics with the King County average and receive personalized review from their medical directors and training officers.

The secure web-based platform enables EMTs, paramedics, training officers, and physicians to access the Cardiac Case Review System through EMS Online from any location and at any hour. This tool is an ideal example of how the use of infrastructure technologies can be extended to improve patient care and deliver cost-efficient strategies of quality



10. ROC - Continuous Chest Compressions (CCC)

This new trial will compare survival to hospital discharge after continuous chest compressions (CCC) versus standard American Heart Association (AHA) recommended cardiopulmonary resuscitation (CPR) with chest compressions interrupted for ventilation at a ratio of 30:2 in patients with out-of-hospital cardiac arrest.

11. ROC - Amiodarone-Lidocaine-Placebo Study (ALPS)

This new study aims to determine if survival to hospital discharge is improved with early therapeutic administration of the antiarrhythmic drugs amiodarone or lidocaine in shock-refractory cardiac arrest, compared to when a placebo is administered (see p. 32 for details).



EFFECTIVENESS

This web-based tool will streamline the cardiac arrest quality assurance process to improve the timeliness and delivery of review to providers. This tool will also increase the number of providers receiving personalized review and eliminate unnecessary costs related to conventional reviews.

CPR AND PUBLIC ACCESS DEFIBRILLATION

OVERVIEW: Cardiac arrest is one of the most life-threatening of all pre-hospital medical emergencies. Numerous clinical studies have demonstrated that patients who receive early cardiopulmonary resuscitation (CPR) and early defibrillation have a significantly improved chance of survival from cardiac arrest. The EMS Division runs a number of programs to provide CPR and Automated External Defibrillators (AED) training to residents of King County, along with efforts to place these devices in public locations and to encourage the public to register their AEDs.

PROGRAM INDEX

1. King County Student CPR/AED Program
2. Community Responder Defibrillation Program
3. Regional Approach to Municipal Public Access AED Registry and Training (RAMPART)

1. King County Student CPR/AED program

This program trains secondary school students (grade 6-12) in King County to perform CPR and use an AED in American Heart Association approved classes taught by their teachers and local firefighters. Many elementary, junior high and high schools in King County have AEDs located in the school buildings to be used by the public should the need arise. See EMS 2011 Annual Report for details.

2. Community Responder Defibrillation Program

The Seattle Fire Department and Public Health - Seattle & King County promote Public Access Defibrillation (PAD) in the community. The EMS Division provides the AEDs, AED training, placement and registration instruction advice, and supports the PAD Registry database. This registry allows the EMS Division to provide AED location and availability information to communication centers. One of the Strategic Initiatives for the 2008-2013 EMS levy is a Public Awareness Campaign for Public Access Defibrillation. See p. 46 for details.

AEDs are strategically located in public places around King County.

3. Regional Approach to Municipal Public Access AED Registry and Training (RAMPART)

The EMS Division partners with cities to purchase and place AEDs in public settings and train city/county employees on their use. The EMS Division maintains the PAD Registry and encourages cities to seek out and identify unregistered AEDs in their communities.



2,706 AEDs REGISTERED

When AEDs are registered, dispatch centers can alert callers to the nearest AED location, leading to early defibrillation and, subsequently, possibly saving a life.

*see Appendix F: Public Access AEDS - King County for a map of AED locations in King County

CRITICAL INCIDENT STRESS MANAGEMENT

OVERVIEW: Research has shown that occupational-caused stress impacts the health and productivity of the American worker. Perhaps most affected are the professionals who work in emergency services. The EMS Division's Critical Incident Stress Management (CISM) Program has been a regional leader for over two decades in its mission to support the mental health of police, fire, EMS, corrections officers and emergency dispatch professionals. The 18-member all-volunteer intervention team is available 24 hours a day, 7 days a week for specific stress events and major crisis incidents. Interagency partnerships have developed through this program, with CISM teams uniting to provide services and utilize mutual aid, and working with the King County Healthcare Coalition to develop disaster preparedness and psychological first aid. Such cooperation encourages behavioral health and wellness, improves stress resilience and enhances agency-based peer support services.

For more information, please visit: <http://www.kingcounty.gov/healthservices/health/ems/community/cism.aspx>

EMERGENCY MEDICAL DISPATCH

OVERVIEW: Dispatchers play a vital link in the EMS continual “Chain of Survival” as the first point of contact with the public. They are trained by the EMS Division in Criteria Based Dispatch, which uses specific medical criteria, based on signs and symptoms, to send the proper level of care with the proper urgency. This allows patients with critical medical conditions to receive an ALS response, and those with less critical conditions to receive either a BLS response, or a transfer to the telephone nurse-line. Dispatchers also provide pre-arrival instructions for most medical emergencies and guide the caller through life-saving steps – including Dispatcher-Assisted Cardiopulmonary Resuscitation and Automated External Defibrillator instructions – until the Medic One/EMS provider arrives.

PROGRAM INDEX

- | | |
|--|---|
| 1. Criteria Based Dispatch (CBD) Training | 4. EMD Awards - HIGHLIGHT, facing page |
| 2. CBD Continuing Education | 5. Revision of Criteria Based Dispatch (CBD) Guidelines |
| 3. Emergency Medical Dispatch (EMD) Quality Improvement (QI) Program | 6. Communities of Care* - HIGHLIGHT p. 26 |

*previously referred to as Nursing Homes, Adult Family Homes, Boarding Homes and General Medical Clinics

1. Criteria Based Dispatch (CBD) Training

The EMS Division oversees the basic training of dispatchers from four communication centers. The training is participant-centered with simulation exercises and enhanced scenario-driven content.

2. CBD Continuing Education

King County dispatchers must complete eight hours of Continuing Medical Education to remain informed on system-wide trends and new emerging medical standards of patient care. At least half of these credits can be obtained via EMS Online right from dispatcher consoles and are supplemented with in-classroom instruction. See EMS 2011 Annual Report for details.

3. EMD Quality Improvement (QI) Program

The Quality Improvement (QI) program allows the EMS Division to identify issues and systemwide trends that are used to develop courses for continuing education and individual feedback. By reviewing call audio and records, the EMS Division can give individual dispatchers feedback

and specific training, ensuring excellent patient care, better management of ALS resources, and limited future risks. See EMS 2011 Annual Report for details.

4. EMD Awards - [HIGHLIGHT p. 25](#)

5. Revision of Criteria Based Dispatch (CBD) Guidelines Revisions

Dispatchers follow CBD Guidelines to accurately determine the level of care required by patients. Every three years, the EMS Division reviews these Guidelines to identify potential areas for revision that could safely limit the frequency with which ALS is dispatched. The ultimate objective of these revisions is to provide the most appropriate response for the patient. See EMS 2011 Annual Report for details.

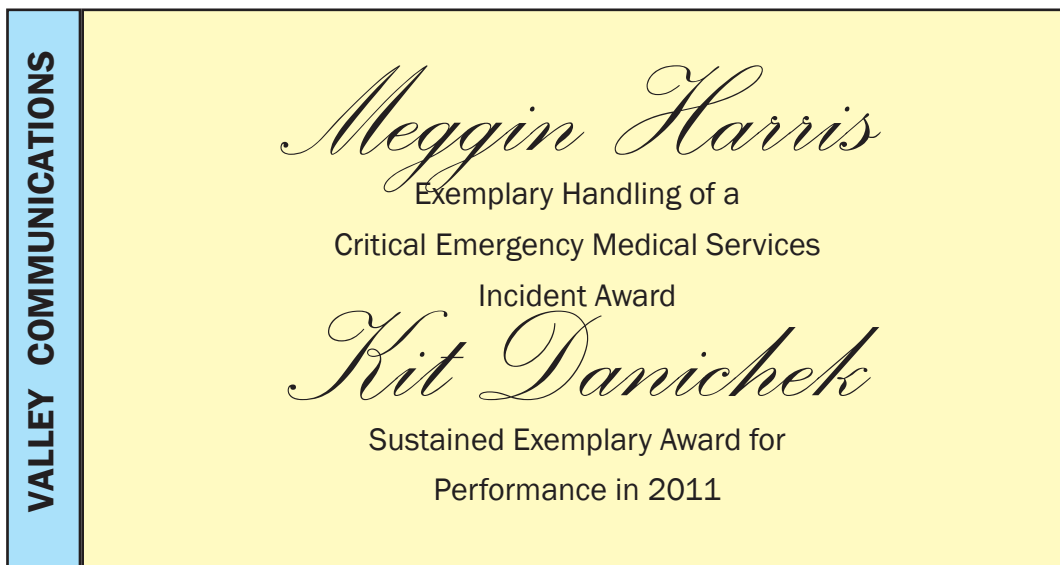
6. Communities of Care - [Highlight p. 26](#)

PROGRAM HIGHLIGHT

4. EMD Awards

The EMS Division is honored to recognize the outstanding and critical work of its valued partners, the 9-1-1 emergency medical call-receivers and dispatchers in King County.

The 2012 award recipients are Traci Caligiuri and Stacey Montemayor from NORCOM and Meggin Harris and Kit Danichek from Valley Communications. Ms. Montemayor and Ms. Danichek received their awards for sustained exemplary performance throughout the year. Ms. Harris and Ms. Caligiuri received their awards for exemplary handling of a critical EMS incident. Ms. Harris received her award for her immediate identification of a patient in cardiac arrest and prompt and efficient delivery of Dispatcher-Assisted CPR instructions. Ms. Caligiuri received her award for her quick response to a critical prolapsed cord childbirth, offering positioning instructions to keep blood flowing to the child during delivery efforts.



PROGRAM HIGHLIGHT

6. Communities of Care*

Background

When the EMS Division recognized that Communities of Care facilities were calling 9-1-1 with non-emergent concerns (lift-assists, delay of private ambulance, confusion about patient care responsibilities, etc.), it worked with regional ALS providers, fire departments, and the Washington State Department of Social & Health Services - Residential Care Office to initiate a program to educate the administration and staff of those facilities on the appropriate use of EMS services. The training and presentations provide medical and non-medical administration and staff with an explanation of the tiered response system, private ambulance services and what to expect when calling 9-1-1, including the kind of information the dispatcher will request. The training was developed and then delivered to a number of agencies in King County and post-training evaluations were completed.

Evaluation indicators

- Number of 9-1-1 calls from agencies prior to training
- Appropriateness of calls from agencies prior to training
- Number of 9-1-1 calls from agencies post-training
- Appropriateness of calls from agencies post-training
- Feedback from stakeholders

Stakeholders

- EMS services – Fire Departments
- Facility administrators and staff
- Facility residents and patients
- 9-1-1 center staff and administration
- Residents of King County
- Washington State Department of Social Health Services - Residential Care Services

Activities

Last year, the staff at 30 facilities received the Communities of Care intervention and training. Attendees included approximately 180 medical and non-medical staff. The program has been shared with Seattle and agencies within Pierce and Kitsap counties.

Results

The comparison between the pre-training and post-training requests for EMS response was very favorable. The following is an example of the response data in a 60-day period from three separate facilities.

This program represents the EMS Division's unique approach to EMS care, supplementing the world class patient treatment already provided by EMTs with the provision of preventive care to high-risk seniors.

*previously referred to as Nursing Homes, Adult Family Homes, Boarding Homes and General Medical Clinics

Requests for EMS response:

Facility Name	Pre-Training	Post-Training	Change
Renton Villa	45	11	-75.6%
Stafford Suites (Kent)	19	8	-57.9%
Merrill Gardens (Kirkland)	20	11	-45.0%

Calls made to 9-1-1 for Lift-Assists alone (responses included in previous chart):

Facility Name	Pre-Training	Post-Training
Renton Villa	18	0
Stafford Suites (Kent)	4	0
Merrill Gardens (Kirkland)	8	0

The data reveals an average 59.5% decrease in calls to 9-1-1 and a reduction of lift-assist calls from 30 to zero.

As a result of training and collaborating with one of the larger providers of Adult Care Services, Merrill Gardens, new policies and procedures regarding patient falls and actions to be taken by medically trained personnel were implemented. These new policies and procedures will apply to all five Merrill Gardens facilities served by King County EMS and will have a direct affect on decreasing the number of inappropriate calls for BLS response.

Evaluations from course participants and facility administrators were nearly 100% favorable, citing the value in understanding how the EMS system in King County coordinates with 9-1-1 Emergency Medical Dispatchers to triage requests to send appropriate resources and provide proper pre-arrival instructions.

Next Steps

The EMS Division proposes to offer the training and intervention program to additional facilities county-wide. This will strengthen and improve performance, but will also require additional resources for staff and materials. Analysis of the larger facilities will be conducted to identify the number of residents, determine the 9-1-1 call volume, and assess the willingness of facility administrators to collaborate in the program efforts.



EFFECTIVENESS

The Communities of Care Project is the result of the productive collaboration between the EMS Division, Fire Departments, Washington State Department of Health & Human Residential Care Services and the administrators of Adult care facilities. The program provides training to care facility staff and builds relationships between service providers working together toward the shared goal of delivering quality patient care to residents. Approximately 180 medical and non-medical staff have been trained and the comparison between pre-training and post-training requests for EMS response was favorable. In a review of a 60-day post-training period the data reveals an average 59% decrease in calls to 9-1-1 as well as a reduction of lift-assist calls from 30 to zero.

INJURY PREVENTION

OVERVIEW: *Injury is the leading cause of death for those under 45 years of age, while for the elderly, falls account for many hospitalizations. The EMS Division has invested considerable time and effort into building long term relationships with fire departments, community agencies and organizations that work toward the common goals of reducing injury and death through injury prevention and public education programs.*

PROGRAM INDEX

PROGRAM INDEX

- | | |
|---------------------------------------|-------------------------------|
| 1. EMS Child Passenger Safety Program | 3. Smart Kids Safe Kids |
| 2. Think Again | 4. Distracted Driving Project |

1. EMS Child Passenger Safety Program

Placing children in car seats that are size and age appropriate can reduce serious and fatal injuries by more than 50%, but only if properly installed and used. Through the Child Passenger Safety Program, Community Health Workers trained as certified car seat technicians provide free car seats and installation assistance to low income pregnant mothers at Public Health Centers.

2. Think Again

The EMS Division no longer provides this program. See EMS 2010 Annual Report for details.

3. Smart Kids Safe Kids

The EMS Division no longer provides this program. See EMS 2010 Annual Report for details.

4. Distracted Driving Project

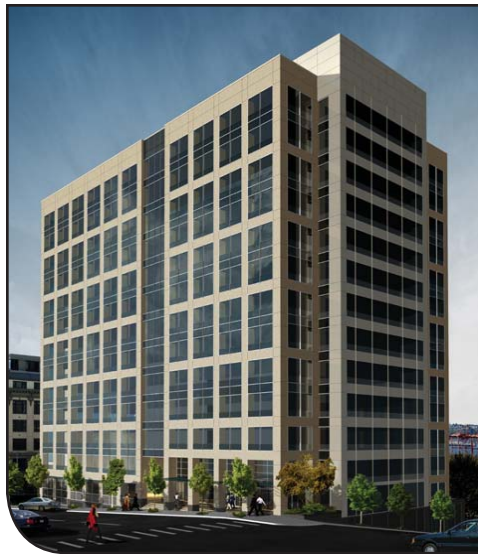
The EMS Division has joined forces with a conglomeration of public and private entities to educate high school students about the dangers of texting while driving. Slated to run from September through December 2011, this campaign will provide various opportunities for teens to develop messages through story ideas and video. See EMS 2011 Annual Report for details.



ADMINISTRATION

The EMS Administration Section is committed to ensuring integrity and transparency of the EMS system by providing financial and administrative leadership and support to both internal and external customers. It engages with regional partners to implement the EMS Strategic Plan, uses best practice in the financial management of EMS levy funds, participates in countywide business improvement processes, and ensures the continuity of business in collaboration with EMS stakeholders.

Rooted within Administration are the sections that supply integrated regional direction. Collaborating with county partners, the EMS Division provides quality data and planning, medical oversight, basic life support training, community training and education, and research. These dedicated professionals have a nationwide reputation for providing excellent service to the residents and visitors of King County.



The EMS Division is located in the Chinook Building in downtown Seattle.

2011 KING COUNTY AUDIT

The King County Auditor currently conducts an annual EMS audit as established by ordinance as part of the 2007 Medic One/EMS levy approval package. While the primary mandate is a financial compliance audit, the Auditor's Office has included performance-oriented review each year.

In 2011, the EMS Division was evaluated on whether levy funds were managed in accordance with the adopted 2010 financial plan and policies, including the use of restricted reserve and contingency funds. The cost of EMS dispatch services provided primarily by two independently operationed dispatch agencies was also reviewed. The audit looked to verify whether the 2010 dispatch fee schedules were based on an acceptable methodology and confirm whether expected dispatch cost increases could be funded by the EMS levy during the

remainder of the levy period.

Like in past years, results were positive. The Auditor concluded that the EMS Division appropriately managed the 2010 levy resources and financial activities in accordance with the 2010 EMS levy financial plan and policies. It found that dispatch fee schedules established by independent agencies were based on an acceptable methodology and reflected the dispatch

agencies' respective operating costs. However, the revised fee schedule for one dispatch agency resulted in significant dispatch cost increases beginning in 2009 and for the duration of the current levy cycle. To effectively respond to the cost increases, the EMS Division established a designated reserve to fully fund ALS dispatch and communication services through 2013.

The Auditor suggested establishing and tracking EMS dispatch service productivity standards to improve the

precision of the current and future dispatch fee schedule. The audit also proposed that the dispatch service documentation provided for EMS levy reimbursement be improved to verify that reimbursements are based on the actual volume and cost of ALS services provided. The 2011 Audit was submitted to the King County Council in September 2011. In response to the audit findings, the EMS Division is working to improve reporting of dispatch costs. In addition, as part of EMS levy planning, the region agreed to review dispatch performance standards and incorporate the auditor's comments into those discussions.

2012 AUDIT

The 2012 audit is nearing completion and will be submitted to the King County Council in September 2012.

KING COUNTY MEDIC ONE PROGRAM

OVERVIEW: King County Medic One (KCM1) is one of the six Advanced Life Support (ALS) providers in the regional EMS system. It serves approximately 450 square miles of south King County, an area with a population now close to 690,000 people. In calendar year 2011, KCM1 responded to 13,054 calls for this advanced care, including pediatric patients, mass casualty motor vehicle crashes, and cardiac emergencies.

KCM1 works in south King County as part of a coordinated system of effective emergency care that includes 9-1-1 emergency dispatch, basic life support care by fire departments, advanced life support care by KCM1, and hospital-based care. KCM1's 70 paramedics work side-by-side with local fire department personnel to provide the highest-quality, cost-effective emergency medical care to those in need, 24 hours a day, every day of the year. To achieve this coordinated care approach, paramedic units co-locate with fire stations whenever possible, to promote a team atmosphere. This cost-effective strategy also eliminates the need for separate facilities. Physicians provide medical oversight for clinical care decisions and actively participate in strategic planning decisions that guide the KCM1 organization. The "medical model" that incorporates a tiered response strategy results in the best-trained, most-experienced paramedic providers, who in turn serve as a critical and integral component of emergency care in King County. This system of care practiced throughout King County consistently achieves the highest benchmarks of EMS care and is recognized worldwide.

PROGRAM INDEX

Program Index

- | | |
|--|---|
| 1. King County Medic One Medical Direction | 4. Operations, Preparedness, and Safety |
| 2. Training | 5. Administration |
| 3. Medic Unit Relocations | 6. ALPS Study - HIGHLIGHT p. 32 |

1. King County Medic One Medical Direction

Dr. Tom Rea is the Medical Program Director for KCM1 and is assisted by four Associate Medical Directors with quality review, guidance for procedures, new equipment and training needs for the program. Quality assurance activities undertaken include systematic review of specific medical conditions or critical procedures, or case-based review and feedback. Assessments have demonstrated proficient care, and underscore the importance of the fundamental approach of these clinical guidelines that require proactive paramedic implementation and

involvement.

2. Training

a. Initial Training

The 10-month Initial Paramedic Training program, provided by the University of Washington/Harborview Medical Center, is the most comprehensive and intensive program in the nation. This rigorous training fully integrates classroom experience with field care, providing an unparalleled clinical education.

b. Continuing Education

Every year, paramedics must complete over 50 hours of continuing education training that covers a broad range of topics and formats, including Harborview Medical Center Tuesday Series (three-hour educational seminars), Grand Rounds Training (reviews critical paramedic skills and important clinical scenarios), Medication of the Month, Paramedic Case-of-the-Month, and quarterly meetings with KCM1 Medical Directors.

c. Care Under Fire

KCM1 initiated a training program for police officers county-wide. Called “Care Under Fire,” the course trains patrol officers and SWAT team members to provide lifesaving care for themselves and each other if wounded in an ongoing fire fight until EMS personnel can come to them, or they are extracted to a safe zone where EMS personnel can treat them. Currently 480 officers have been trained, and training will continue for the next several months.

d. Testing New MCI Protocols

King County Medic One and its regional partners tested and practiced the new Mass Casualty Incident (MCI) protocols during a nine-day drill held at the Kent Showare Center. More than 480 EMTs and Paramedics in south King County were trained in the recently developed regional MCI protocols.

3. EMS Medic Unit Locations

The EMS Division continues its relocation review on an annual basis to ensure residents are provided a timely medic unit response. Partner cities are included in the review to assure their future growth and special needs are considered. Plans include a relocation of Medic 7 to east Kent.

4. Operations, Preparedness and Safety

KCM1 medics began using the Physio Control Lifepak 15 which is the new standard in emergency ALS care and the most clinically and operationally innovative monitor/defibrillator available to date. The Lifepak 15 units now have WiFi capabilities, allowing for rapid information flow and feedback from the Medical Director to medics.

5. Administration

KCM1 Administration supports its 70 employees and 10 medic unit locations. Administrative responsibilities include managing the hundreds of vendor and venue contracts required to support the operations 24 hours a day/7 days a week, financial management of payroll, procurement of supplies, and records management. KCM1 is the lead contract agency responsible for both the Regional Medical supplies/equipment, and medications purchasing contracts. See p. 17 for more details.



EFFECTIVENESS

KCM1 will begin responding in new, larger, International “Terra Star” trucks configured as emergency response vehicles. Each will carry a newly designed patient care compartment, providing increased comfort, safety and efficiency. The patient care compartments will be retrofitted to new future units, reducing total future purchases costs by nearly 30%.

PROGRAM HIGHLIGHT

6. ALPS Study

Antiarrhythmic medications (amiodarone, lidocaine) are frequently used as part of advanced care to treat ventricular arrhythmias that persist or recur during a cardiac arrest. Although much is known about the pharmacological effects of these drugs, none has ever been demonstrated to improve survival to hospital discharge after cardiac arrest. It is not known whether these drugs may actually cause more harm than good.

The Amiodarone, Lidocaine or neither (Placebo) Study (ALPS) aims to determine whether the early administration of a new formulation of IV amiodarone improves the survival to hospital discharge rate compared to lidocaine or neither drug (placebo) in patients with out-of-hospital cardiac arrest due to shock-resistant ventricular fibrillation.

ALPS will potentially answer two critical questions: (1) are antiarrhythmic drugs effective for the treatment of VF cardiac arrest? (2) If so, is amiodarone or lidocaine preferable for such treatment? Answering these questions will determine the proven role (if any) of antiarrhythmic drugs for future generations of patients with out-of-hospital cardiac arrest.

ALPS plans to enroll 3,000 patients with shock resistant cardiac arrest across North America over the next two years. The results of this trial are likely to impact resuscitation practice worldwide.

Research nurses and paramedics discuss the implementation of ALPS Study protocols in the field.



2008-2013 STRATEGIC INITIATIVES

The Medic One/EMS 2008-2013 Strategic Plan contains specific Strategic Initiative projects designed to improve EMS services, manage growth of the EMS system, and contain costs. The following section describes the Strategic Initiatives currently underway, and contains a continued emphasis on performance measures and objectives. Table 1: Strategic Initiative Summary Table offers a quick reference as to the status of each initiative.

Table 1: Strategic Initiative Summary Table	
Strategic Initiative	Status
Emergency Medical Dispatch Enhancements	
1. CBD/CAD Integration Project	Implemented at Port of Seattle and Enumclaw; NORCOM and Valley Comm pending CAD replacement
2. Dispatch Center Performance Standards	Implemented in 2009
3. Advanced EMD Training Program	Implemented in 2008
4. Better Management of Non-Emergency Calls to 9-1-1	
A. Telephone Referral Program/Nurseline Evaluation	Completed in 2009
B. Community Medical Technician (CMT) Pilot Project	Pilot I completed in 2011; Pilot II initiated in 2012
C. Taxi Transport Voucher (TTV) Project	Completed pilot in 2011
Injury Prevention - Fall Prevention	
1. Community Awareness Campaign – SHAPEUP 50+	Implemented in 2009
2. Small Grants Program for BLS Agencies	Implemented in 2008
3. Expansion of the One Step Ahead Fall Prevention Program	Implemented in 2008
4. Grant and Other Funding Opportunities	Discontinued due to lack of revenue
Public Access Defibrillation Campaign	Implemented in 2012
Interactive Enhancements to EMS Online	Initiated in 2011
Systemwide Enhanced Network Design (SEND) Project	Initiated in 2008
All Hazards Management Preparation	Discontinued due to duplication of local efforts
EMS Efficiencies & Evaluation Studies	Ongoing
Strategic Planning for Next EMS Levy Period	Initiated in 2011

STRATEGIC INITIATIVES, continued

SI: Dispatch Enhancements

The following four Strategic Initiatives are dispatch projects currently in progress.

1. Criteria Based Dispatch (CBD)/Computer Aided Dispatch (CAD) Integration Project

Background

9-1-1 dispatchers in King County use Criteria Based Dispatch Guidelines to determine the appropriate level of EMS response to send. In 2006, the EMS Division developed a non-CAD interfaced version of eCBD software currently used by Enumclaw Police Department and Port of Seattle Airport Operations. The workload demands for quick and efficient call processing at the large 9-1-1 centers in King County require an interface between eCBD and CAD. The efforts of this initiative in the current levy have focused on creating a new eCBD/CAD interface for NORCOM (Northeast King County Regional Communications Center).

Description

A fully functioning version of the eCBD/CAD interface for New World Systems was developed, tested and deployed at NORCOM in September 2011. However, the New World Systems CAD was not able to be implemented successfully for reasons not related to eCBD. NORCOM successfully reverted back to the Tri Tech CAD/eCBD program and call processing has been managed without incident since October 2011.

Objectives

- Eighty percent of medical calls to 9-1-1 processed using the eCBD tool within one year of implementation at a communications center;*
- Increased use of the eCBD tool, leading to more efficient call processing and enhanced data collection for QI activities; and
- Ninety percent of medical calls to 9-1-1 processed using the eCBD Tool within two years of implementation at a communications center.*

*Excludes certain 9-1-1 calls that are inappropriate for eCBD tool use.

Results

While using the Tri Tech version of the eCBD software, NORCOM has met all three objectives, 80% use within the first year and over 90% within in two years after implementation.

Next Steps

The New World/eCBD CAD interface is expected to be retested and implemented in late 2012. The next phase of the project is to develop an interface at Valley Communications Center. Valley Com is in the midst of replacing their CAD system, and is committed to work on the development of the Tiberon/eCBD CAD interface once their new system is stabilized.

2. Dispatch Center Performance Standards

Background

During the 2008-2013 EMS levy period, the King County EMS Division implemented methods to strengthen the recognition for the role of communication centers in managing growth of EMS resources and providing more efficient services. Proper data collection, training and quality improvement practices are essential to maximizing this function.

Description

In September 2008, the EMS Division convened EMS system representatives to develop criteria for communication center performance standards. Representation included one ALS representative from each ALS provider (not including Seattle Medic One) and one BLS representative from Zone 1 and Zone 3.

Objectives

This project creates a list of performance standards and measurable criteria for communication centers in King County, outside the City of Seattle. Funding is provided to meet these standards, including participation in required training, quality improvement activities and data collection.

Performance Standards	Compliance Requirements
Use of CBD Guidelines Software (eCBD tool) for Call Processing of EMS Calls	80% use of eCBD tool within one year of implementation
Training	100% attendance at EMD Basic and Continuing Education courses, by all line employees/supervisors answering 9-1-1 calls
Data Completeness Standards - Data elements fully populated in CAD and downloaded to RMS	Incident address – 100% Initial Dispatch Codes - 98% Alarm Time - 100% Aid/Medic Dispatch Times – 100% Geocode – 98%
Provide the EMS Division access to CAD reporting and audio recordings of 9-1-1 calls	100% access, unless technology or RCW restrictions apply (i.e. access to Police data)
Quality Improvement	Internal Communication Center QI Review of six EMS calls for each employee that answers 9-1-1 lines per calendar quarter

Results

Communication centers are evaluated quarterly for compliance with each standard. Performance standard funding is only available for compliance with all standards. No payment is made for partial compliance. In 2011, NORCOM, Valley Communications and Enumclaw Police Department complied with all of the standards.

Next Steps

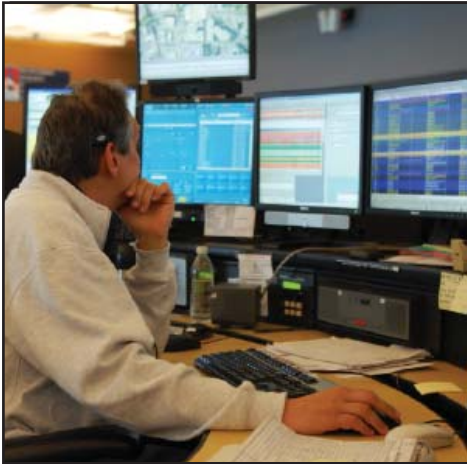
The Initiative is recommended for conversion to a Regional Services program in the 2014-2019 levy. The EMS Division will work with the communication centers and EMS providers to determine the need for new performance standards for the next levy period.

STRATEGIC INITIATIVES, continued

3. Advanced Emergency Medical Dispatch (EMD) Training Program

Background

In this regional system, emergency medical dispatchers play a critical role in determining when paramedic units are sent, and referring minor, non-urgent calls to a nurse referral line. The EMS Division invests in the training and education of dispatchers to improve the effectiveness and efficiency of ALS dispatch and use of the nurse referral line, in support of our tiered response system.



Advanced Dispatch Training concepts include the following:

- The need to provide dispatchers with opportunities to improve their understanding of cultural and language issues encountered in their daily operations;
- The desire to provide networking and more general exposure to public safety EMS issues;
- EMS/9-1-1 courses, training and conference opportunities that already exist; and
- Advanced training for more experienced emergency medical dispatchers and call-receivers.

Description

The EMS Division uses Strategic Initiative funding to reimburse dispatch agencies for the costs of sending emergency medical dispatchers (EMDs) to training courses:

ADVANCED EMD COURSE

Objective: Provide experienced EMS call-receivers and dispatchers with an opportunity to discuss advanced EMS topics and address the most current evidence-based pre-hospital treatments such as Dispatcher-Assisted CPR and other emergency pre-arrival instructions.

QI / FEEDBACK COURSE

Objective: Guide 9-1-1 center supervisors in developing and delivering EMD feedback to staff and dealing with Quality Improvement (QI) issues that arise; understand the QI/feedback process that occurs at the regional level and understand the consequences of undelivered feedback.

BASIC EMD COURSE

Objective: Send dispatchers and call-receivers that have not been through the Basic EMD class in five years or more to retake the Basic class. Because the focus of the course has changed dramatically over the past few years, this will ensure dispatchers are operating with the most up to date materials and training.

CULTURAL COMPETENCE / CROSS CULTURAL COMMUNICATION COURSE

Objective: Help 9-1-1 personnel communicate more effectively with residents of diverse communities and provide them with a better understanding of the different cultures and barriers these residents may face when interacting with public safety.

EMS AND 9-1-1 CONFERENCES

Objective: Provide opportunities for 9-1-1 personnel to attend EMS and 9-1-1 conferences to obtain advanced continuing education for dispatchers and call-receivers.

AUDIT EMT BASIC COURSE

Objective: Dispatchers audit the didactic portions of the EMT basic course to obtain additional knowledge of anatomy, physiology and disease process.

Objectives

This Strategic Initiative provides dispatchers and call-receivers with additional learning opportunities in line with improving performance of their job tasks, knowledge, skills and abilities. Specific objectives include:

- At least 15% of King County Emergency Medical Dispatchers will take advantage of at least one Advanced EMD course annually;
- A minimum of 90% of all course attendees will report via survey that the attended course will assist them in their duties as an Emergency Medical Dispatcher; and
- The EMS Division will offer a minimum of eight Advanced EMD courses annually.

Results

Appropriate use of ALS resources is dependent upon the knowledge, skills, abilities and experience of the EMDs. The efficacy of the Advanced Training courses is evaluated through the EMS Division's extensive continuous quality improvement process and by surveying the participants, trainers, supervisors and EMS coordinator.

In 2011, 12 dispatchers attended the Advanced EMD course, four dispatchers attended the didactic portion of the Basic EMT class, and two dispatchers attended the National Association of Public-Safety Communications Officials (APCO) Conference in Philadelphia, Pennsylvania. Six dispatchers attended the Washington State APCO Conference in Kennewick, Washington and 24 attended a one-day Communications Training Officer workshop in Bellevue. The percentage attendance for 2011 was 26%. The results from the surveys collected indicated that 98% of the attendees considered the trainings valuable and an asset to performing their job duties.

Next Steps

To more clearly evaluate Advanced EMD courses in King County, the EMS Division will redesign and develop more applicable course-specific evaluation tools designed to measure how the training has improved performance and whether that improvement was sustained. Evaluations will include a variety of methods both pre and post training, such as focus interviews with the participants, supervisors or Quality Improvement coordinators.

Providing dispatchers and call-receivers with opportunities to improve their job knowledge and abilities assures more appropriate care will be sent, resulting in better EMS system effectiveness, improved quality of pre-hospital care in the delivery of appropriate pre-arrival instructions, and helps manage the rate of growth with the appropriate use of ALS resources and nurse line referral.

STRATEGIC INITIATIVES, continued

4. Better Management of Non-emergency Calls to 9-1-1

Background

Managing the rate of call growth in the EMS system is a regional priority and has been an ongoing focus throughout the past three levy periods. While the EMS Division has effectively managed growth in ALS responses over the past twelve years, growth in BLS responses averaged 2.8% per year from 2000 through 2008. Recognizing potential strategies for serving non-emergency patients and callers, the EMS Division undertook the following Strategic Initiatives as alternatives to dispatching a BLS unit. Due in part to these projects, the number of BLS calls in King County (excluding Seattle) decreased 1.4% in 2009 from a high of 114,437 incidents in 2008, and has continued to decrease in the subsequent two years.

A. Telephone Referral Program/Nurseline

Background

Early in this levy period, the Telephone Referral Program (TRP), also known as Nurseline, was identified as a program with untapped potential to help manage BLS call growth. In 2007, 700 patients were transferred from 9-1-1 communication centers to the TRP, less than 1% of BLS responses. Additionally, hundreds of calls each month that met TRP criteria received engine and aid unit response instead of being transferred to the Nurseline. Because the units were handling these low-acuity patients, they were potentially not available or out of position for higher acuity medical incidents and fire calls.

Objectives

- Maintain combined TRP transfer rate of 1.5% of total BLS calls;
- Maintain “Sendback” rate of $\leq 10\%$ (“Sendbacks” are patients transferred back to 9-1-1 center for BLS or higher response); and
- Maintain $\geq 50\%$ transfer rate for calls coded with TRP Initial Dispatch Codes (T-IDC Nurseline criteria).

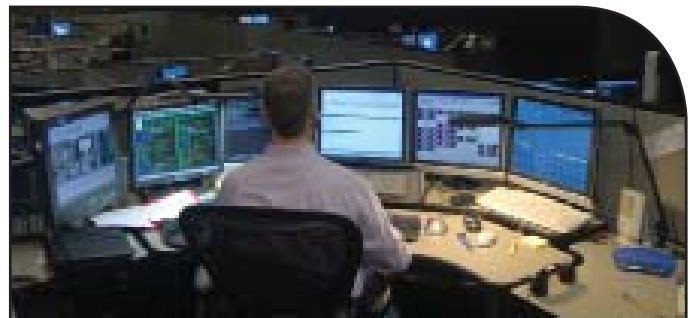
Results

This project resulted in significant improvement.

- A total of 1,867 patients were referred to Nurseline in 2009 and 1,759 in 2010. This is an increase of 151% over the past 3 years;
- Valley Communications (south King County), utilizing new ERD procedures, increased its rate of transfers in 2010 to 2.19% of BLS calls, a 242% increase compared to the 0.64% rate in 2007;
- NORCOM (North King County) increased its rate of transfers to 0.89% of BLS calls, a 25% increase since 2007; and
- Service improvements were incorporated at the Nurseline and focused training was provided to 9-1-1 center personnel.

Next Steps

Incorporate Enhanced Rapid Dispatch at NORCOM to increase the rate of appropriate transfers to the Nurseline.



B. Community Medical Technician (CMT) Pilot Project

Background

Many BLS responses are for lower acuity calls that are non-emergent and do not require transport for follow-up treatment, but still need a 'patient assist' and may need the care of an Emergency Medical Technician (EMT) at the scene. Yet the primary BLS response unit for most fire departments is a 2-EMT transport-capable unit, or costlier 3-EMT non-transport fire engines. Not only is this use of personnel and vehicle/apparatus costly, but it makes those units unavailable or delayed in response to patients with higher acuity, more emergent medical conditions, or to fire calls.

Description

The current levy funded two separate CMT pilot projects. CMT Pilot I was conducted in 2010 and was a combined effort of two Strategic Initiatives: Better Management of Non-Emergency Calls (project staffing) and Efficiencies/Evaluation Studies (funding for CMT personnel). Kent Fire Department Regional Fire Authority, South King Fire & Rescue, and Valley Communications participated. CMT units were sent on lower acuity calls in Sport Utility Vehicles (SUVs) and tasked with providing basic patient evaluation, patient assistance, and specified BLS treatment at the scene; and arranging for transport if medically necessary. This helped reserve other BLS responders and transport-capable vehicles for more serious medical emergencies.



Eastside Fire and Rescue CMT unit.

The five-month pilot project successfully demonstrated a 'proof of concept,' showing promise as a response method that could provide long term EMS efficiencies in personnel costs, apparatus operating costs, deferred apparatus replacement costs, and better management of low-acuity EMS call growth; all while continuing to provide appropriate BLS care and a high level of patient satisfaction. Objectives and results of CMT Pilot I were presented in the EMS 2011 Annual Report.

CMT Pilot II was implemented in February 2012 as a one-year pilot project. CMT Phase II has similar objectives to the first pilot with the additional testing of a one-responder CMT unit and a patient engagement component, allowing EMTs to refer patients with unmanaged medical or other needs to agencies and resources that can provide assistance, potentially reducing a patient's reliance on 9-1-1 and EMS response. Eastside Fire and Rescue is participating with the one-responder model, while Woodinville Fire and Rescue is participating with a two-responder model.

Objectives (CMT Phase II Pilot)

- Deploy alternative, non-emergent response model to low-acuity patients requesting assistance via 9-1-1;
- Demonstrate single-person response unit can manage calls with no degradation in patient care;
- Provide patient satisfaction equal to or greater than non-intervention patients;
- Engage patients in management of chronic or recurrent medical conditions, reducing their calls to 9-1-1 and need for BLS response;
- Reduce repeat calls from patients identified as recurring 9-1-1 callers, promoting medical stability;

STRATEGIC INITIATIVES, continued

- Demonstrate potential cost savings in CMT response vs. other fire and aid unit apparatus;
- Demonstrate alternative response model that maximizes fire unit productivity, serves patient needs, and reduces the long-term cost of delivering EMS services; and
- Demonstrate use of a Complete Air Moving Elevating Lift (CAMEL) device in successfully and safely lifting patients by a single responder.

Performance Measures

1. Average response time in 20 minutes or less.
2. Average unit on-scene time is at least 5 minutes longer than average BLS on-scene time for calls that meet CMT criteria for response.
3. Decrease by 50% the average monthly number of calls from an identified set of recurring patients, 6 months before through 6 months after pilot period.
4. An average of 10 patients added monthly by each agency to a patient referral database for follow-up care or assistance.
5. 75% of patients referred by fire agencies receive follow-up contact from a referral agency.
6. 75% of referred patients' follow-up and take part in referral.
7. 95% of patients satisfied or very satisfied with treatment by CMT.

Next Steps

Future funding for the CMT Program is currently included in the EMS Task Force 2014-2019 levy recommendations. The proposal uses a regional approach to positioning units with each unit serving between three to five fire departments. A year of project planning is reserved for 2014. Funding for implementing three CMT units is in the financial plan for 2015 - 2019, with the potential for two additional units funded by levy reserves.

C. Taxi Transport Voucher (TTV) Project

Background

When a low-acuity patient treated by EMS requires follow-up non-emergent treatment, options for transport include 1) the BLS unit at the scene; 2) a private ambulance; or 3) a privately operated vehicle. If the patient does not have access to private transportation or cannot wait for it to become available, the default option becomes a BLS unit or private ambulance. BLS units transporting low-acuity patients are delayed or unavailable for more serious medical emergencies. Transport by BLS unit is expensive, both in fuel and wear on vehicles, and ambulance transport fees can be \$600 - \$1,000, with significant co-pays for patients.

Description

To improve EMS knowledge of taxi transports and encourage their use for patients when appropriate, the EMS Division engaged in a one year pilot project with Redmond Fire Department, Renton Fire & Emergency Services, and Evergreen Nurseline. This pilot project was conducted between January 1 and December 31, 2011. EMTs were provided with round-trip taxi vouchers for patients with low-acuity transport needs. The Nurseline used pre-assigned Voucher ID numbers given to the taxi dispatcher over the phone. Project funding was provided from two Strategic Initiatives, Better Management of Non-Emergency Calls (project staffing) and Efficiencies/Evaluation Studies (funding for round-trip vouchers).

Goals

Demonstrate a cost and resource-effective transportation alternative for low-acuity, non-emergent, ambulatory patients, and provide patient and health insurer cost savings for non-emergent transport.

Objectives

1. Decrease BLS unit time on scene with patients by 5 minutes;
2. Reduce the number of “transport” sendbacks from Nurseline to 9-1-1 centers by 75%;
3. Increase transports to non-ED and alternative care facilities for low-acuity patients;
4. Decrease the private ambulance transport percentage for BLS low-acuity responses by 20%; and
5. Provide intervention patient satisfaction with service equal to or better than that of control patients.

EMT Comments



“It’s easy and straight forward. I’m glad we have this transport option; we see a lot of people who don’t need an ambulance.”

“This program benefits patients that need to get to hospital because they often might not go because they can’t afford it.”

Results

234 vouchers were issued to 160 patients during the one-year pilot. 74 vouchers were two-way round trips and 76 were one-way trips. 10 patients did not use their voucher. Positive impression among EMTs toward providing taxi vouchers to patients rose from 20% pre-pilot to 83% after the project began.

EMTs supplied with taxi vouchers were 60% more likely to discuss transport options with low-acuity, non-emergent patients. EMTs were more inclined to discuss treatment facility options (including non-emergency facilities) in 29% of the cases with low-acuity patients. Of patients offered a taxi voucher by EMTs for transportation, 86% accepted.



Patient comments

“The firefighters were really on top of this, it went really quickly. The taxi drove me up to the entrance door and the hospital staff brought out a wheelchair. It was seamless.”

Of the taxi transport patients interviewed, 88% were “satisfied” or “very satisfied” with the service. Of the patients provided with a taxi transport voucher, 97% were “satisfied” or “very satisfied” with the fire department’s response. The

average taxi fare was \$34.99 (\$47.18 round-trip, \$22.97 one-way). The primary destination for patient transports during the project remained Emergency Departments, at 71.3%. The majority of patients were covered by some form of medical insurance (87%). More than two thirds of interviewed patients had previously called 9-1-1 for medical response (70%).

Next Steps

Initiate an ongoing Taxi Voucher Program as a Regional Services Program by expanding the program to include additional interested fire departments. Develop funding partnerships with additional agencies such as ambulance providers and hospitals. Improve methods and inclination to encourage transport of low-acuity patients to non-emergency facilities in place of emergency departments and hospitals.

STRATEGIC INITIATIVES, continued

SI: Injury Prevention - Fall Prevention

Background

In King County, the 65+ population numbered 210,679 in 2010 (King County Comprehensive Plan, March 1, 2012). It is estimated that by 2020, the number of 65+ adults will increase by 41%. In the next 15 – 20 years, King County is likely to see an additional 200,000+ seniors, nearly doubling the senior population. Nearly half (48%) of seniors live alone, while 41% are married, and may or may not have children or others living with them. Eight percent of seniors live with other family members but with no spouse, and three percent of seniors live with an unrelated (non-family) person.

Three Injury Prevention Strategic Initiatives (SI) target the rate of growth of Medic One/EMS calls by reducing reoccurring falls among older adults. This is accomplished through mitigation of home safety hazards and offering opportunities and incentives for older adults to exercise in various senior/community centers at a low cost. The following summarizes the status of these three fall prevention strategies.

1. Community Awareness Campaign – SHAPEUP 50+

Background

According to the American Association of Retired Persons' "The State of 50+ America 2005" report, only 28.8% of 50 to 64 year olds, 25.6% of 65 to 74 year olds, and 16.3% of those 75 and older are physically active. The direct medical cost of physical inactivity was nearly \$76.6 billion in 2000, and care for people with chronic diseases accounted for more than 75% of the \$1.4 trillion medical care costs in the U.S. (Centers For Disease Control). U.S. healthcare cost is forecasted to grow to \$2.8 trillion (or \$9,216 per person) by 2011 (source: the National Health Statistics Group, Centers for Medicare and Medicaid Services). Adults who are 50 years and older and start exercising only 90 minutes a week save an average of \$2,200 per year in medical costs (HealthPartners Research Foundation).

In focus groups of people 65 years or older, non-exercisers said their primary barriers to exercise were fear of falling, unwillingness to take action, and a feeling of resistance to exercise. The people who exercised identified unwillingness to take action, time constraints and physical ailments as significant barriers (Journal of Aging and Physical Activity, 2005;13(1).

Program Description

ShapeUp enrolls seniors (50+) in group physical activity classes at seven regional senior/community centers. The program provides seniors with either a \$10 discount coupon or a free class with the intent that seniors will continue to participate in other physical activity classes after their initial participation.

Objectives

- 2011 Goal: 500 participants

Results

- 2011 results: 822 participants
- 50% to 90% of participants continued on to other physical activity classes
- Reached out to low income senior public housing by providing “Sit Fit” group exercise classes

Next Steps

Continue outreach to low income senior public housing apartments and increase participation.

2012 Goal: 850 participants



Participant comments



“Gene and I are seeing an increase in our energy levels, I can now do my cardio program (level 2) on the treadmill without slowing down the speed before the end. A great improvement! Gene and I also walk the hills near our house and we have extended the walk to 2.5 miles rather than the 1.5 miles we were previously walking. We got started via the Shape Up discount coupon—the perfect incentive we needed to get started!” – Linda Paine

STRATEGIC INITIATIVES, continued

2. Fire Department Small Grant Program

Background

Approximately 18% of EMS responses in King County are fall related among persons 65 years and older. With the prediction that the boomers will double in the next 15-20 years, it is assumed that the EMS responses to this age group will also increase. Recognizing this potential increase in EMS responses, the EMS Division provides fire departments an opportunity to apply for grant funds to address falls in this increasingly aging population.

Program Description

Previous fall prevention studies have shown that a multi-disciplinary approach to preventing falls in the 65+ age group is the most effective at reducing fall risks. Hence, grant requests must incorporate at least two of the proven “best” practices in reducing fall risks: providing exercising opportunities, reviewing medication, offering vision checks, and home environmental hazard mitigation.

2011 Objectives

- Increase fire department participation by 60%.
- Increase community member participation to 250.

2011 Results

- Increased fire department participation by 20%, from five to six fire departments (2011 grants - Redmond Fire Department, Mercer Island Fire Department, South King Fire & Rescue, Shoreline Fire Department, and Bothell Fire Department; 2012 grants - Eastside Fire & Rescue, Redmond Fire Department, Shoreline Fire Department, Fire District #27, Mercer Island Fire Department, and South King Fire & Rescue).
- 182 seniors participated in a variety of fall prevention programs that were implemented by the grantees.

Next Steps

EMS will offer the program in 2013, the last year of the current levy period.

3. Expansion of the Fall Prevention One Step Ahead Program

Background

Every 15 seconds, an older adult is treated in an emergency room for fall-related injuries; every 29 minutes, an older adult dies from a fall (National Council on Aging). In 2000, the direct medical cost of fatal and non-fatal fall injuries was over \$28 billion, adjusted to 2010 dollars (U.S. Centers for Disease Control and Prevention). The financial toll for older adult falls is expected to increase as the population ages and may reach \$54.9 billion by 2020 (U.S. Centers for Disease Control and Prevention). Nearly one in five Medicare patients discharged from the hospital is readmitted within 30 days, approximately 2.6 million seniors at a cost of over \$26 billion every year (Centers for Medicare and Medicaid Services).

Program Description

The *One Step Ahead* program assists adults 65 and older in staying healthy, independent and safe in their homes by providing a home safety walk through identifying any fall safety hazards, education about staying safe in the home, installation of fall prevention safety devices, and information on other community resources. This year, a new pilot project started having hospital emergency department social workers (Highline, Evergreen and NW hospitals) refer fall patients to the EMS fall program for follow-up care. In addition, fall prevention presentations were made to various retirement facilities.

2011 Objectives

- Increase enrollment by 3%.
- Expand program to hospitals and retirement facilities.
- Reduce participants' reoccurring falls by 10%.

Results

- In 2011, 186 participants enrolled in the program, a 31% increase over 2010 enrollment. From January 2012 to May 2012, enrollment is 89 as compared to 65 participants during the same time period in 2011.
- To date, 78% of participants did not fall after the intervention, an increase of 20% from the initial fall study.
- Fall prevention presentations to nine retirement facilities in 2011 and six retirement facilities as of May 2012.



Jean Corr, Fall Prevention Specialist (left) implements a fall prevention action plan.

Next Steps

Continue expansion of hospital emergency department fall patient referrals.

4. Grant and Other Funding Opportunities

This Strategic Initiative was discontinued due to lack of revenue generation.

STRATEGIC INITIATIVES, continued

SI: Public Access Defibrillation (PAD) Community Awareness Campaign

Background

Every year more than 300,000 Americans die from sudden cardiac arrest (SCA), a condition in which the heart unexpectedly stops beating. It can happen anywhere, to anyone, at any time; even to those with optimal heart health. And when it occurs – seconds count. Studies have shown a 70-80% chance of survival if an Automated External Defibrillator (AED) is used within minutes on a SCA victim. For many victims, a shock from an AED is the only chance for survival. A key component to the system of care during cardiac arrest is early CPR and the application of an Automated External Defibrillator (AED) to restore proper heart rhythm. These two life-saving tasks can be performed by citizens, prior to EMT arrival, increasing the chances for patient survival.

Description

The Public Access Defibrillation (PAD) Community Awareness Campaign supplements the EMS Division's efforts to increase the number of AEDs in the community, improve the ability to locate and use them during cardiac arrest and increase registration of the AEDs in the EMS PAD Registry. The registry enables the EMS Division to determine an approximate total and dispersion of AEDs in King County, potentially develop AED mapping applications, contact AED owners if necessary, and assist them in complying with state law requiring AED registration.

Objectives

Performance objectives are currently being developed.



Results

After nearly 1 year in development, the EMS Division launched the **Shockingly Simple** campaign in June 2012 to increase adoption and registration of AEDs in Seattle and King County. Major accomplishments as part of developing the campaign included:

- Design of campaign logo and tag line.
- Development of a Campaign Toolkit (Overview, AED Fact Sheet, and Communication Tools).
- Development of a media strategy.
- Recruitment of Sound Heart Heroes, community and business leaders willing to support the campaign and spread the message.
- A re-tooling of the website to support the Shockingly Simple Campaign and simplify the process of AED registration.

The launch included 1) issuing a press release; 2) hosting a media training event; 3) numerous radio and TV interviews; 4) Sounders game sponsorship including display booth and campaign signage during the game; and 5) a partnership with Nick of Time Foundation to promote AEDs at a Seattle Storm game.

Next Steps

Develop a plan to maintain the strength of the awareness campaign in 2013 and into the next levy. It is recommended that funding be converted to Regional Services for the 2014-2019 levy. Final results will be reported in 2013.

SI: Interactive Enhancements to EMS Online

Background

When the EMS Division recognized that EMS personnel needed an alternative method for completing the cognitive pieces of on-going training and evaluation (OTEP) courses, it developed the EMS Online website. This interactive web-based teaching tool was originally intended to serve only a small number of EMS providers and deliver only a limited number of courses. However, its offerings have expanded immensely due to its effectiveness in delivering quality training at a low cost, and users are now requesting additional content and expanded features.

Description

The 2008-2013 Strategic Plan includes an initiative to develop additional content and expanded features to EMS Online over the span of the current levy period.

Objectives

- Incorporate tools for training officers into the website.
- Produce new interactive case studies.
- Produce new courses.
- Design and develop two continuing medical education courses at the paramedic level.
- Incorporate interviews with experts into existing courses.
- Create learning activities that track to the course outcomes.

Results

New this year was the launch of the first in a series of six paramedic courses. The courses are developed in conjunction with the University of Washington/Harborview Medical Center and topic specialists in the field. The paramedic courses follow County, State and national paramedic educational requirements and will focus on the following topics:

- Sepsis
- Supraventricular Tachydysrhythmias (SVT)
- Bradycardia and Heart Blocks
- Anaphylaxis
- Obstruction or Bleed
- Blunt Force Abdominal Trauma



Next Steps

- Complete the six courses at the paramedic level to EMS Online.
- Incorporate 'Video Ask-the-Doc' – addressing questions from the field with Dr. Mickey Eisenberg.
- Deliver EMT Patient Care Protocol Book in mobile learning format (available for smart phones and tablet devices).
- Develop interactive games for two of the 2013 courses.

STRATEGIC INITIATIVES, continued

SI: Systemwide Enhanced Network Design (SEND)

Goal

Included in the regional Medic One/EMS 2008-2013 Strategic Plan, the SEND Project is a five-year project developed in partnership with regional EMS agencies, hospitals and dispatch centers to enhance the existing EMS data network to improve the quality and timeliness of EMS data, thus improving patient care.

Objectives

1. Access to Data: Improves access to complete and timely EMS patient data, especially patient outcomes, thus improving oversight of EMS protocols and procedures and enhancing patient care (ex. management of stroke patients). Currently may take up to 2-3 months.
2. Patient Information Prior to Arrival at ER: Communicates critical and timely patient information to hospitals prior to patient arrival at emergency departments (ex. chest pain patients requiring catheterization). This information is not currently available prior to patient arrival.
3. Manual Data Processing: Improves data processing, including fully automating MIRF uploads to the central repository, reducing administrative staff work and errors.

Key Tasks

- The EMS Division will procure a data hub to automate the process of integrating EMS data and work with EMS agencies and hospitals to build interfaces from their existing EMS data to the data hub.
- The EMS Division will work with EMS agencies and hospitals to facilitate the activation of electronic field data collection and transmission of critical information to emergency departments.

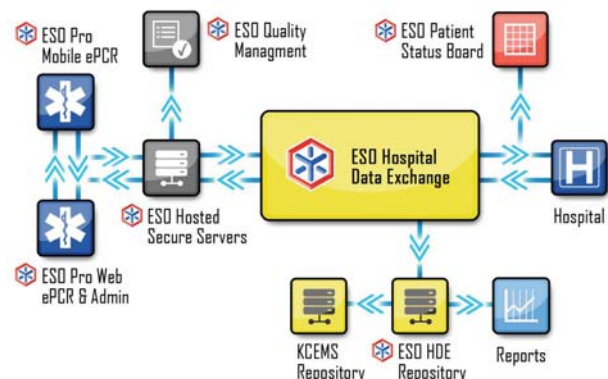
Results

- 98% of all EMS records are collected electronically. Reduced EMS Division data entry from 1.0 FTE to 0.5 FTE.
- Improved timeliness to EMS records from an average of 87 days to 38 days.
- Completed procurement and setup of data hub. Currently 1% of all KC records run through data hub per month. Expect 100% by end of levy period.
- Worked with Evergreen Hospital to develop interface as prototype for other hospitals. Expect 3-5 hospitals by end of levy period.
- Initiated tablet pilot, distributing 34 tablets to 13 EMS agencies. Currently, 3 EMS agencies are using tablets in the field. Expect all 13 by the end of the levy period.

Next Steps

- Continue encouraging electronic EMS records in the field at remaining EMS agencies.
- Complete hospital interfaces in remaining hospitals in King County.

ESD Data Bus Systems Flow



SI: All Hazards Management Preparation

The All Hazards Management Preparation strategic initiative was discontinued due to the duplication of local area efforts.

SI: EMS Efficiencies & Evaluation Studies

The following three projects fall under this Strategic Initiative heading:

1. Community Medical Technician (CMT)
2. Taxi Transport Voucher (TTV) Project
3. EMS Vehicle Replacement Policies

Background

The emphasis behind all Strategic Initiative projects is to improve EMS patient care, manage growth in paramedic services, and develop system efficiencies and cost savings/avoidance. This Strategic Initiative provides additional funding to further pursue areas identified by other strategic initiatives and to also review the existing system.



1. Community Medical Technician (CMT)

The Community Medical Technician (CMT) pilot project, summarized more fully on p. 39 of this report, allowed the EMS Division to conduct two CMT pilot studies to evaluate an alternative EMS response model to low acuity calls. CMT Phase II is currently evaluating sending one FF/EMT in a light-duty SUV, including a patient engagement/referral model to provide follow-up support from community agencies.

2. Taxi Transport Voucher (TTV) Project

The EMS Division completed a Taxi Transport Voucher pilot project in 2011. Results of the project are outlined on p. 40 of this report.

3. EMS Vehicle Replacement Policies

The King County Auditor's Office indicated that ALS agencies could achieve significant cost efficiencies if ALS vehicle replacement were based on findings from a life cycle cost analysis rather than current methods which schedules vehicles to be replaced at six-year intervals. In practice, the schedule varies among ALS provider agencies, some agencies use vehicles for six years, while others average nearly ten.

As part of the EMS levy planning process, ALS agencies agreed to increase the vehicle replacement cycle to eight years in the 2014-2019 levy period with the intention of evaluating if they can all safely expand to ten years as some ALS agencies have succeeding in doing. Criteria for evaluation may include optimal use, evaluating initial purchase costs, mileage, engine hours, operational and maintenance costs, patient safety and comfort, downtime, and salvage values. Replacement criteria may also include remounting ambulance modules to new vehicle chassis and development of a standardized ALS vehicle design.

STRATEGIC INITIATIVES, continued

SI: Strategic Planning for the Next Levy Period

Background

The current six-year Medic One/Emergency Medical Services levy is scheduled to expire December 31, 2013. To continue providing this vital service in 2014 and beyond, a new Strategic Plan, defining the roles and responsibility and programs for the system, and a levy rate to fund these approved functions must be developed. The King County Executive will propose placing the reauthorization of the Medic One levy before the voters in 2013.

Description

King County Ordinance #15862 created an EMS Advisory Task Force to develop “interjurisdictional agreement on an updated EMS strategic plan and financing package for the next levy funding period.” Comprised of leaders and decision makers from throughout the region, the Task Force convened to assess and approve a strategic plan and a proposed levy rate to put before the voters of King County. The composition of the Task Force was reformulated by the King County Council in July 2011 to create a more manageable size, and consists of 19 members representing cities with more than 50,000 in population, suburban cities, the King County Council and fire districts.

Objectives

EMS Advisory Task Force responsibilities include reviewing and endorsing recommendations regarding:

- Current and projected EMS system needs;
- The Financial Plan based on those needs; and
- The levy rate, levy length, and when to run the levy measure.



Task Force financial and programmatic recommendations are due to the Executive and King County Council no later than September 15, 2012, and the Medic One/EMS 2014-2019 Strategic Plan is due January 1, 2013.

Results

The EMS Advisory Task Force first convened in October 2011 as outlined in the EMS Levy Work Plan. Four subcommittees, representing the Advanced Life Support (ALS), Basic Life Support (BLS), Regional Services (RS) and Finance program areas, met a total of 23 times to conduct both programmatic and cost analysis, and develop recommendations for review by Task Force members. The EMS Division has provided staff support in organizing, preparing for, and facilitating the EMS Advisory Task Force and Subcommittee meetings.

Next Steps

Prior to being placed on the ballot for voter approval, the Medic One/EMS 2014-2019 Strategic Plan and recommended EMS levy rate must be approved by the councils of all cities over 50,000 in population and the King County Council. There are nine cities over 50,000: Auburn, Bellevue, Federal Way, Kent, Kirkland, Redmond, Renton, Seattle, and Shoreline. Representatives from each of the nine cities and the King County Council serve on the EMS Advisory Task Force.

The table below reflects the summary recommendations:

Program Area	2008-2013 Levy Span	Programmatic Needs for the 2014-2019 Levy Span
Advanced Life Support (ALS)	Started levy span with 25 medic units: 18 medic units – King County (KC) 7 medic units – Seattle	Starting levy span with 26 medic units: 19 medic units – King County (KC) 7 medic units – Seattle
	3 planned additional units: 2 KC (only 1 unit added) 1 Seattle (not added)	0 planned additional units *\$2,291,000 placeholder/ reserve to fund a 12 hour medic unit during last two years of the levy span, if needed.
	Determine costs using the unit allocation methodology	Determine costs using the unit allocation methodology
	Starting Unit Allocation (KC): <u>\$1,783,685</u> Average Unit Allocation over span of levy (KC): <u>\$1,897,030</u>	Starting Unit Allocation (KC): <u>\$2,126,816</u> Average Unit Allocation over span of levy (KC): <u>\$2,334,412</u>
	12 Reserves to cover unanticipated/one-time expenses <ul style="list-style-type: none"> - Disaster Response - Facilities - Call Volume Utilization - Pharmaceuticals/Medical Equipment - Chassis Obsolescence - Dispatch/Communications - ALS Salary and Wage - Risk Abatement - Diesel Cost - Paramedic Student Training - Excess Backfill for PTO - Outstanding ALS Retirement 	4 Reserve categories to cover unanticipated/one-time expenses <ul style="list-style-type: none"> - Capacity - Operations - Equipment - Risk
	Compound inflator (using CPI-U) to inflate annual costs (see <i>attachment</i>)	Compound inflator (using CPI-W) to inflate annual costs (see <i>attachment</i>)
	Equipment allocation: 6-year medic unit life cycle (3 years primary, 3 years back-up)	Equipment allocation: 8-year medic unit life cycle (4 years primary, 4 years back-up)

STRATEGIC INITIATIVES, continued

Program Area	2008-2013 Levy Span	Programmatic Needs for the 2014-2019 Levy Span
Basic Life Support (BLS)	Allocates funds to BLS agencies based on funding formula based 50/50 on Assessed Value and Call Volumes.	Allocates funds to BLS agencies based on funding formula based 50/50 on Assessed Value and Call Volumes.
	BLS allocation amount equal to 22.8 % of levy (over entire span).	BLS allocation amount equal to 23.6% of levy (over entire span).
	Costs inflated at CPI-U	Costs inflated at CPI-W
Regional Services (RS)	Fund regional services that focus on superior medical training, oversight and improvement; innovative programs and strategies, regional leadership, effectiveness and efficiencies.	Fund regional services that focus on superior medical training, oversight and improvement; innovative programs and strategies, regional leadership, effectiveness and efficiencies. Programs enhanced/rescoped to meet emergent needs.
	Costs inflated at CPI-U	Costs inflated at CPI-W
Strategic Initiatives (SI)	Total of 14 Strategic Initiatives 1. eCBD/CAD Integration (Emergency Medical Dispatch) 2. Dispatch Center Performance Standards (Emergency Medical Dispatch) 3. Advanced Emergency Medical Dispatch Training (Emergency Medical Dispatch) 4. Better Management of Non-Emergency Calls to 9-1-1 (Emergency Medical Dispatch) 5. Community Awareness Campaign (Injury Prevention) 6. Small Grants Program for BLS Agencies (Injury Prevention)	10 proven Strategic Initiatives converted into Regional Services; 2 eliminated; 2 revamped; 3 NEW Strategic Initiatives Converted into RS Converted into RS Converted into RS Revamped to further develop strategies to manage current demand and expected future growth in requests for BLS assistance. Converted into RS Converted into RS

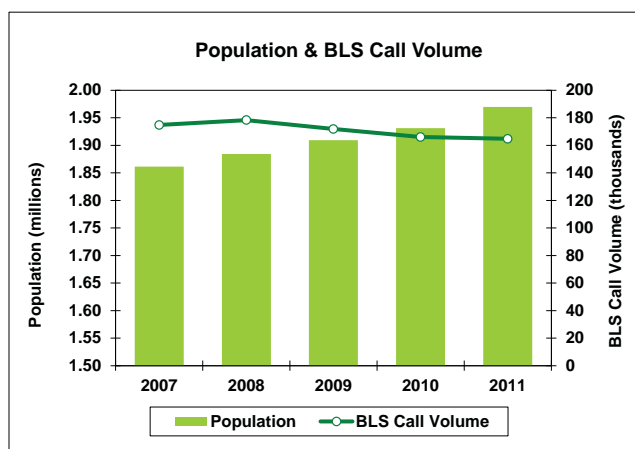
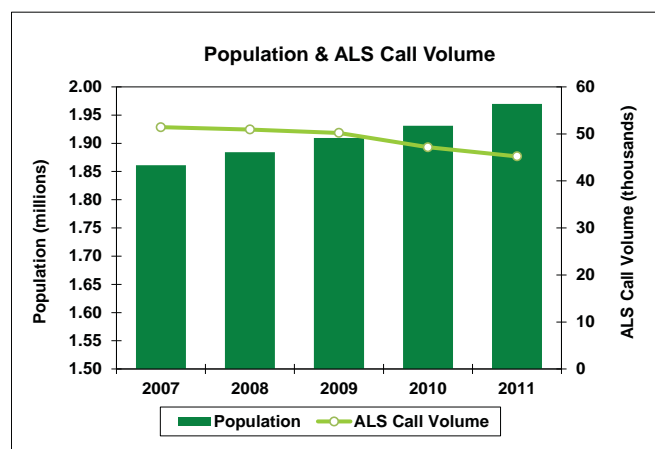
Program Area	2008-2013 Levy Span	Programmatic Needs for the 2014-2019 Levy Span
Strategic Initiatives (SI) - continued	7. Countywide Falls Program (Injury Prevention)	Converted into RS
	8. Public Access Defibrillation Awareness Campaign	Converted into RS
	9. Interactive Enhancements to EMS Online	Converted into RS
	10. System wide Enhanced Network Design (SEND)	Converted into RS
	11. Grant writing/other funding Opportunities (Injury Prevention)	Eliminated
	12. All Hazards Management Preparation	Eliminated
	13. EMS Efficiencies & Evaluation Studies	Revamped to provide additional focus on performance measures, outcomes, metrics, and looking at continuous improvement projects outside of what is currently being done
	14. Strategic Planning for Next EMS levy period	Converted into RS
		3 NEW Strategic Initiatives <ul style="list-style-type: none"> - Vulnerable Populations - Regional Record Management System - BLS Lead Agency Proposal
OTHER:	Community Medical Technician <ul style="list-style-type: none"> - 2 pilots as part of EMS Efficiencies/Evaluation Study Audit <ul style="list-style-type: none"> - Annual audit by King County Auditor's Office 	Community Medical Technician <ul style="list-style-type: none"> - Funding for 3 units, plus reserve for additional units if project is successful. Audit <ul style="list-style-type: none"> - Financial and performance audit over span of six years by King County Auditor's Office
	Costs inflated at CPI-U	Costs inflated at CPI-W

Summary of 2011 EMS Statistics (Seattle and King County)*

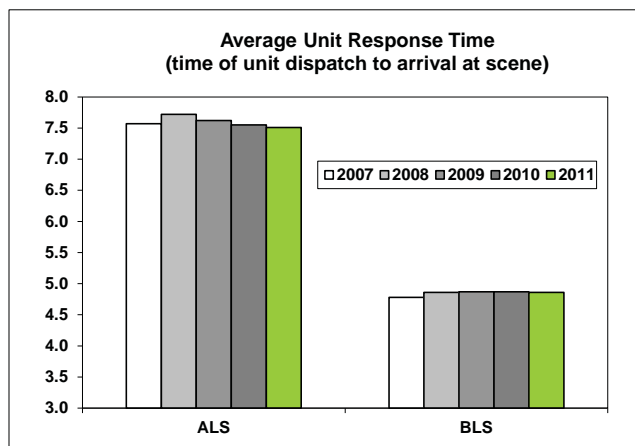
The following statistics are derived from the patient care reports collected and submitted by EMS agencies to the EMS Division for the year 2011.

Population	Seattle-King County	% Growth (Annualized)
1980	1,269,898	
1990	1,507,305	1.87%
2000	1,737,034	1.52%
2010	1,931,249	1.12%
2011	1,969,722	1.10%

The rate of population growth in King County continues to decline. Population has historically been strongly correlated to EMS growth, and in 2011, data showed a fourth consecutive year of ALS call volume decline. BLS is now following the same pattern with a three year call volume decline. The two graphs below depict the population growth relative to both ALS and BLS call volume patterns. Note that the scales for population and call volumes are different in the tables below.



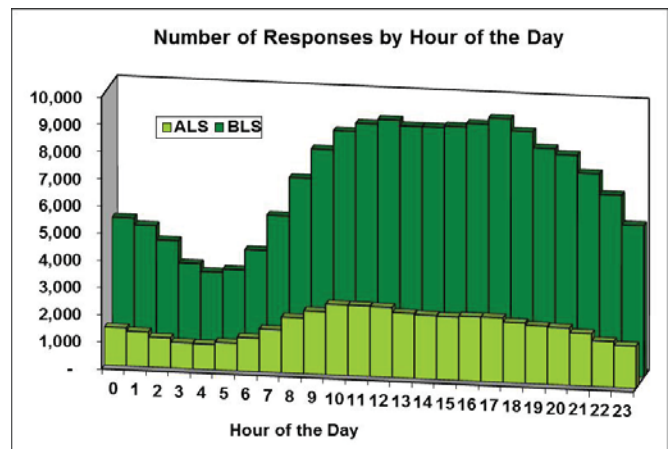
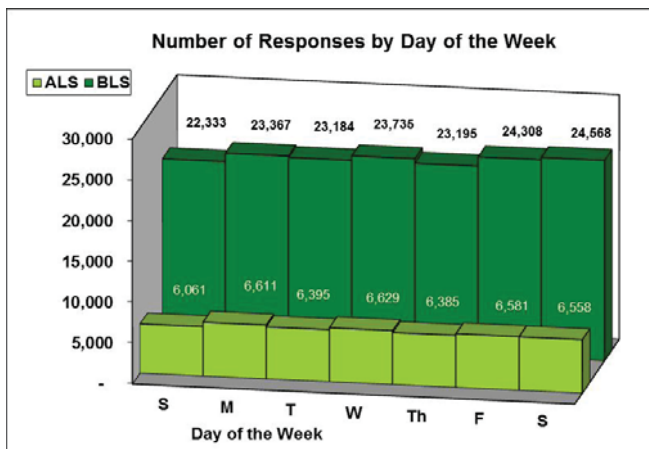
*EMS data uses a fully integrated EMS Division and Seattle dataset. Response times are defined as follows: Total - the time of call received at dispatch center to the time of arrival at the scene, and Unit - the time of unit dispatch to time of arrival at the scene. In some instances, totals differ due to missing values.



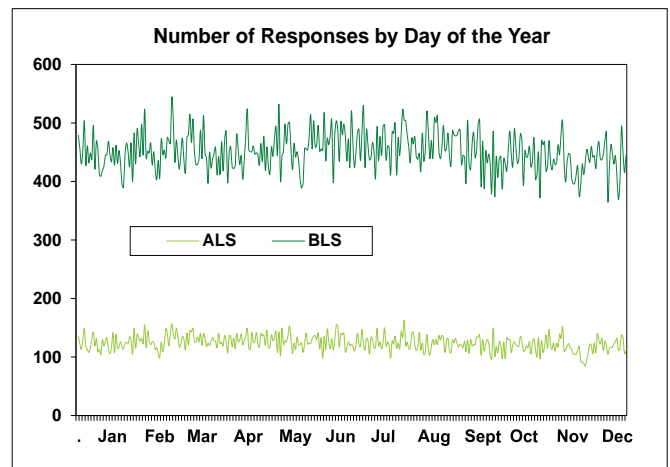
Characteristics of Responses

Operations

Service	ALS		BLS	
Number of Responses	45,220		164,690	
Average Response Time	Total RT	Unit RT	Total RT	Unit RT
	11.4	7.5	5.9	4.9
6 minutes or less			65.1%	77.4%
8 minutes or less	38.1%	64.8%		
10 minutes or less	55.6%	81.6%		
12 minutes or less	67.6%	90.1%		
14 minutes or less	75.6%	94.5%		
Cancelled Enroute Calls	7,182 (15.9%)		4,666 (2.8%)	



The average BLS unit response times have remained stable, indicating some capacity to manage additional calls. Average ALS response times declined again slightly last year. The three graphs located above and to the right reflect the patterns of ALS and BLS response during the day, the week, and throughout the year. There remains a notable difference in range of BLS responses per day over time (~370-550 calls) in comparison to ALS responses (~85-165 calls).

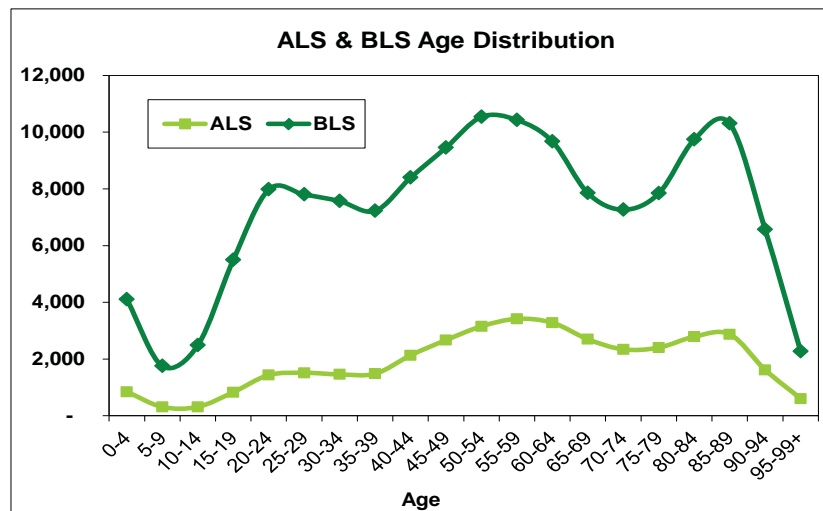


Characteristics of Responses, continued

The following information reflects a variety of statistics that characterize the types of both BLS and ALS calls, including a comparison of age groups, types of medical complaints, where incidents take place, and patient transport information. Paramedics providing advanced life support are more likely to attend to older patients for cardiac conditions, while EMTs often attend to trauma in young adults.

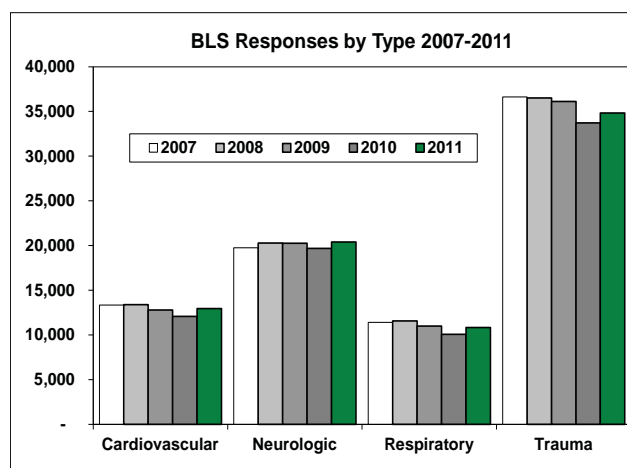
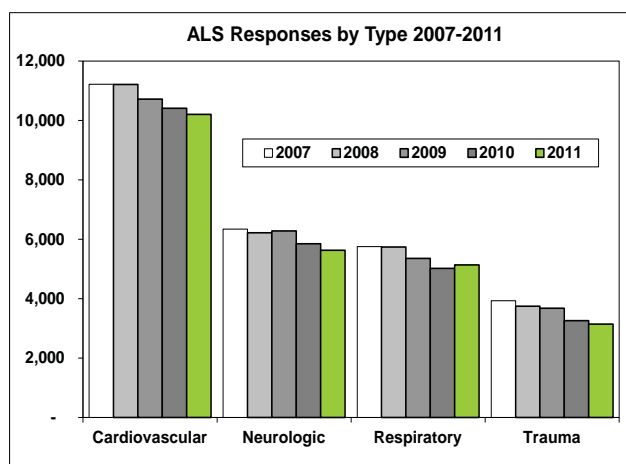
Responses by Age Group

	ALS	BLS
0-4 yrs	846 (2.2%)	4,102 (2.8%)
5-9 yrs	311 (0.8%)	1,751 (1.2%)
10-17 yrs	697 (1.8%)	5,309 (3.7%)
18-24 yrs	1,883 (4.9%)	10,645 (7.4%)
25-44 yrs	6,589 (17.3%)	30,984 (21.4%)
45-64 yrs	12,520 (32.8%)	40,089 (27.7%)
65-84 yrs	10,230 (26.8%)	32,696 (22.6%)
85+ yrs	5,099 (13.3%)	19,129 (13.2%)
Total	38,175	144,705



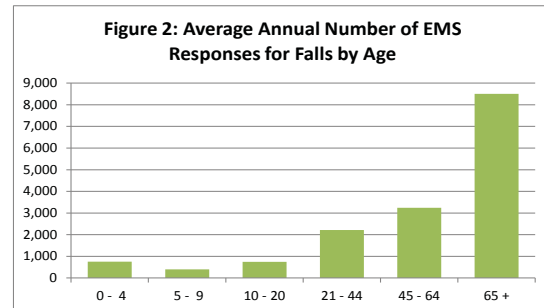
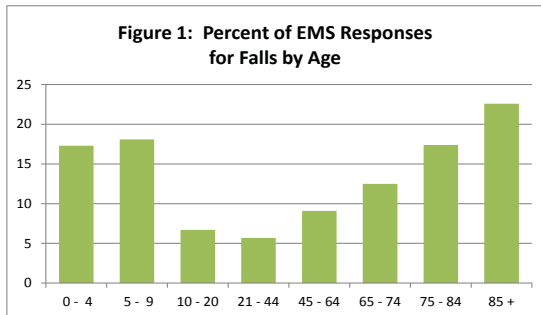
Although ALS and BLS personnel each respond more frequently to particular types of calls (i.e. cardiac calls for ALS and trauma for BLS), the EMS community serves a wide variety of medical emergencies. This requires not only an in-depth knowledge of specific invasive medical procedures but also requires a considerable breadth of knowledge and skills for diagnoses and management.

Responses by Medical Type	ALS	BLS
Cardiovascular	10,199 (27.0%)	12,593 (9.2%)
Neurologic	5,624 (14.9%)	20,401 (15.0%)
Respiratory	5,136 (13.6%)	10,825 (7.9%)
Trauma	3,139 (8.3%)	34,823 (25.6%)
Abdominal/Genito-Urinary	2,109 (5.6%)	11,185 (8.2%)
Alcohol/Drug	1,870 (4.9%)	7,438 (5.5%)
Metabolic/Endocrine	1,643 (4.3%)	3,674 (2.7%)
Psychiatric	1,282 (3.4%)	7,661 (5.6%)
Obstetric/Gynecological	437 (1.2%)	1,146 (0.8%)
Anaphylaxis/Allergy	387 (1.0%)	1,126 (0.8%)
Other Illness	5,954 (15.8%)	25,338 (18.6%)
Total Medical	37,780	136,210

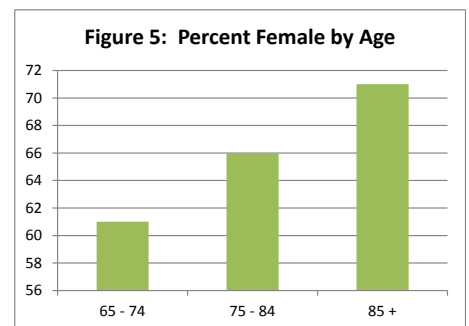
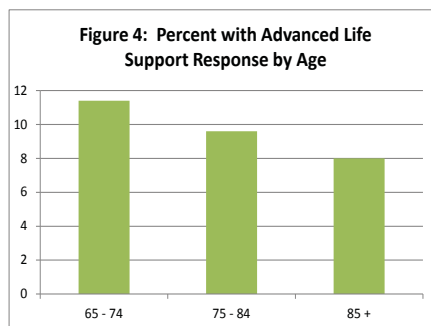
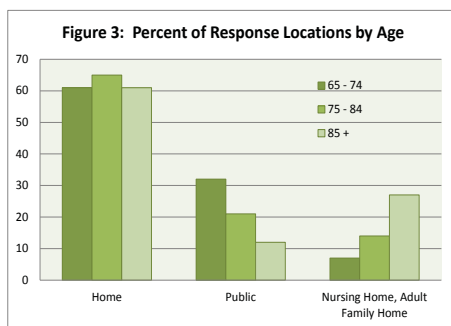


Public Health Highlight: A Decade of EMS Responses to Falls

Falls among the elderly are a major health concern, with significant morbidity and mortality.¹ Fall risk increases with age, a trend mirrored by EMS responses to patients in King County for problems related to a fall. Over the last decade (2001-2010), 10.5% of all EMS responses were associated with a fall, with highest proportions for patients under 10 years of age and those aged 65 and older (Fig. 1). Nearly 25% of all EMS responses to the very elderly, patients aged 85 and older, were for a problem related to a fall. While the proportion of EMS responses for falls is also high in children, the average annual number of EMS responses for falls, and the associated EMS service burden, is nearly 9 times greater in the elderly due to their numbers in the King County population and their rate of EMS utilization (Fig. 2).



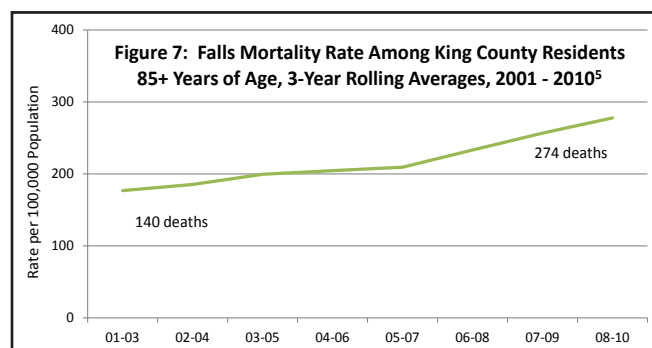
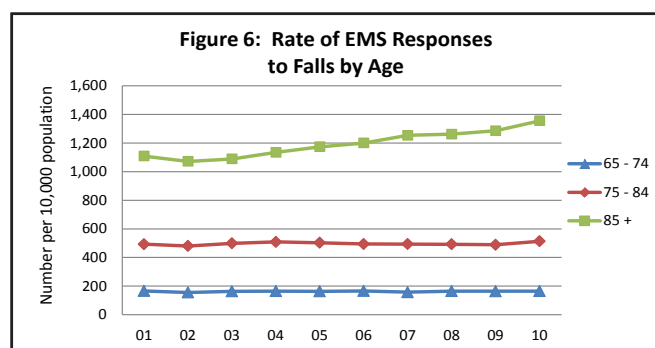
Of all falls among patients aged 65 and older, EMS responders classified 77% as traumatic, 6% as consequences of a medical problem, and 17% as service calls of a less urgent nature, for example, to assist a patient back into bed. About 70% are transported to hospital, most by a private or fire department ambulance equipped to provide basic life support. EMS data reveal several age-related trends in service and patient characteristics. Most patients are attended at home; however, changing proportions in a public place versus at a nursing home or adult family home (Fig. 3) reflect age-related patterns of activity and residence. While fairly low for ages 65 and above, the proportion treated by paramedics with advanced life support, such as medications, declines with age (Fig. 4). And, as in the elderly population, the proportion of women among fall patients increases with age (Fig. 5).



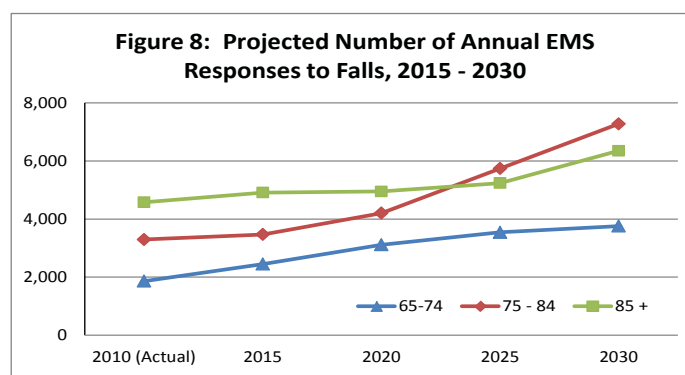
Considering trends over the last decade, EMS responses for falls as a percent of total service volume show a slight but significant increase by year, from 10.7% in 2001 to 11.2% in 2010. The increase is related to responses for patients aged 65 and older, with 17.4% of EMS responses related to falls in 2001, increasing to 18.9% by 2010. At this same time, the King County population aged 65 and over grew from 184,644 persons to 210,679, a 14% increase.² Among those 85 and older, falls were 22.7% of their total EMS responses in 2001, compared to 24.2% in 2010. The 85 and older cohort increased 33% over the last decade, from 25,465 to 33,785 persons, the fastest-growing age group among the elderly.

Among the Elderly in King County, and a Look Ahead

Figure 6 shows trends in rates of EMS responses to falls patients per 10,000 population. The falls rate increased over the decade in the cohort age 85 and older, compared to relatively flat rates for ages 65–74 and 75–84. Similar trends can be seen in the population-based falls mortality and morbidity data for King County residents.³ Figure 7 shows the parallel increase in falls mortality rate across the decade for the oldest age group. Not shown in the figure, the age group 75–84 also experienced a significant mortality rate increase. As in the EMS response rate data, the falls mortality rate did not increase between 2001 and 2010 for residents aged 65–74. Combining years 2008 through 2010, population-based morbidity data shows an increase in falls hospitalizations per 100,000 residents by age group: 639 for ages 65–74; 1,939 for ages 75–84, and 4,737 for ages 85 and older.⁴ Morbidity rates do not include hospital deaths; they were included in the mortality rates.



The King County population aged 65 and older is projected to grow to an estimated 416,455 persons by 2030, nearly doubling in size since 2010.⁶ This mid-range projection suggests a continuing and perhaps increasing burden of falls among the vulnerable elderly population served by King County Emergency Medical Services. Figure 8 projects the estimated numbers of EMS fall responses to elderly patients in the decades ahead based on current rates applied to the projected populations of these older cohorts. National forecasts project an increase in falls morbidity and mortality rates among the very elderly. The increasing population of older adults is at greater risk for falling and less likely to survive resulting injuries.⁷



Through Strategic Initiatives, the EMS Division is taking proactive steps to manage the impact of falls in the elderly. Programs such as ShapeUp (50+), OneStep Ahead to assist seniors in their homes to prevent falls, the Community Medical Technician (CMT) Pilot Project, with the added Community Referral component, and better management of non-emergency calls to 9-1-1 are described elsewhere in this report. This combination of programs to help seniors in their homes and to reduce the low acuity calls for 9-1-1 assistance aims to mitigate the burden of falls among the elderly in our community and their impact on the provision of emergency medical services in the years ahead.

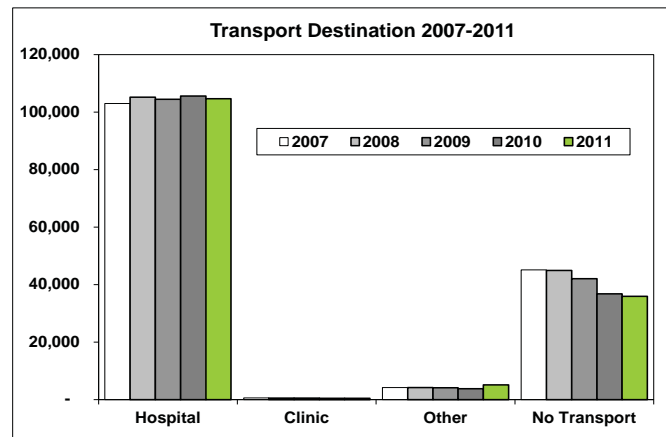
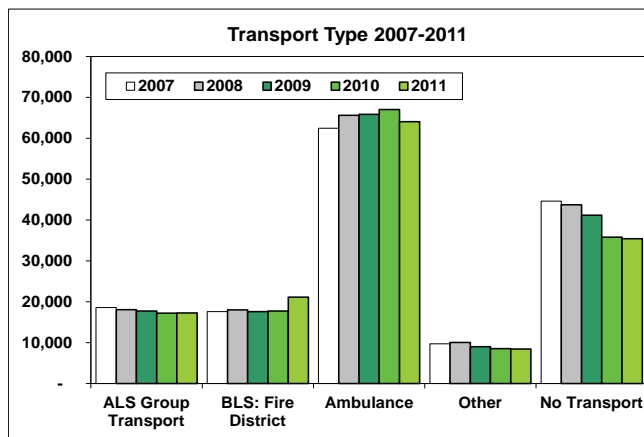
Characteristics of Responses, continued

Similar to the variation reflected in the types of responses EMS agencies provide, EMS personnel respond to a variety of physical settings, again requiring a versatility of skills. For example, providers may respond to settings where they need to interact with other medical professionals or need to deliver patient care on a busy street or highway. Alternatively, EMS personnel respond to public settings where they may need to not only deal with the patient but also the public. This response sometimes requires cooperation and collaboration with other public safety personnel such as police officers and security guards.

Incident Locations	ALS	BLS
Home/Residence	23,319 (58.6%)	79,519 (55.2%)
Nursing Home/Adult Family Home	3,301 (8.2%)	11,145 (7.7%)
Clinic/MD Office	2,048 (5.2%)	3,650 (2.5%)
Other/Unknown Location	11,110 (27.9%)	49,733 (34.5%)
Total	39,778	144,047

An important component of providing EMS care is appropriate triage. EMS personnel use their skills and knowledge to match the clinical need of the patient with the most appropriate transport and destination plan. The figures below reflect the transport trends over the past five years.

Transport Type and Destinations



Cardiac Arrest Statistics

Seattle and King County have compiled cardiac arrest statistics for over 40 years. The following are data from the combined registries. A cardiac arrest is defined as a pulseless, breathless state for which cardiopulmonary resuscitation (CPR) is required. The data reflect cardiac arrest cases due to all causes except trauma and patients under the age of two. Survival is defined as discharge from the hospital alive.

All Cardiac Arrests:

	Year				
	2007	2008	2009	2 010	2011
Total number of cardiac arrests (all causes, resuscitation attempted)	1,035	1,046	1,072	1,069	1,047

For **2011**, the following table shows cardiac arrests broken down by arrest before and after EMS arrival, rhythm on arrival, and survival for each category:

		# Survival	% Survival
Arrest before arrival:	907	187	21%
Ventricular fibrillation/ tachycardia (VF/VT)	260	118	45%
Asystole	368	9	2%
PEA	272	58	21%
Unknown	7	2	29%
Arrest after arrival:	140	36	26%
VF/VT	27	18	67%
Asystole	19	3	15%
PEA	92	14	15%
Unknown	2	1	50%
Total cases treated:	1,047		

CPR initiated by Bystanders (all cases of CPR):

Year	Rate
2011	92/177 (52%)
2007-2011	450/926 (49%)

Year	Rate
2004	501/952 (53%)
2005	568/1,007 (56%)
2006	496/875 (57%)
2007	502/898 (56%)
2008	530/920 (58%)
2009	577/1,067 (54%)
2010	547/1,042 (52%)
2011	533/1,017 (52%)

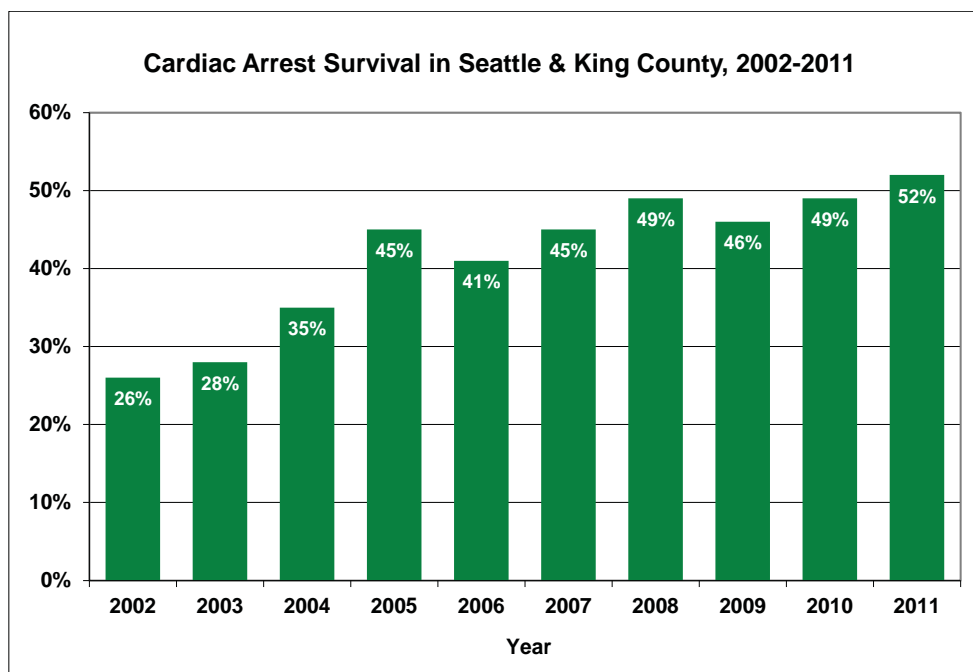
Cardiac Arrest Highlight: **Achieving 50% Survival Rate**

The rate of survival from out-of-hospital cardiac arrest in King County has been consistently rising, and reached 50% in 2012. This rate is derived from a very specifically defined set of cardiac arrest cases; those patients with bystander-witnessed arrests which were due to heart disease and with a collapsing rhythm of ventricular fibrillation. The significance of this survival rate can be appreciated when compared to other major cities in the United States; New York - 5%, Chicago - 3%, and Detroit - 0%.

The rate of cardiac arrest survival over the past decade is depicted in the graph below, and reflects the consistent improvements in cardiac arrest care. After remaining quite constant for years, survival jumped from 34% in 2004 to 48% in 2005. There were a number of factors contributing to the increase, but the biggest one was a change in the relationship between Cardiopulmonary Resuscitation (CPR) and defibrillation.

Based on evidence from animal studies indicating that interruptions or delays in CPR immediately before or after defibrillation result in a lower likelihood of survival, King County undertook a study headed by Dr. Thomas Rea which resulted in a protocol change for CPR and defibrillation. Three successive shocks for ventricular fibrillation before beginning CPR were replaced by just one shock and two minutes of CPR before reanalysis. The “hands off” interval was greatly reduced, and survival improved.

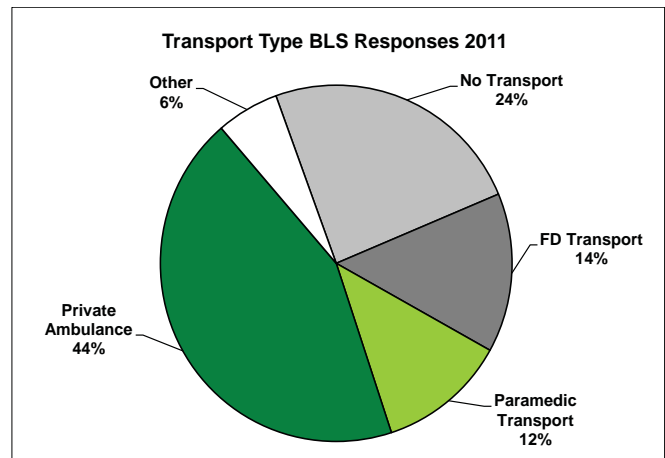
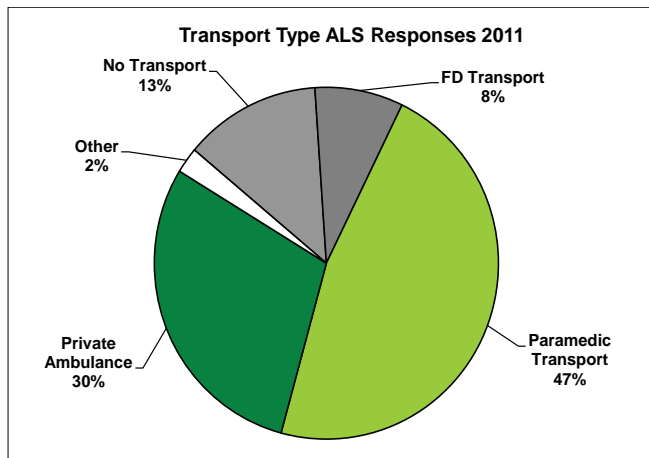
Ventricular Fibrillation (VF): Survival is highest among patients with a rhythm of VF/VT and is commonly reported on a subset of patients whose arrests are witnessed, prior to EMS arrival and due to underlying heart disease. The following is a one year and a five year summary of survival.



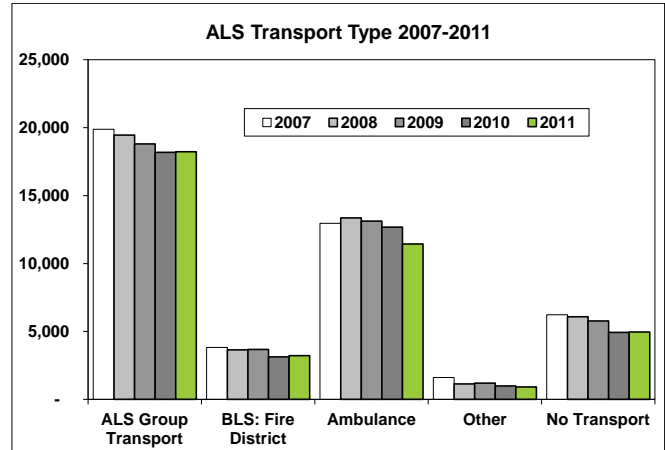
The recent focus on improving CPR resulted in the development of ‘high performance CPR’ where a greater rate, depth and quality of chest compressions are getting widespread implementation. High performance CPR is a highly choreographed team effort with emphasis on continuous chest compressions with consistent rate and depth. Feedback on the quality of compressions is provided by the defibrillator. The hope is that this will lead to even higher rates of survival.

Characteristics of Responses, continued

Transport Type		Transport Destination	
ALS Transport	17,184 (11.7%)		
ALS Air	77 (0.1%)	Hospital	104,662 (71.6%)
BLS - Fire District	21,131 (14.5%)	Clinic	447 (0.3%)
BLS - Ambulance	64,029 (43.8%)	Other	5,084 (3.5%)
Other	8,428 (5.8%)	No Transport	35,947 (24.6%)
No Transport	35,432 (24.2%)		
Total	146,281	Total	146,140



ALS Transport Type	
ALS Transport	18,129 (46.8%)
ALS Air	94 (0.2%)
BLS - Fire District	3,224 (8.3%)
BLS - Ambulance	11,439 (29.5%)
Other	914 (2.3%)
No Transport	4,966 (12.8%)
Total	38,766



EMS FUNDING AND 2012 FINANCIAL PLAN

OVERVIEW: EMS Levy Structure

The EMS levy is a regular property tax levy, subject to the limitations contained in Chapter 84.55.010 RCW. Levy funds are restricted by RCW and can only be spent on EMS-related activities. The levy growth is limited to a 1% increase for existing properties, plus assessment on new construction.

EMS Levy funds are collected throughout King County and managed by the EMS Division for the region, based on RCW 84.52.069 Emergency Medical Care and Service levies and policy guidelines of the 2008- 2013 Medic One/EMS Strategic Plan. King County EMS funds are spent on the four main areas of Advanced Life Support (ALS), Basic Life Support (BLS), Regional Support Services, and Strategic Initiatives.

King County and the City of Seattle have an inter-local agreement stating that EMS levy funds collected within Seattle go directly to the City. Subsequently, funds generated within the City of Seattle are managed separately by the City. Therefore, this section pertains only to the EMS fund within the remainder of King County (referred to as the KC EMS Fund), and excludes the City of Seattle.

Introduction

Economic conditions have changed significantly since the current 2008-2013 EMS levy was planned in 2006. To manage within the limitations of reduced revenues, both the EMS Division and EMS partners are focusing on efficiencies, including:

- Realigning resources to promote efficiencies and provide value to EMS partners
- Continuing to manage use of resources – particularly ALS and BLS call volumes
- Developing reserves and designations to cover ALS costs as recommended by King County Auditor’s Office
- Using reserves prudently and appropriately
- Reviewing operational and business practices for efficiencies
- Eliminating the addition of two planned 12-hour medic units in 2012 and 2013

As a result of current financial forecasts and a focus on efficiencies, decreased revenues and expenditures resulted in a forecast \$24 million less than originally planned for the levy period.

The following section concentrates on the KC EMS Fund. Information focusing on grants, donations, and entrepreneurial projects included in the Public Health Fund is included at the end of this section.

1. Revenues

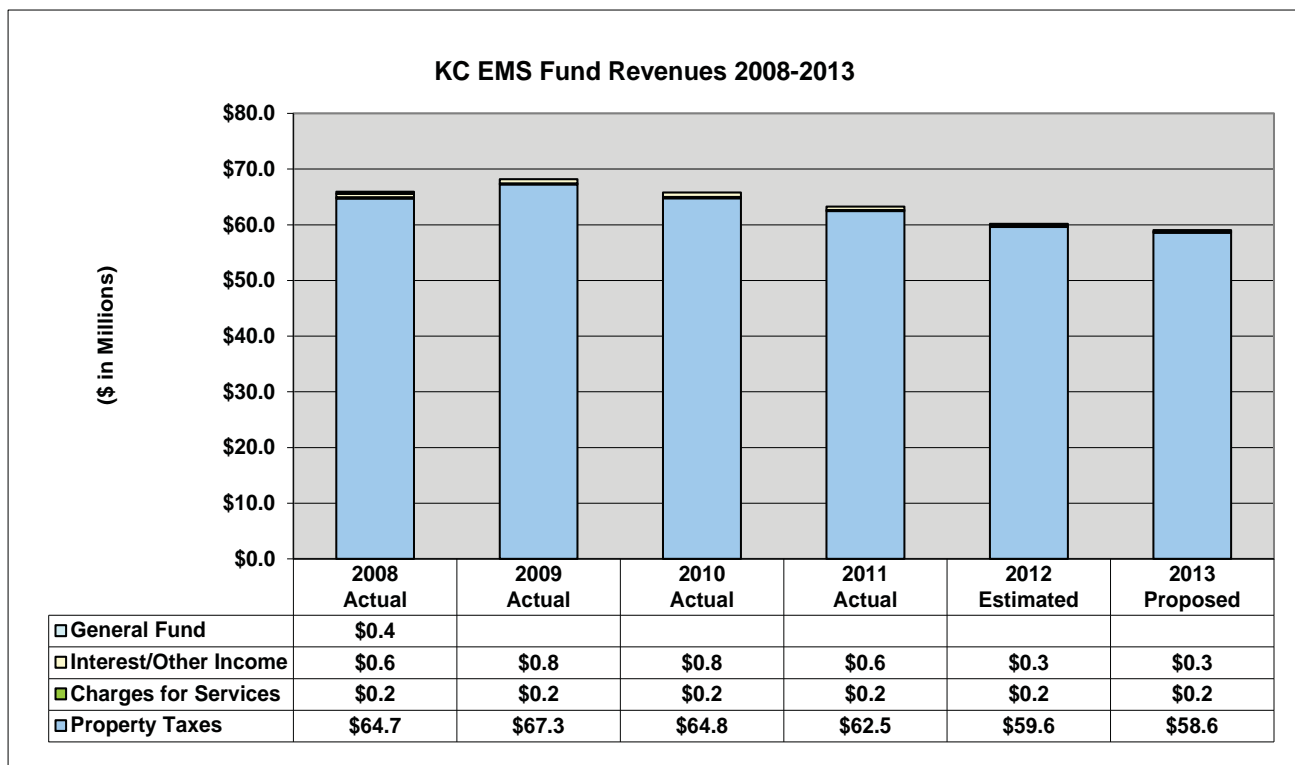
The primary revenue supporting the KC EMS Fund is property taxes, although miscellaneous income, interest earnings, and fees for reimbursable services contribute a small amount to the fund.

EMS Revenues (KC EMS Fund)		
	2011 Actual	2012 Budget
Property Taxes	98.74%	98.85%
Charges for Services	0.27%	0.32%
Interest and other Miscellaneous	0.99%	0.83%
Total	100.00%	100.00%

2011 Revenues for the KC EMS Fund, excluding the City of Seattle, were \$63,261,633; 2012 Adopted Revenues for the KC EMS Fund, excluding the City of Seattle, are \$60,277,680.

The 2008-2013 EMS Financial Plan was developed in 2006 and 2007. Consistent with forecasts from that time period, it did not forecast the current economic downturn and, therefore, did not assume any decreases in Assessed Valuations (AV). Instead, it assumed modest growth in property values and a one-percent limit on revenues from existing properties.

The chart below shows the actual and forecast revenues; property taxes have decreased due to lowered assessed valuations.



EMS FUNDING AND 2012 FINANCIAL PLAN, continued

The original levy financial plan assumed a stable division of levy revenues between the KC EMS Fund and the City of Seattle, based on the proportional distribution of assessed valuation (35.6% City of Seattle/64.4% KC EMS Fund). In 2010, the division of revenues between the City of Seattle and KC EMS Fund changed slightly from historic and forecasted amounts; this trend continued in 2012 with the King County portion reduced to 63.2% of revenues as a result of assessed valuations in the City of Seattle decreasing less than those in the remainder of the County.

Division of Assessment*	2011	2012
KC EMS Fund	\$62,325,897	\$59,627,469
City of Seattle*	\$35,277,400	\$34,688,676
Total	\$97,603,297	\$94,316,146
% of King County	63.9%	63.2%

*Forecast split based on Assessors and Budget office templates (actual KC EMS Fund revenues received slightly higher in 2011). Variances often result due to current year delinquent taxes and collection of delinquent taxes from previous year.

Discussions with budget analysts attribute part of this change to greater reductions in AV for residential than commercial properties (with Seattle having a larger percentage of commercial properties than the area covered by the KC EMS Fund).

2. Expenditures

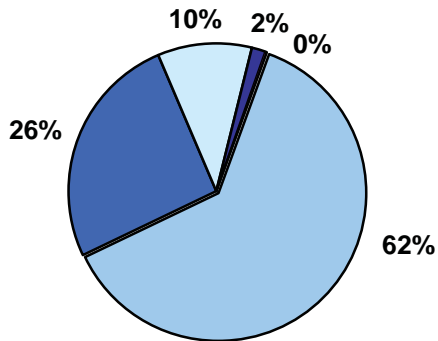
EMS revenues support four major EMS activities related to direct service delivery or support programs:

- Advanced Life Support (ALS) Services:
 - Receives over 60% of EMS funds
 - Uses a compound inflator that considers the different inflators for labor, pharmaceuticals, equipment and benefits
 - Uses a standard unit cost allocation consisting of an operating and equipment allocation
- Basic Life Support (BLS) Services:
 - Receives approximately 26% of EMS funds
 - Uses a July-to-June CPI inflator
 - Funds are distributed to individual agencies based on an allocation that includes the assessed valuation of the district and demand for services (call volume)
- Regional Support Programs:
 - Uses CPI as the inflator
 - Approximately 10% of funds spent in 2011

- Strategic Initiatives:

- Funded with lifetime budgets
- The budgeted amount by year is adjusted to reflect changing cash flows based on project needs

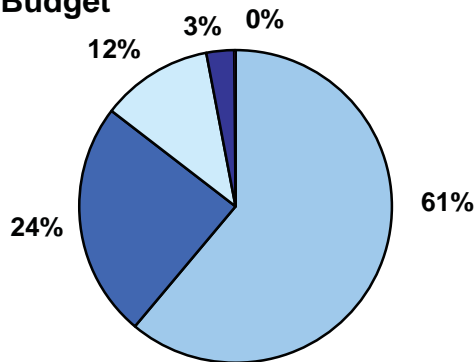
2011 Actual Expenditures



■ ALS
 ■ Regional Services
 ■ Auditor's Office
 ■ BLS
 ■ Strategic Initiatives

Sub-Area	2011 Actuals
ALS	\$36,753,633
BLS	\$15,154,163
Regional Services	\$6,070,339
Strategic Initiatives	\$897,024
Auditor's Office	\$90,512
Total	\$58,965,671

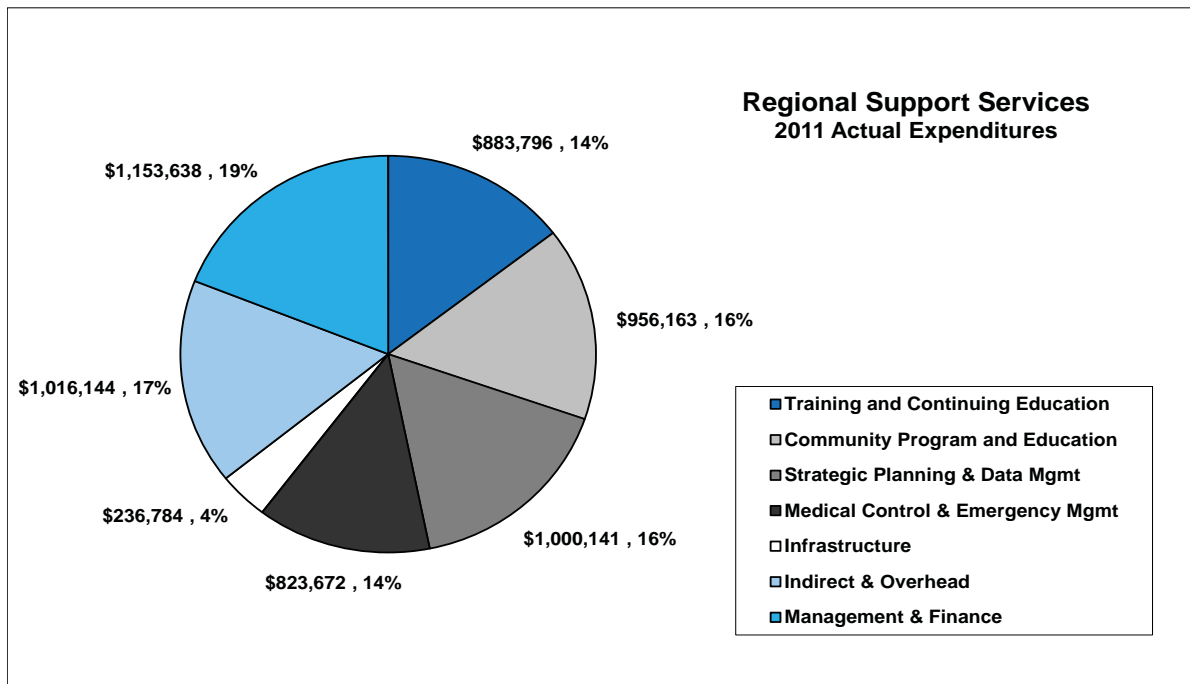
2012 Budget



■ ALS
 ■ Regional Services
 ■ Auditor's Office
 ■ BLS
 ■ Strategic Initiatives

Sub-Area	2012 Budget
ALS	\$38,641,290
BLS	\$15,396,394
Regional Services	\$7,295,051
Strategic Initiatives	\$1,811,631
Auditor's Office	\$95,763
Total	\$63,240,129

EMS FUNDING AND 2012 FINANCIAL PLAN, continued



EMS Strategic Initiatives - Life to Date Results (2008-2013)						
	2008 Actual	2009 Actual	2010 Actual	2011 Actual	Life Time Budget	Balance
Emergency Medical Dispatch Strategic Initiatives						
CAD Integration	\$258,448				\$385,501	\$127,053
Dispatch Center Performance Standards	\$406	\$260,186	\$265,299	\$284,761	\$1,363,200	\$552,548
Advanced EMD Training		\$7,008	\$24,569	\$38,858	\$154,035	\$83,600
Better management of Non-Emergency Calls	\$60,242	\$119,595	\$116,563	\$75,308	\$419,069	\$47,361
Injury Prevention Strategic Initiatives	\$161,890	\$168,242	\$153,773	\$139,922	\$949,175	\$325,348
Public Access Defibrillation	\$76	\$402	\$3,134	\$49,954	\$162,980	\$109,414
Interactive Enhancements to EMS Online	\$8,150	\$57,740	\$127,070	\$12,015	\$484,975	\$280,000
Enhanced Network Design (SEND)	\$101,996	\$16,297	\$13,200	\$284,610	\$838,909	\$422,806
All Hazards Emergency Management Preparation						
EMS Efficiencies and Evaluations Studies			\$129,588	\$101,555	\$849,776	\$710,033
Levy Planning				\$1,441	\$151,441	\$150,000
TOTAL	\$591,208	\$629,470	\$833,196	\$897,024	\$5,759,061	\$2,808,163

EMS Strategic Initiatives Lifetime Budget Comparisons			
	New Lifetime Budget	Previous Lifetime Budget	Change
Emergency Medical Dispatch Strategic Initiatives			
Address Non-emergency Calls	\$419,069	\$419,069	(\$0)
Dispatch Center Performance Standards	\$1,363,200	\$1,452,465	(\$89,265)
Advanced EMD Training	\$154,035	\$233,921	(\$79,886)
CBD/CAD Integration	\$385,501	\$522,519	(\$137,018)
Injury Prevention Strategic Initiative Programs	\$949,175	\$1,371,225	(\$422,050)
Public Access Defibrillation	\$162,980	\$162,980	\$0
Interactive Enhancements to CBT On-Line	\$484,975	\$1,042,928	(\$557,953)
Enhanced Network Design (SEND)	\$838,909	\$1,040,262	(\$201,353)
Emergency Management	\$0	\$115,000	(\$115,000)
EMS Efficiencies and Evaluations Studies	\$849,776	\$648,416	\$201,360
Levy Planning	\$151,441	\$250,270	(\$98,829)
TOTAL 2008-2013	\$5,759,061	\$7,259,055	(\$1,499,994)

3. EMS Contingencies, Reserves and Required Fund Balance

The 2008-2013 levy added contingencies related to ALS Wages and Disaster Relief. The levy also added reserves to cover unanticipated inflation, vehicle costs/chassis obsolescence, risk abatement, and potential millage reduction (to potentially lower the rate for the next levy).

Based on comments from the King County Auditor related to fully funding ALS costs, EMS led a regional process to identify potential expenses that fell outside of the unit allocation. This information was used to revise existing reserves and develop new reserves that would be available to cover potential expenses that were not included in the ALS allocation. New reserves were added: Dispatch/Communications, Facilities, Excess backfill for paid time off (PTO), and Paramedic student training. The salary contingency was converted to a salary reserve. In addition, amounts set aside within existing reserves were revised.

A matrix was developed that identified eligible use of reserves with use triggers, agency responsibilities (including cost sharing), how triggers were determined, how reserves were costed, and how reserves could be expensed. To access reserves, the proposed use must be reviewed and approved by both the Financial Subcommittee of the EMS Advisory Committee (EMSAC), and EMSAC itself. If approval levels are above funds appropriated by council, council approval would need to be secured before approving distribution of funds to agencies. As part of the 2011 budget process, the King County Council approved these new reserves and access to the reserves.

Provider/Program Balances: These are operating allocations that agencies choose to set-aside for future years' needs. All agencies contributed to their balances in 2011 anticipating expenditures in future years.

EMS FUNDING AND 2012 FINANCIAL PLAN, continued

ALS Provider Loans. Two agencies have taken out provider loans. The financial plan reflects payment plans to pay off loans by the end of the levy period. Both agencies paid off the 2011 portion of their loan.

Designations from 2002-2007 Levy. The remainder of these funds are dedicated to relocating Medic 7 from Kent to the East Hill in 2012.

Reserves. Three reserves were used in 2011 as shown in the Use of Reserves and Designations table below. These included use of reserves for vehicle costs due to cost increases higher than the inflator chosen as part of the original ordinance, dispatch costs where actual costs exceeded amounts in the allocation, and a one-time use of salary reserves to cover the difference between CPI and the 2% minimum cost of living increase. This use of the reserve is limited to 2011. It was provided as a one-year-only bridge to allow agencies to manage costs with allocations that may be based on low CPI inflation.

The Millage Reduction reserve, which can be used to lower property tax rates in the future or replenish other reserves, was changed to \$6 million in 2011 and \$6.7 million in 2012 by the King County Council as part of the 2010 adopted budget (original financial plan was \$1.5 million in 2011 and \$2.0 million in 2012).

Fund Balances: EMS Financial Policies require a fund balance of 6% of revenues. The current fund balance is above the minimum requirement.

The following table shows use of reserves and designations from both the current and the 2002-2007 levy periods, as of July 2012:

USE OF RESERVES AND DESIGNATIONS				
Reserves	2009	2010	2011	Total
Diesel Reserve	\$171,903			\$171,903
Vehicle/Chassis Reserve	\$201,751		\$389,381	\$591,132
Salary/COLA Reserve			\$336,542	\$336,542
Dispatch			\$229,463	\$229,463
SubTotal	\$373,654	\$0	\$955,386	\$1,329,040
Designations from 2002-2007 Levy				
Facility Tenant Improvements	\$150,000	\$190,914		\$340,914
Dispatch		\$258,018		\$258,018
SubTotal	\$150,000	\$448,932	\$0	\$598,932
TOTAL	\$523,654	\$448,932	\$955,386	\$1,927,972

The following chart shows contingencies, designations and reserves (projections match 2nd Quarter Financial Report):

CONTINGENCIES, RESERVES & DESIGNATIONS (available amounts)	2011 Actuals	2012 Projected
EMS Contingencies		
Use of Designations		\$759,181
Use of Reserves		\$3,237,690
Disaster Response Contingency		\$3,540,000
SUBTOTAL EMS CONTINGENCIES		\$7,536,871
Reserves & Designations		
Encumbrances		\$101,519
Reappropriation		
Designations		
Provider/Program Balances	\$7,547,458	\$7,445,939
ALS Provider Loans	(\$469,586)	(\$234,793)
KCM1 Equipment Replacement	\$2,512,444	\$1,072,444
Designations from 2002-2007 Levy	\$230,842	
Reserves for Unanticipated Inflation		
Diesel Cost Stabilization	\$90,000	\$90,000
Pharmaceuticals/Medical Equipment	\$1,097,000	\$877,600
Call Volume/Utilization Reserve	\$942,821	\$977,155
Reserves		
Salary Reserve	\$385,000	\$490,000
Excess Backfill for PTO	\$400,000	\$400,000
Paramedic Student Training	\$310,000	\$310,000
Dispatch/Communications	\$654,863	\$505,928
Medic Unit/Chassis Obsolescence	\$550,619	\$550,619
Facilities	\$1,050,000	\$650,000
Risk Abatement	\$2,200,000	\$2,200,000
Outstanding ALS Retirement Liability	\$3,900,000	\$875,592
Millage Reduction	\$6,041,654	\$6,741,654
SUBTOTAL RESERVES & DESIGNATIONS	\$27,443,115	\$23,053,657
TOTAL	\$27,443,115	\$30,590,528

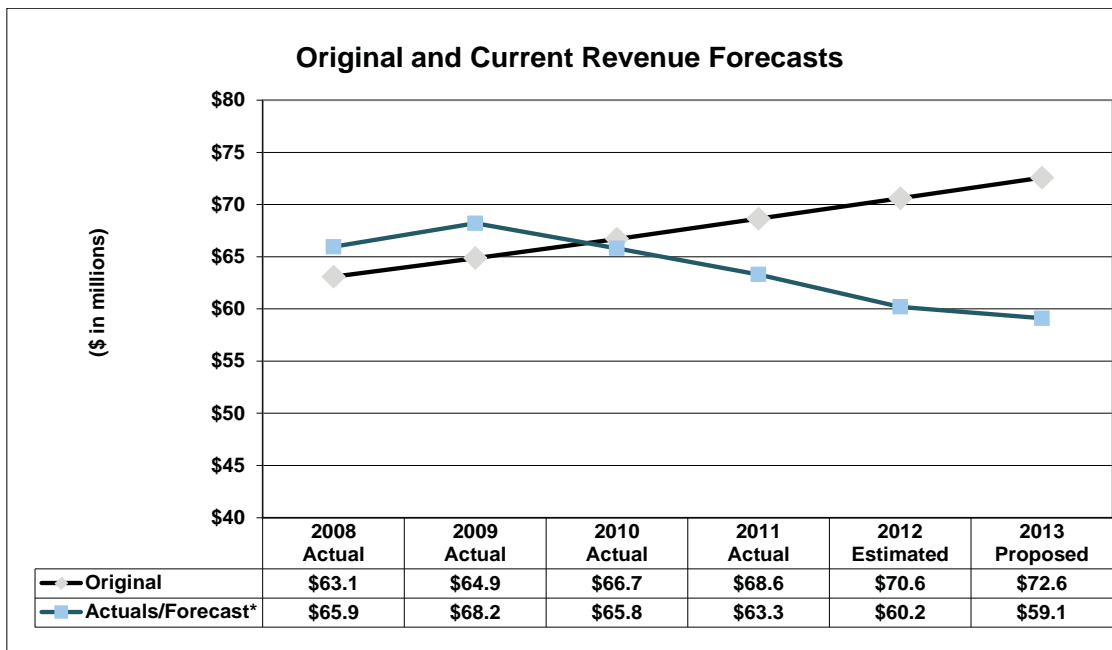
4. 2008-2013 Financial Plan Trends

Reductions in assessed valuations, along with the 30 cent per \$1,000/AV cap on the EMS levy, have resulted in lowered property tax assessment forecasts. The economic downturn has also resulted in lowered inflation. Since EMS allocation increases are based on economic metrics, allocation amounts have also been lower than originally planned. In addition, efficiencies and management decisions have also lowered expenditure levels. These include:

- Removing the planned addition of two 12-hour ALS units in 2012 and 2013
- ALS agencies managing small unexpected costs within unit allocations
- Lowering overall Strategic Initiative lifetime project budgets

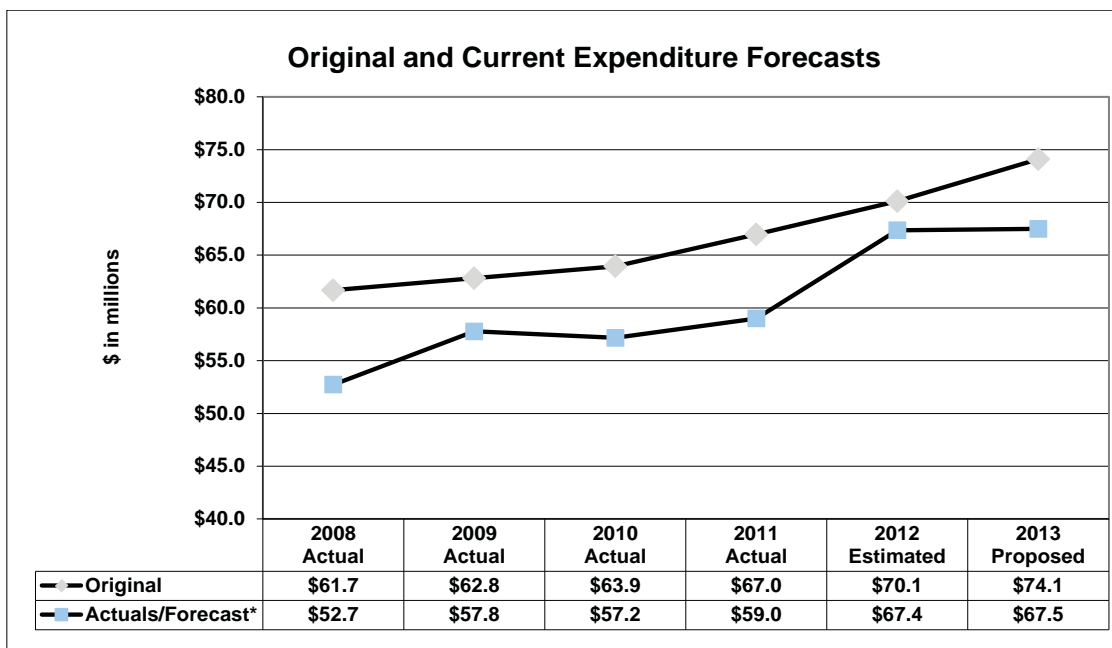
EMS FUNDING AND 2012 FINANCIAL PLAN, continued

The following charts compare the planned revenues and expenditures (from the EMS Levy Ordinance 15861) with the current forecast (March 2012):



Based on March 2012 OEFA Forecasts; does not include disaster relief contingency

Total revenue forecast in the original plan was \$406.5 million; current revenue forecast is \$382.6 million or \$24 million less than planned.



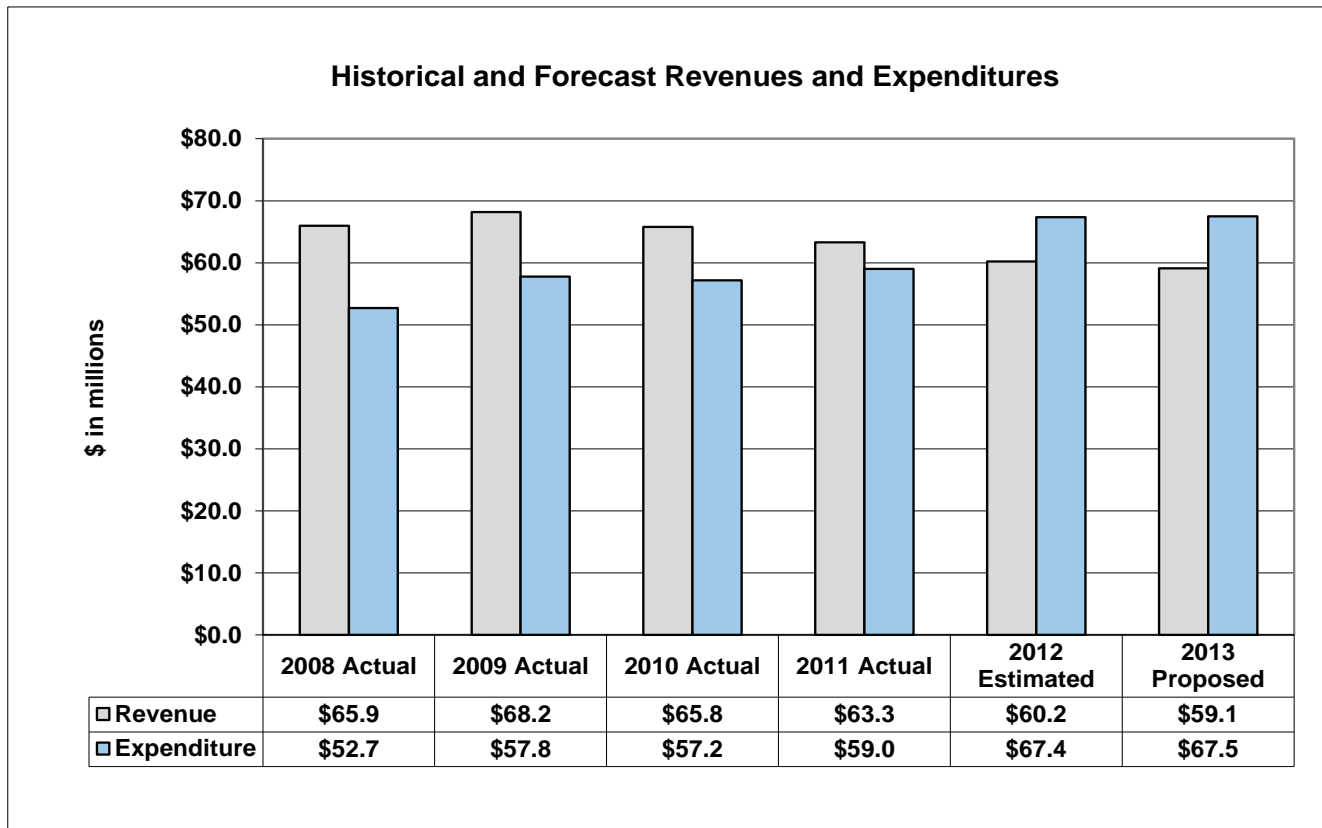
Based on March 2012 OEFA Forecasts; does not include disaster relief contingency

Total expenditure forecast in the original plan was \$400 million; current expenditure forecast (not including potential use of disaster relief contingency) is \$362 million or \$38 million less than planned. Current forecast has reduced expenditures by \$14 million more than revenues.

The following table shows the difference between the original and current financial plan assumptions:

Comparison of Original and Current Financial Plans (in millions) *							
	2008	2009	2010	2011	2012	2013	Total
Difference (Current minus Original)							
Revenue	\$2.86	\$3.34	(\$0.90)	(\$5.34)	(\$10.40)	(\$13.48)	(\$23.91)
Expenditures	(\$8.95)	(\$5.04)	(\$6.78)	(\$7.96)	(\$2.75)	(\$6.62)	(\$38.09)
*Financial Plan in Ordinance 15861							

The chart below shows actual and forecast revenues and expenditures (not including funds budgeted for disaster relief contingency) for the 2008-2013 levy period.



The EMS Division remains committed to minimizing new costs and looking for programmatic efficiencies. The regional partners have reiterated their commitment to continue to look at placing funds into the millage reserve, while at the same time meeting the needs of the system.

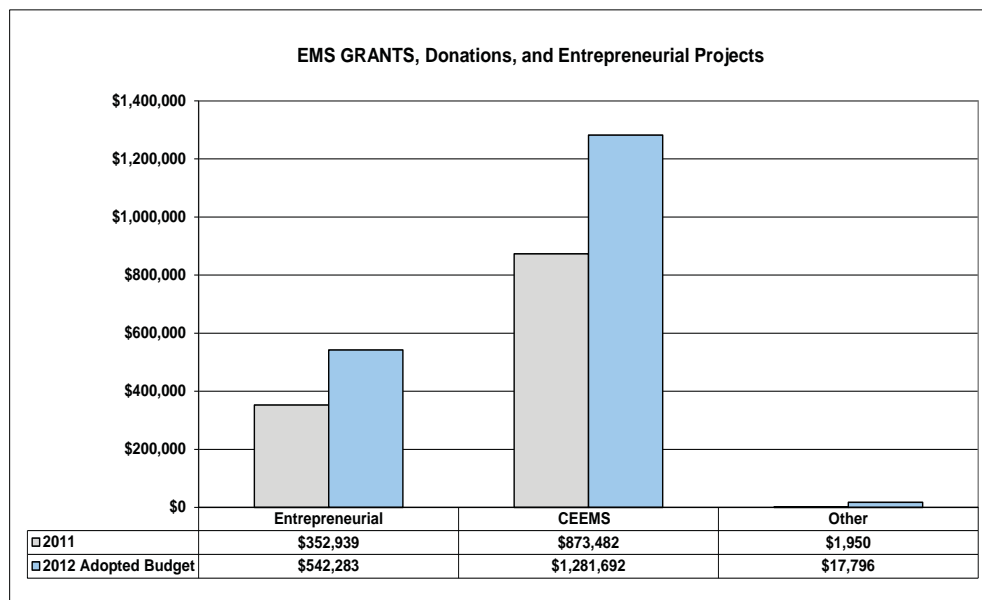
EMS FUNDING AND 2012 FINANCIAL PLAN, continued

5. EMS Grants, Donation, and Entrepreneurial Projects (Public Health Fund)

The EMS Division, through the EMS Grants Group and the Center for Evaluation of Emergency Medical Services (CEEMS) located in the Public Health Fund, has been very successful in competing for research grants. In 2011, the Medtronic Foundation awarded a 5-year \$1.3 million grant to implement the HeartRescue Flagship Program to improve outcomes from sudden cardiac arrest throughout Washington state by focusing on community, pre-hospital, and hospital response levels of care. In 2009, the Life Sciences Discovery Fund Agency awarded a \$2.6 million, four-year programmatic grant to support the Program to Integrate Technology and Cardiac Arrest Resuscitation (PITCAR), a collection of projects aimed at developing and advancing new technologies to improve the care and treatment of out-of-hospital cardiac arrest.

The EMS Grants Group focuses on research grants that usually do not obligate the EMS program to fund future services. The results of these research grants have been incorporated into existing EMS services and have affected interventions, protocols and standard operating procedures used in the field. The EMS Division is evaluating on-going continuation of activities initiated through EMS Grant Group and CEEMS as part of the planning process for the next levy period.

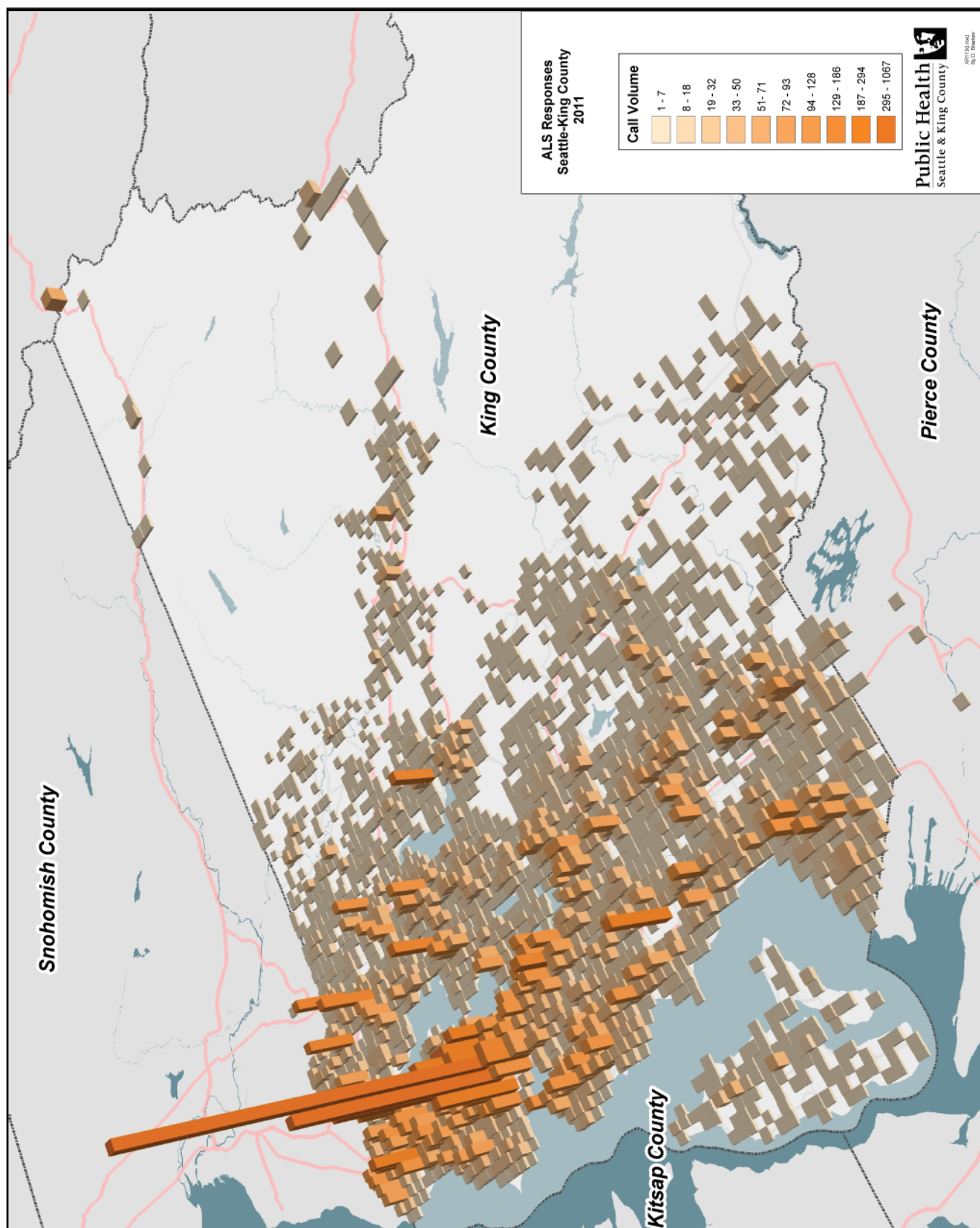
The EMS Online Entrepreneurial Project provides online training to agencies outside King County as a subscription service. The project was based on the interest of the outside agencies, a response to the King County Executive's Entrepreneurial Project initiative and included legal review and approval. The expenses incurred in providing the service outside of King County are covered by revenue from the subscription program. In addition, subscription revenues are used to make enhancements above those funded by the EMS levy.



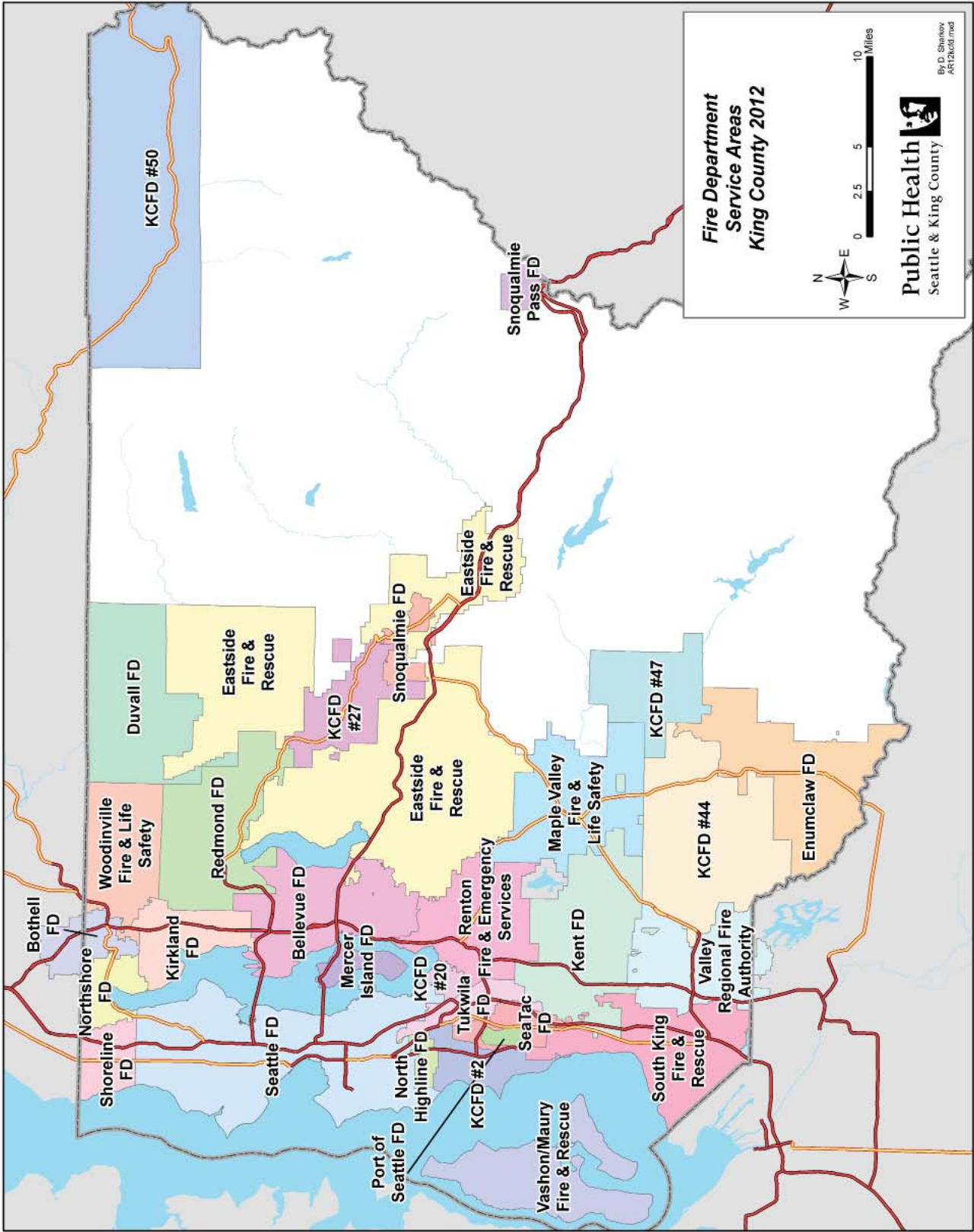
6. Recommendations for EMS Levy Fund 2013 Rates

Due to the changed economic conditions, it is recommended that the 2013 levy rate remain at the statutory limit and that reserves set aside for lowering property taxes be saved to “buy down” the levy rate for the next levy.

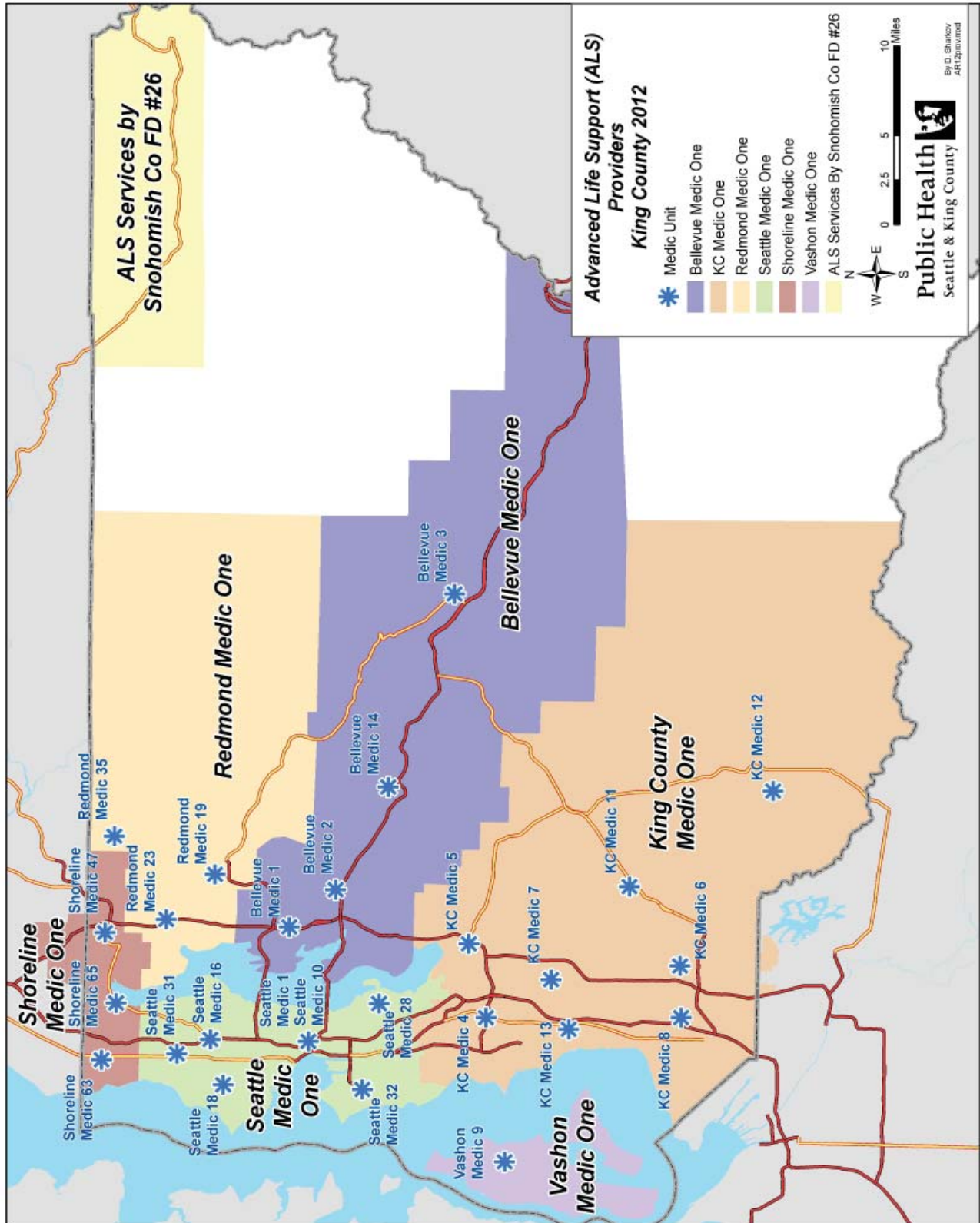
Appendix A: Regional Map of 2011 Total ALS Call Volume



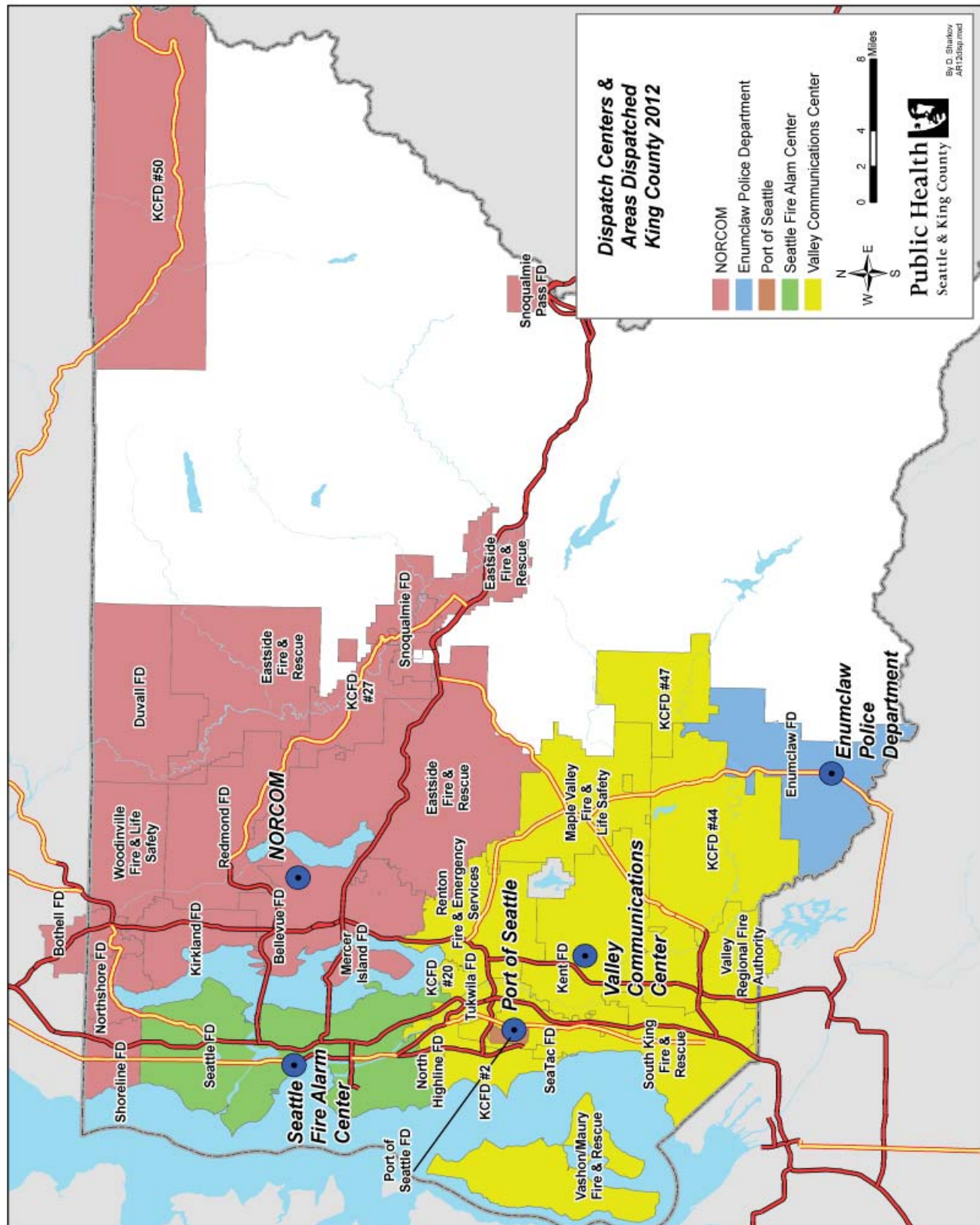
Appendix B: Regional Map of BLS Provider Areas



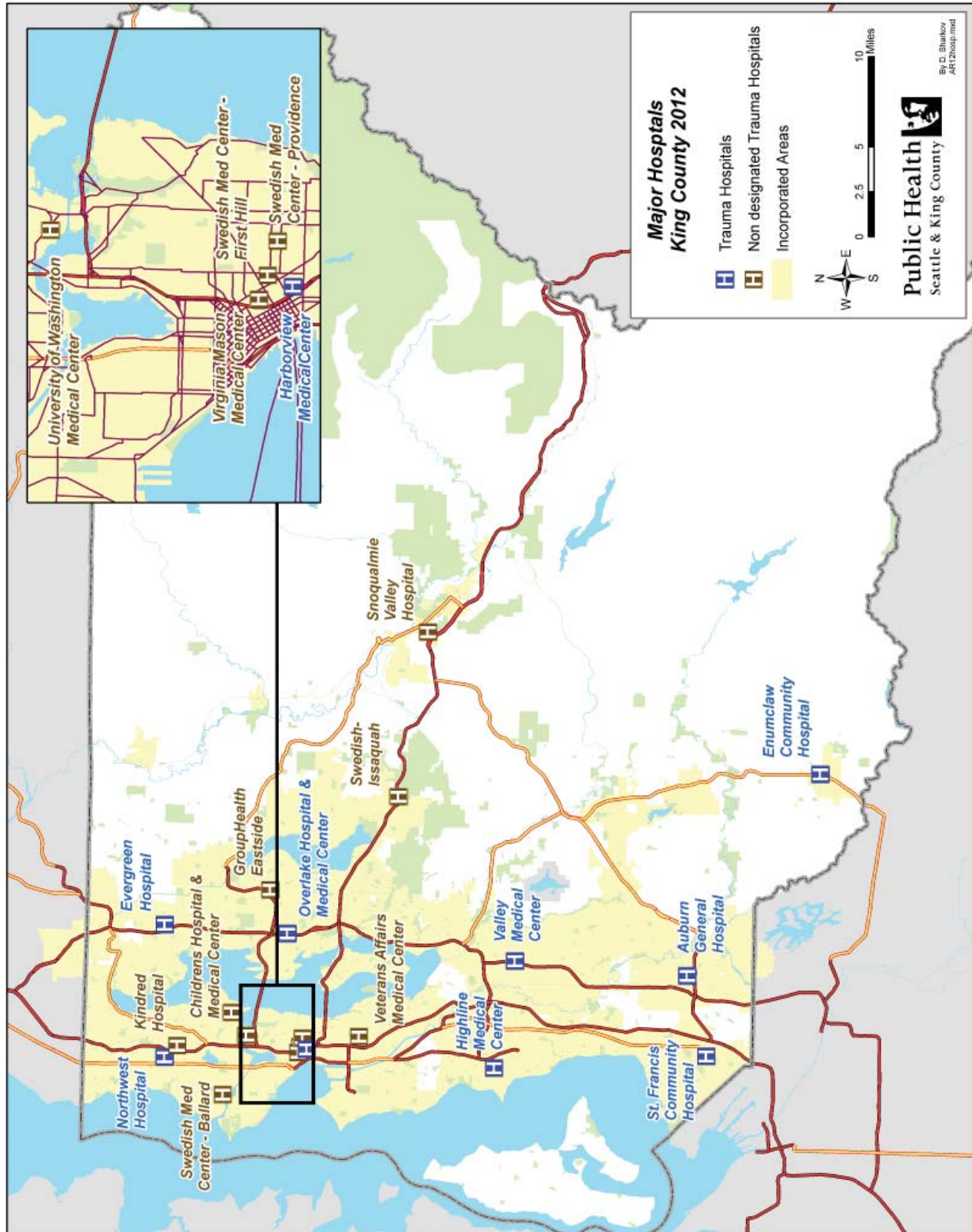
Appendix C: Regional Map of ALS Provider Areas



Appendix D: Regional Map of Dispatch Center Service Areas



Appendix E: Regional Map of EMS Hospitals



Appendix F: Public Access AEDs - King County



Appendix G: 2012 EMS Advisory Committee Listing

Name	Representation	Title/ Organization
Jim Fogarty, Chair	KC Emergency Medical Services	Director, EMS Division
Vacant	Ambulance Service	
Mark Bunje	ALS Providers - Shoreline	Chief, Shoreline Fire Department
Al Church	BLS in Cities > 50,000	Chief, South King Fire & Rescue
Michael Copass, M.D.	Seattle Medical Program Director	Medical Program Director, Seattle Medic One
Wayne Corey	Citizen Representative	
Gregory Dean	ALS Providers - Seattle	Chief, Seattle Fire Department
Kevin Donnelly	ALS Providers - Redmond	Chief, Redmond Fire Department
Mickey Eisenberg, M.D.	EMS Medical Program Director	Medical Program Director, KCEMS
Mike Eisner	ALS Providers - Bellevue	Chief, Bellevue Fire Department
David Fleming, M.D.	Public Health - Seattle & King Co.	Director & Health Officer
John Herbert	ALS Providers - KC Medic One	Medical Services Administrator, King County Medic One
Jon Kennison	KC Fire Commissioner's Assn. - Rural	Fire Commissioner, Shoreline
Hank Lipe	ALS Providers - Vashon Medic One	Chief, Vashon Island Fire & Rescue
Doug McDonald	Labor - BLS	EMS, Renton Fire Department
Steve Perry	Labor - ALS	Paramedic, KC Medic One
Mark Peterson	BLS in Cities > 50,000	Chief, Renton Fire Department
Alan Reed	Health Care System	Manager, Medical Support Services, Group Health
Lora Ueland	Dispatch	Valley Communications Center, Director
John Rickert	KC Fire Commissioner's Assn. - Urban	Fire Commissioner, South King Fire & Rescue
Jim Schneider	BLS in Cities >50,000	Chief, Kent Fire & Life Safety
Adrian Whorton, M.D.	Chair, Medical Directors' Committee	Medical Director, Redmond Medic One

Appendix H: EMS FUND 1190 Revenue/Expenditures Summary

	2010 Actual	2011 Actual	2012 Budget
BEGINNING FUND BALANCE	\$ 29,988,811	\$ 38,627,394	\$ 33,462,959
REVENUES			
Property Taxes	\$ 64,780,871	\$ 62,464,631	\$ 59,536,069
Grants	2,186	1,738	1,650
Charges for Services	193,498	170,361	192,761
Interest Earnings/Miscellaneous Revenue	778,185	572,461	446,200
Other Financing Sources	52,248	52,442	54,000
Transfer from Current Expense Subfund			
EMS REVENUE TOTAL	\$ 65,806,988	\$ 63,261,633	\$ 60,230,680
EXPENDITURES			
Advanced Life Support Services	\$ (35,272,596)	\$ (36,753,633)	\$ (38,641,290)
Basic Life Support Services	(15,032,807)	(15,154,163)	(15,396,394)
Regional Services	(5,952,633)	(6,070,339)	(7,295,051)
Strategic Initiatives	(833,196)	(897,024)	(1,811,631)
Use of Designations			(759,181)
ALS Salary and Wage Contingency			
Disaster Response Contingency			(3,540,000)
Use of Reserves			(3,807,690)
King County Auditor's Office	(68,180)	(90,512)	(95,763)
EMS EXPENDITURE TOTAL	\$ (57,159,413)	\$ (58,965,671)	\$ (71,347,000)
OTHER FUND TRANSACTIONS			
GAAP Adjustment	(5,600)	131,684	
Journal Entry Error	(3,391)	(3,391)	
Disaster Response not Used			3,420,000
Subtotal	(8,991)	128,293	3,420,000
ENDING FUND BALANCE	\$ 38,627,394	\$ 43,051,649	\$ 25,766,639
RESERVES AND DESIGNATIONS			
Encumbrances	\$ (118,317)		\$ (118,317)
Program/Provider Balances	(5,200,985)	(7,547,458)	(3,511,934)
ALS Providers Loans	704,379	469,586	234,793
KCM1 Equipment Replacement	(2,042,123)	(2,512,444)	(602,123)
Designations from 2002-2007 Levy	(230,842)	(230,842)	
Reserves for Unanticipated Inflation	(2,310,000)	(2,129,821)	(1,944,755)
Reserves (incl. millage reduction)	(8,152,403)	(15,492,136)	(12,337,865)
TOTAL RESERVES AND DESIGNATIONS	\$ (17,350,291)	\$ (27,443,115)	\$ (18,280,201)
ENDING UNDESIGNATED FUND BALANCE	\$ 21,277,103	\$ 15,608,534	\$ 7,486,438
TARGET FUND BALANCE	\$ 3,948,419	\$ 3,795,698	\$ 3,613,841

KING COUNTY MEDIC ONE DONATIONS

Fund 6980/Account 06204*	2010	2011
Beginning Balance	\$ 112,869	\$ 6,931
Donations	15,011	2,234
Expenditures	(120,949)	
2010 Ending Balance	\$ 6,931	\$ 9,165

* Sources: ARMS downloads

Appendix I: EMS Division Bibliography

Bibliography:

1. Aufderheide TP, Nichol G, Rea TD, Brown SP, Leroux BG, et al: *A Trial of an Impedance Threshold Device in Out-of-Hospital Cardiac Arrest*. **N ENG J MED** 2011; 365:9: 798-806.
2. Bigham BL, Koprowicz K, Rea TD, Dorian P, Aufderheide TP, et al: *Cardiac Arrest Survival did not Increase in the Resuscitation Outcomes Consortium after Implementation of the 2005 AHA CPR and ECC guidelines*. **Resuscitation** 2011; 82: 979-983.
3. Bobrow BJ, Panczyk M, Sudido C. *Dispatch-assisted cardiopulmonary resuscitation: the anchor link in the chain of survival*. **Current Opinion Critical Care** 2012, 18: 1-6.
4. Dumas F, Farenbruch C, Hambly C, Donohoe RT, Carli P, et al: *Predicting non-cardiac aetiology: A strategy to allocate rescue breathing during bystander CPR*. **Resuscitation** 2012; 83: 134-137.
5. Kudenchuk PJ, Redshaw JD, Stubbs BA, Fahrenbruch CE, Dumas F, et al: *Impact of Changes in Resuscitation Practice on Survival and Neurological Outcome After Out-of-Hospital Cardiac Arrest Resulting from Nonshockable Arrhythmias*. **Circulation** 2012, 125: 1787-1794.
6. Lerner EB, Rea TD, Bobrow BJ, Acker JE, Berg RA, et al: *Emergency Medical Dispatch Cardiopulmonary Resuscitation Prearrival Instructions to Improve Survival from Out-of-Hospital Cardiac Arrest: A Scientific Statement from the American Heart Association*. **Circulation (online)** 2012; January 9,1-4
7. Rea TD, Blackwood J, Damon S, Phelps R, Eisenberg M. *A Link between emergency dispatch and public access AEDs: Potential implications for early defibrillation*. **Resuscitation** 2011; 82: 995-998.
8. Rea, TD, Dumas F. *Editorial: Spontaneous cooling and rewarming after cardiac arrest may not be therapeutic*. **Resuscitation** 2012; 83: 283-284.
9. Steill IG, Nichol G, Leroux BG, Rea TD, Ornato JP, et al: *Early versus Later Rhythm Analysis in Patients with Out-of-Hospital Cardiac Arrest*. **N ENG J MED** 2011; 365:9: 787-797.
10. Weisfeldt ML, Siobhan ES, Sitlani C, Rea TD, Aufderheide TP, et al: *Ventricular Tachyarrhythmias after Cardiac Arrest in Public versus at Home*. **N ENG J MED** 2011; 364: 798-806.

References:

¹Rubenstein, Laurence Z., Falls in older people: epidemiology, risk factors, and strategies for prevention. *Age and Ageing*, 35-S2:ii37-ii41, 2006.

²Vista: Population estimates by age and year 2001 to 2010 were obtained for this report from the source Population Estimates for Public Health Assessment, Washington State Department of Health, Vista Partnership, and Krupski Consulting, July 2012.

³Washington State Department of Health, Center for Health Statistics, Death Certificate Data, September 2011.

⁴Washington State Hospital Discharge Data, Comprehensive Hospitalization Abstract Reporting System (CHARS) 1987-2010 from the Washington State Department of Health, Center for Health Statistics. July 2011.

⁵Trend line from analysis. Data source: Washington State Department of Health, Center for Health Statistics, Death Certificate Data. Produced by: Public Health - Seattle & King County; Assessment, Policy Development & Evaluation; 07/2012.

⁶Population estimates were obtained from the Washington State Office of Financial Management, <http://www.ofm.wa.gov/pop/gma/projections12/projections12.asp>, accessed July 2012.

⁷Stevens JA, Fatalities and injuries from falls among older adults – United States, 1993 – 2003 and 2001- 2005. Editorial Comment. *MMWR* 2006a: 55(45).

Appendix J: EMS Division Contact Information

Mailing Address: Emergency Medical Services Division
Public Health – Seattle & King County
401 5th Ave, Suite 1200
Seattle, WA 98104
(206) 296-4693 (206) 296-4866 (fax)

Web Address: <http://www.kingcounty.gov/healthservices/health/ems.aspx>

Specific Program Contacts:

King County Medic One www.kingcounty.gov/healthservices/health/ems/MedicOne.aspx	(206) 296-8550
Professional Standards Programs www.kingcounty.gov/healthservices/health/ems/training.aspx	(206) 263-8054
CPR/AED Training Programs www.kingcounty.gov/healthservices/health/ems/aed.aspx	(206) 263-8562
Emergency Medical Dispatch Programs www.kingcounty.gov/healthservices/health/ems/emdprogram.aspx	(206) 263-8636
Injury Prevention and Public Education Programs www.kingcounty.gov/healthservices/health/ems/community.aspx	(206) 263-8544
Regional Medical Control and Quality Improvement www.kingcounty.gov/healthservices/health/ems/quality.aspx	(206) 263-8659
Center for the Evaluation of EMS (CEEMS) www.kingcounty.gov/healthservices/health/ems/CEEMS.aspx	(206) 263-8564