Public Health - Seattle & King County

Division of Emergency Medical Services

2015 Annual Report

to the King County Council

September 2015

Public Health
Seattle & King County

Medic One/Emergency Medical Services (EMS) serves nearly 2 million people in King County and provides life saving services on average **every 3 minutes**.

Each year, approximately **1 out of 10** of our residents will use our Medic One/EMS system.

Every year **the Medic One/EMS System saves thousands of lives**:
In 2014 firefighters responded to more than 177,000 calls in King County.
Paramedics responded to more than 50,000 calls for
advanced life support in King County.

Compared to other cities, cardiac arrest victims are 4 to 5 times more likely to survive.
This year 113 people in Seattle & King County were saved from cardiac arrest.

Strong, effective medicine is the hallmark of the regional Medic One system.

Introduction

We are pleased to present the 2015 Emergency Medical Services Annual Report, as required by King County Ordinance #12849.

Forty-five years ago, the first local Medic One emergency medical system (EMS) started in City of Seattle. At the time, it was a radical idea: teaching firefighters some of the skills that doctors used to save seriously injured or ill people, and applying these skills in a person's home or on a street. It quickly proved to be a success, and eventually expanded county-wide in 1977, as people recognized the value of an effective regional system for emergency care. Today, we're widely acknowledged as one of the best regional EMS systems on the planet.

Our EMS system is sustained by thousands of heroes across the county. But one deserves special mention this year. Dr. Michael Copass recently stepped down from his oversight position for the Seattle Medic One system after 39 years of service. As one of Medic One's founding fathers, Dr. Copass championed the demanding training and compassionate care that became the trademark and backbone of our region's outstanding system. EMS leaders and providers, both here at home and around the globe, have benefitted from his passion and dedication to emergency medicine. We can't begin to express our gratitude for his service.

You'll see Dr. Copass' legacy of excellence and continual improvement in this year's report. We have one of the world's best cardiac survival rates, but we're not resting on success. For example, we're pursuing improved training for dispatchers, so they can recognize cardiac arrest even earlier and prompt bystander CPR by phone. And we're testing new CPR methods for first responders that may keep even more people alive.

We also continue to work as efficiently as possible with the public dollars entrusted to us, while delivering the highest quality of care. We're expanding our community medical technician pilot program, which gets the right level of care to less-urgent calls, while preserving other emergency responder for other 911 calls. And we're expanding use of taxi transports to hospitals when emergency vehicles aren't needed.

To each person within our EMS system who has made these successes possible, we thank you. Together, you make our regional partnership work in providing lifesaving care for our community.

Patty Hayes, RN MN
Director
Public Health - Seattle & King County

Jim Fogarty
Division Director
Emergency Medical Services

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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 2015 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 **Carol Fahrenbruch, Jamie Emert, Dan Henwood, Sofia Husain, Dmitry Sharkov** and **Ben Stubbs.**

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

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Executive Summary

"Measure and improve" is the motto which has led King County EMS to becoming the exceptional system that it is today. Since its creation nearly forty years ago, the system has continually focused on reviewing its performance and determining how it can do better. This year's report features efforts underway to consistently move forward and provide users with "the highest possible…" - the highest possible standards and practice of medicine; degree and delivery of training; pursuit of innovation and science-based strategies; and confidence in the system's management and transparency.

Providing users with "the highest possible…" requires programs that extend across the different segments of the entire system. It involves systemic reviews of specific medical conditions and treatments that result in new medical guidelines, practices and a more effective and informed EMS system. It entails innovative technological advances being pursued in partnership with private industry to transform the standard of treating cardiac arrest. It includes applicable scenario-based training that strengthens the chain of survival and reinforces all tiers of the EMS system. It calls for strategies to reduce demand on the system, conserving EMS resources while still ensuring the most appropriate level of patient care. And it encompasses effective management, leadership and support, enhancing future decision-making and public trust.

Reflecting its role as a national leader in the field, the EMS system is driven to move programs and services forward to meet the needs of its users. This report highlights the region's commitment to continually search for ways to improve how services are delivered so that it can provide the highest possible patient care and medical outcomes.

System Overview

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 nearing two 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 Medic One/EMS System in King County is distinctive from other systems in that it **(a) is medically based, (b) is regional,** and **(c) uses tiered out-of-hospital response.**

(a) The medical model is the core of the EMS program in King County. In essence, it asserts that direction and practice must be derived from the highest standards of medical training and medical care. Accordingly, 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.

The leadership of the Medical Program Director ensures the success and the ongoing medical quality improvement of the EMS system. Mickey Eisenberg, MD, PhD, has filled this role for more than ten years. His substantial responsibilities include writing and approving medical protocols, approving all initial Emergency Medical Technician (EMT) and continuing EMT medical education, undertaking new and ongoing medical quality improvement activities, and initiating disciplinary actions when necessary.

System Overview

To support the best possible outcomes of care, Dr. Eisenberg oversees continual medical quality improvement activities, such as the review of every cardiac arrest event for the past 35+ years and patient protocol compliance audits. The result of this ongoing quality improvement is enhanced patient outcomes and an excellent cardiac arrest survival rate, currently among the highest reported in the nation.

(b) Regional partners sustain uniformity and consistency across the entire EMS system. Dr. Eisenberg coordinates policies and procedures among the Medical Directors of the region's six paramedic programs: Dr. Michael Sayre 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.

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, including major governance issues, strategic plan implementation, and other proposals.

(c) A tiered response system in King County ensures the most appropriate care provider responds to each 9-1-1 call. 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.

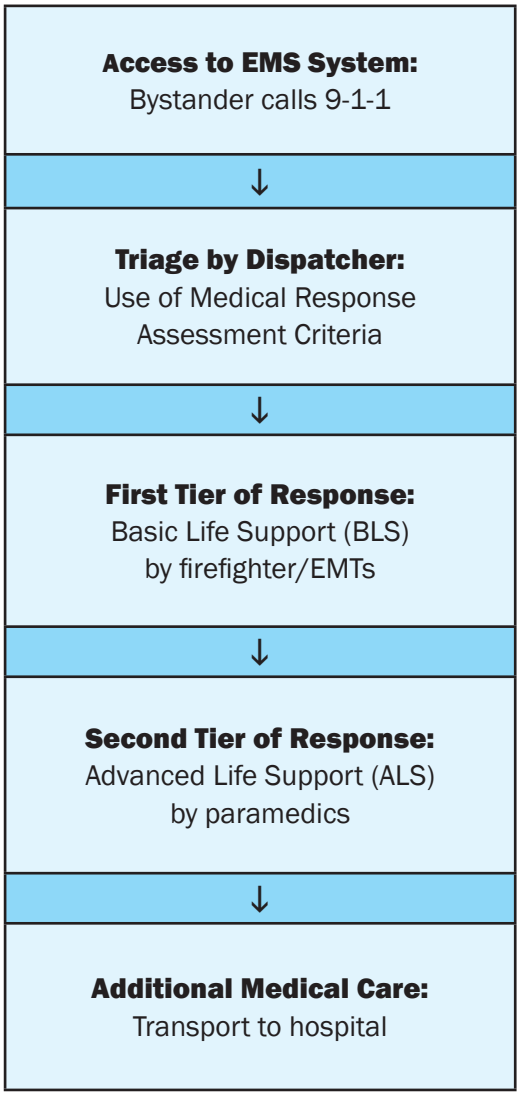
Basic Life Support (BLS) Services: BLS personnel are the "first responders" to an incident and provide immediate medical care, such as advanced first aid and CPR/AED to stabilize the patient. Staffed by firefighters trained as Emergency Medical Technicians (EMTs), BLS units arrive at the scene in under five minutes (on average). BLS contributes significantly to the success of the Medic One/EMS system.

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 a quarter 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.

System Overview

EMS Tiered Response System



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.

Basic Life Support (BLS), or first-on-scene medical care, is provided by over 3,800 Emergency Medical Technicians (EMTs) employed by 29 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.

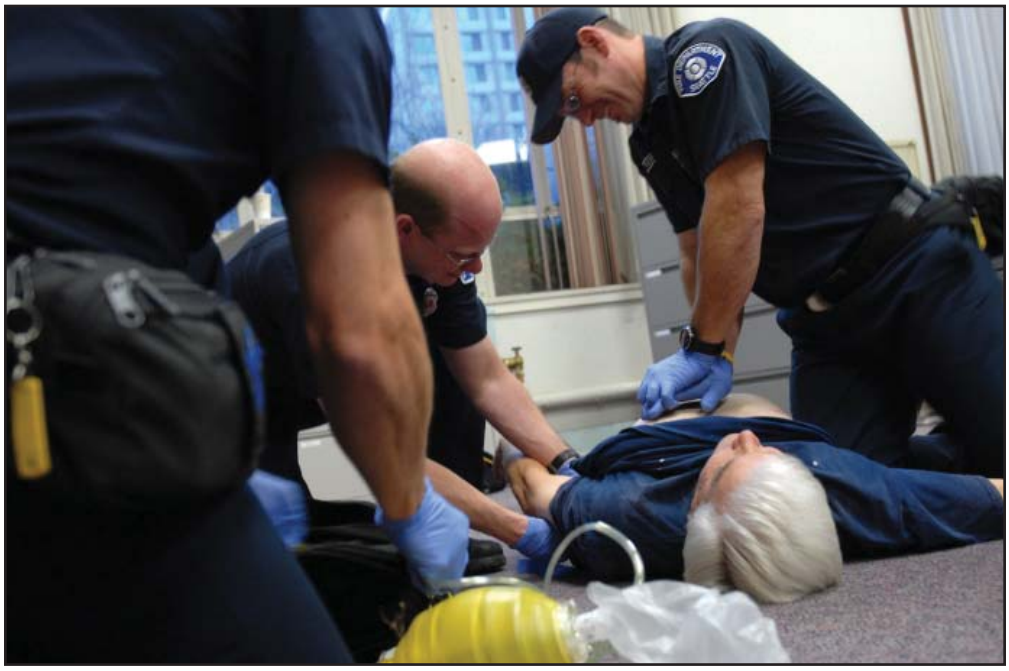
Advanced Life Support (ALS) services, or regional paramedic services, are provided by six agencies operating 26 ALS units throughout King County: Bellevue Fire Department (4 units), Redmond Fire Department (3 units), Seattle Fire Department (7 units), Shoreline Fire Department (3 units), King County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

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 ensures pre-hospital patient care is delivered at the same standards across the region, regional policies and practices that reflect the diversity of needs are maintained, and local area service delivery is balanced with centralized interests.

Examples of Regional Service 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, which are 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.



Cardiac Arrest Report Card

King County Out-of-Hospital Cardiac Arrest Data

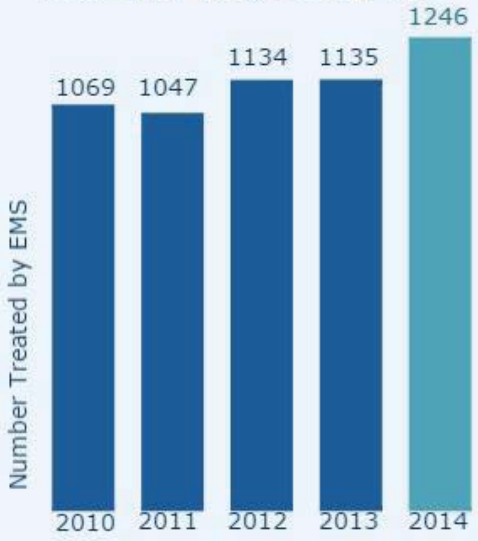
Population: 2,079,967

System Characteristics:

Number of Dispatch Centers: 5
Number of BLS Agencies: 29
Number of ALS Agencies: 6

Cardiac Arrests:

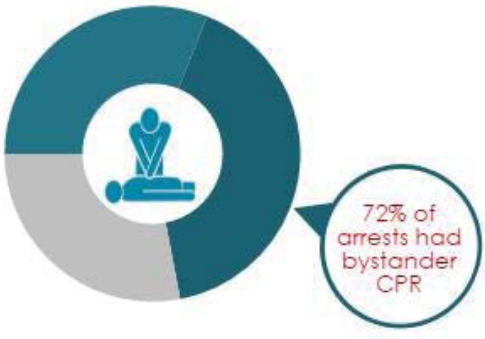
Number of Cardiac arrests per year treated by King County EMS



911 Cardiac Arrest Recognition

Cardiac arrests recognized: 96%

Bystander CPR



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 2014-2019 Strategic Plan, approved by the King County Council in June 2013, and voters in November 2013. Built upon the system's successful medical model and regional approach, the Plan establishes policy directions, outlines the development of new or enhanced programs and initiatives, and presents 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 consistent regional medical direction, standardized EMT training and continuing medical education, standard EMS training for emergency dispatchers, centralized data collection, paramedic service planning and analysis, along with financial management of the regional EMS levy fund. It is far more medically effective and cost efficient for the EMS Division to manage these functions than to have each local response agency develop, implement and administer its own such programs.

This section offers highlights from the past year on some of the Division's many successful programs and activities. The rest of the program descriptions are posted on the EMS webpage.

www.kingcounty.gov/healthservices/health/ems.aspx

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.

The EMS Division adheres to a medical model of integrated regional EMS services, cooperative decision making, and the development of strategies to encourage system efficiencies and effectiveness.

Center for the Evaluation of EMS

The Center for the Evaluation of Emergency Medical Services (CEEMS) receives funding from private, state and federal agencies to conduct studies aimed at improving the delivery of pre-hospital emergency services and advancing evidenced-based care and treatment. The EMS Division works collaboratively with academic and clinical faculty from the University of Washington to implement and evaluate research studies.

Life Science Discovery Fund (LSDF) Matching Grant: Transforming the Paradigm of Sudden Cardiac Arrest Resuscitation: Patient-Specific Treatment through Innovative Technology (aka SMART Resuscitation)

Dr. Thomas Rea, King County Medic One Medical Director and UW Professor of Medicine, was awarded a two-year LSDF matching grant to improve outcomes from sudden cardiac arrest (SCA) by expanding upon defibrillator technology. When it comes to treating SCA, one size does not fit all. However, current defibrillator technology requires that nearly all SCA patients be treated in the same manner. Among other things, this involves stopping chest compressions so that heart rhythms can be analyzed. Numerous scholarly articles have demonstrated that SCA outcomes improve when pauses in chest compressions are minimized, reiterating the need to find an alternative to this standard practice.

One piece of the LSDF Matching Grant will allow the EMS Division to partner with the University of Washington and Philips Healthcare to transform the model of how EMS treats cardiac arrest. The focus will be on refining and integrating a software application that allows for continuous CPR support, with current automatic external defibrillators (AEDs) and cardiac arrest protocols. This Smart Resuscitation software enables real-time detection and characterization of CPR quality, a continuous gauge of the heart's physiologic status, and does not require hands to be removed from the chest unless a shock is being delivered.

The other piece of the grant involves designing an inexpensive, personalized AED for wide-scale distribution into the community. For every minute that passes by after a collapse from SCA without chest compressions or a defibrillatory shock, the likelihood of survival decreases 7-10%. Seconds count, and making personal defibrillators available to the general public could "bridge" that critical time between witnessing a cardiac arrest and the arrival of EMS personnel.

Center for the Evaluation of EMS

The STAT 9-1-1 Study: Simulation Training to Improve 9-1-1 Dispatcher Identification of Cardiac Arrest

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, assistance during those immediate first few minutes is the most critical - a patient's chance of survival plummets with every minute that they do not receive cardio-pulmonary resuscitation (CPR). Because it takes time for EMS responders to arrive on scene, 9-1-1 telecommunicators have been trained to provide CPR instructions over the phone so that bystanders can begin CPR before EMS arrives. This telecommunicator CPR (T-CPR) has significantly increased survival from cardiac arrest. However, 9-1-1 call takers don't always recognize cardiac arrest. As a result, T-CPR is not always provided to patients who could benefit from this critical instruction.

Medical emergency calls, particularly life-threatening ones, can be difficult to process quickly and accurately. Under extreme stress, callers are desperate for assistance, and they often give ambiguous or even conflicting answers to simple questions. Many call centers use a standard "all-caller" set of questions that are asked at the start of each medical emergency call. These questions are designed to quickly establish the patient's state of consciousness and breathing status.

Even with these standard questions, identifying suspected cardiac arrest patients over the phone remains a challenge. Research has found that the frequency with which telecommunicators handle cardiac arrest calls is associated with quicker recognition of cardiac arrest. (For an expanded discussion on this topic, see page 48.) However, calls for patients in cardiac arrest may be relatively few among the total number of calls received at a 9-1-1 emergency communications center, and an individual telecommunicator may encounter only a few of these per year.

The STAT 9-1-1 Study was developed to build experience handling these difficult calls. Participants take a series of simulated 9-1-1 calls, and receive immediate feedback from the study trainer listening in to the calls. This training gives the call receivers a consistent and realistic way to practice handling difficult medical emergency calls in a structured format with consistent, focused feedback on performance.

Simulation training has long been an effective medical education teaching tool - it is interactive, allows for repetition, and the scripted scenarios are designed to teach specific skills. Especially useful in gaining exposure to and training on skills needed in high-stakes emergency responses, it offers a realistic way to safely practice and hone infrequently needed skills. Medical education simulation commonly employs trained actors posing as "standardized patients" who realistically present symptoms and describe medical experiences to the doctors and nurses being trained.

To date, study participants randomized to the training group have completed 250 training call sessions, and 80 participants, both trainees and controls, are finished, having completed the final assessment call. Objectives include:

- Improving the ability to more quickly identify cardiac arrest calls
- Shorter time from the start of the call to the start of T-CPR instruction
- Increased confidence in handling difficult emergency medical calls and providing telephone CPR instruction to callers, and
- Enhanced call-taking skills, overall.

Each training session of the STAT 9-1-1 Study consists of three mock 9-1-1 calls, each scripted to include examples of the most common challenges related to establishing a patient's state of consciousness and breathing status over the phone. The simulations include scripts for both cardiac arrest and non-cardiac arrest patients, with the scenarios becoming increasingly difficult as telecommunicators progress through the study. At the end of each training session, the study trainer debriefs the study volunteer and provides specific feedback in conversation around call-taking performance and the study teaching points.

How the 9-1-1 caller and the call receiver communicate has the potential to alter life or death outcomes.

Medical Quality Improvement

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.

BLS Medical Control

The regional King County EMS system is founded on the tiered medical response model, which ensures that the most appropriate care provider responds to each 9-1-1 call. Under this model, Emergency Medical Technicians (EMTs) respond to every incident, reserving paramedics to respond to only serious or life-threatening injuries and illnesses. After being evaluated and treated, patients may be transported to emergency departments, a critical care facility, or left "at scene".

For paramedics wanting to leave a patient at scene, current protocol requires the approval by the online medical control (MC) physician. In contrast, patients evaluated by EMTs and deemed appropriate to leave at scene do not require online MC authorization. To ensure that patients were getting the best possible medical attention and care, the EMS Division initiated a pilot EMT medical control program, which added a direct layer of medical oversight as a "safety net" for the decisions by EMTs to leave patients at scene.

The EMT Medical Control (EMT MC) Pilot Program allowed for EMTs from four fire departments (Redmond, Kirkland, Woodinville and Duvall) to directly access an online MC physician at a local emergency department. EMTs were only required to consult with the physician in cases where the patient received solely EMT-level care and the EMTs' initial plan was to leave the patient at the scene; under other circumstances, the physician did not need to be contacted. The physician, after hearing the EMTs' proposed plan of care, could:

1. Concur with the EMTs' plan to leave the patient at scene;
2. Request an ALS evaluation on scene; or
3. Have the patient seen at an emergency department.

Medical Quality Improvement

EMS responded to over 7,000 total incidents in the service area over the six-month evaluation period, which revealed three major highlights:

1. EMTs complied in calling the MC physician:
700 patients met the eligibility criteria for the EMT MC Program; EMTs called the MC for 80% of those eligible patients. Those that did not consult the physician may have omitted it because they were unfamiliar with the new requirement.

2. EMTs and the MC physician were in agreement about the patient care treatment:
In most cases (87%), the MC agreed with the EMTs' decision to leave the patient at scene. In those cases where the physician "overrode" the EMTs' decision and had the patients transported to an Emergency Department (ED), the patients' outcomes were also reviewed. Most of those patients were evaluated and discharged within a few hours, while a very small percent had potentially critical discharge diagnoses.

3. The program served as a safety net for the patients, EMTs and the EMS system as a whole:
Because a physician was reviewing the cases, those six critical cases (mentioned above) were transported to EDs, confirming the additional benefit of having such a safety net. They felt that having medical oversight helped validate their didactic training and appropriate decision to leave the patient at the scene.

The EMT MC program allowed EMTs to provide the best care possible to their patients, adding another level of care and consultation to the regional EMS system. Although it can potentially add burden on the MC physician to provide consultation for additional patients, the pros outweigh the cons. The overall health of the community increases when hospitals and EMS systems are able to coordinate their efforts in this manner.

QI Reports

Delivering the highest quality patient care requires establishing annual Training Goals for EMS personnel, and systematically identifying how EMS responses can be improved. Since mid-2011, the Medical QI section has been conducting a series of audits to evaluate how BLS and ALS respond to a wide variety of critical conditions. The results of these audits are distributed to all King County medical directors, fire department chiefs, training officers, dispatch center leaders, and hospital cardiac and stroke coordinators to encourage a culture of evaluating and improving patient care.

The overall health of the community increases when hospitals and EMS systems are able to coordinate their efforts.

Medical Quality Improvement

These efforts are consistent with the EMS Division's mantra of "measure and improve." Findings are reported county-wide in an email newsletter that includes an executive summary, data, and comments from the King County Medical Director. Below is a table of topics and findings from 2014 reports.

Topic	Condition	Findings
Response times	Stroke	Early recognition of stroke symptoms, establishing the time of last known well (aka when the patient last felt "normal" prior to experiencing symptoms), rapid transport, and advanced hospital notification can expedite the hospital's Door-to-CT process
	STEMI	Shorter medic on scene times may prove critical to reducing the overall myocardial ischemic time in STEMI patients, thereby improving health outcomes
	Overall EMS	Unit dispatch time to unit en route and unit on scene times decreased slightly from 2008 to 2012 for BLS and ALS
	At Patient Side	At patient side time was reported more often in Zone 1 than in Zone 3, but both zones improved their rates of reporting in 2013
Documentation	Stroke	A sample patient care record showed the important components of documentation for a stroke case
	Cardiac arrest	Key data points that are difficult to abstract were clarified
	Sepsis	A sample patient care record showed the important components of documentation for a sepsis case
Interventions	Vascularization methods	Rates of IO, central IV, and peripheral IV have changed from 2009 to 2013
	Cricothyrotomy	The use of emergency surgical airways has decreased over time, likely due to better paramedic performance and additional airway management tools
Other	Telecommunicator role	Performance measures for telecommunicators were established after a research study on their role in cardiac arrests
	Fall prevention program	"One Step Ahead," King County's fall prevention program, saw that 80% of the fallers who completed the evaluation did not have a fall after the intervention
	CARES 2013 data	Compared King County data on cardiac arrests to national CARES averages and found that King County exceeds national averages in EMS treatment, community factors, and patient outcome
	Asthma	Total number of asthma cases have decreased from 2003 to 2013 and there are fewer asthma cases in the summer than in other seasons

Emergency Medical Dispatch

Emergency Medical Dispatchers (EMDs) in King County play a vital role in the EMS continual Chain of Survival as the first point of contact with the public. Trained by the EMS Division in Criteria Based Dispatch, they triage calls, using specific medical criteria that are based on signs and symptoms, to send the proper level of care with the proper urgency. Dispatchers also provide pre-arrival instructions for most medical emergencies and guide the caller through life-saving steps – including Telecommunicator CPR (T-CPR), Choking and Emergency Childbirth – until the Medic One/ EMS providers arrive.

Communities of Care

The Communities of Care project started in 2010 to counter an increase in calls being made to 9-1-1 for non-urgent, patient assist requests coming from Assisted Living Facilities, Skilled Nursing Facilities, Adult Family Homes, and Medical Clinics. Implemented originally as a pilot project, its focus was on training the staff at these facilities about the appropriate use of EMS services. Administrators and staff learned about the tiered response system and how it works, and what to expect when calling 9-1-1, including the kind of information that the dispatcher will request. An early assessment of the pilot showed that the training paid off – the number of low acuity calls to 9-1-1 from those facilities decreased on average by nearly 60%, and lift-assist calls were reduced to 0.

The program continues to deliver positive results for facilities serving these types of patients. Post-training evaluations of facilities' calls to 9-1-1 show measured improvement in multiple areas such as calling 9-1-1 and using EMS appropriately and effective information exchange between facility personnel and 9-1-1. In addition, other benefits not considered when the program was originally developed to address EMS service demand have been realized. It has taught facility staff to be better 9-1-1 callers and users; it has strengthened relationships between service providers, fire departments and communication centers who are all working toward the shared goal of delivering quality patient care to residents; and it has provided a better understanding between each industry's expectations and protocols, allowing for a more collaborative approach to treating patients.

	Prior to training	2 months post training	6 month post training
# of calls	148	126	84
# of appropriate calls	120	115	83
% appropriate use	81%	91%	99%
Lift Assists	4	0	0

Data reflect 2-month review of 9-1-1 EMS calls pre- and post- Communities of Care training for five facilities.

In the past year, Communities of Care has provided 48 training and presentation sessions to over 850 employees of adult care facilities.

The EMS Division is currently collaborating with facilities in King County to determine how to reach additional adult family home caregivers, and what specific on-line training resources could better serve these communities.

CPR & Public Access Defibrillation

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 CPR and early defibrillation have a significantly improved chance of survival from cardiac arrest. In Seattle/King County, nearly 80% of those surveyed in 2008 have attended a CPR training class.

Student CPR Program

Trained bystanders have been a critical factor in helping Seattle and King County achieve high sudden cardiac arrest survival rates. This includes training schoolchildren to be proficient in these life saving techniques so that there are more people educated and ready to help. To this end, the EMS Division trains secondary school students (grades 6–12) throughout the region to perform CPR and use an AED in classes taught by their teachers and local firefighters. Using American Heart Association-approved information, the Division's goal is to provide CPR training to students three times prior to graduation from high school. In 2014, a total of 12,390 students were trained, while 41 teachers and other school staff were educated to become CPR instructors themselves. The EMS Division also works with school districts to place AEDs in their facilities and register them with the King County AED Registry.

Twelve school districts currently contract with the EMS Division. Funding is used for training school teachers and staff to be CPR instructors, providing CPR instructors from the community and purchasing CPR equipment and training materials.

King County school districts, through this program, are implementing legislative requirements passed in 2013 by the Washington State Legislature. RCW 28A.230.179 added CPR and AED Training to Washington state high schools' curricula, requiring that all Washington State high school students learn CPR prior to graduation through school-provided CPR training. RCW 28A.300.471 calls for schools to develop a plan for AEDs in their facilities, and the EMS Division has helped with the placement, policy development and registration of AEDs purchased by schools. The Division has linked Project RAMPART (which provides funding for AEDs in municipal public facilities) to school districts so that Project RAMPART funding can be used to place AEDs in schools.

Quick thinking and CPR learned at school helped save a paddle boarder in need. Find the story online at:

http://schoolcpr.com/2014/07/teen-girls-rescue-drowning-paddle-boarder/
http://q13fox.com/2014/07/07/3-teens-rescue-54-year-old-paddle-boarder-in-lake-washington/

BLS Efficiencies

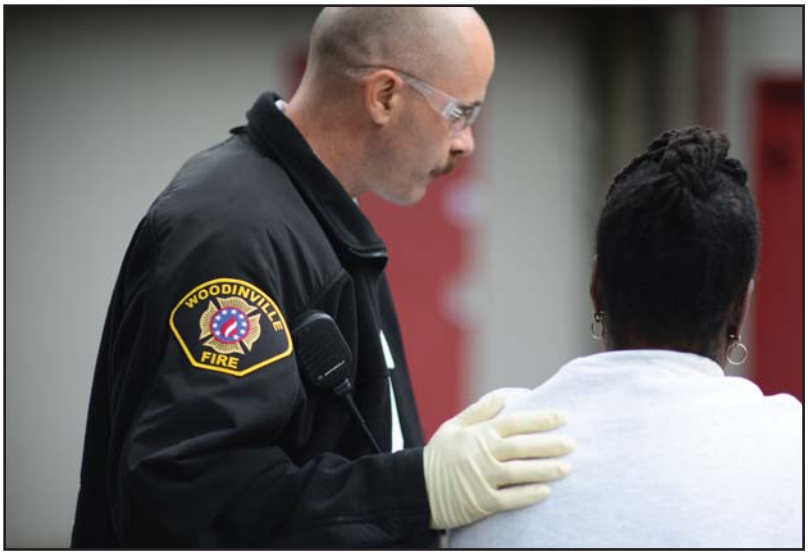
Managing the rate of call growth in the EMS system is a regional priority, and has been an ongoing focus through the past three levy periods. Unmanaged growth can negatively impact fire department response times, performance standard achievement, and quality of patient care. The EMS Division has been identifying and testing strategies for serving non-emergency patients and callers to provide alternatives to dispatching a BLS unit.

Community Medical Technician (CMT)

Since 2010, the EMS Division has worked with its regional partners to pilot the innovative Community Medical Technician (CMT) concept to respond to specific low acuity 9-1-1 calls. The program is entering its third pilot with a widened cohort of participating agencies and a plan for a comprehensive evaluation to determine the program's value, acceptance, efficiency and other impacts on the EMS system. Between now and 2017, multiple EMS agencies in King County are embarking on the next iteration of this model of providing alternative response and management of a key subset of 9-1-1 medical calls. The design of the current model came by way of a series of meetings with regional partners across King County to determine the primary goal of the program, identify the regions that will provide the greatest ability to evaluate the program, and establish the criteria on which the future of the program beyond 2017 will be evaluated.

CMTs are free to spend more time with patients, discussing their non-emergent medical or other social needs.

The two-responder CMT units will respond to 9-1-1 medical calls identified as low-acuity in nature according to the King County-developed Criteria Based Dispatch Guidelines. By alternatively responding to low-acuity calls, other first-responder Fire/EMS crews remain available to respond to other 9-1-1 calls. The CMT unit will be an available resource for a much wider geographic area than a traditional EMS vehicle, allowing this service to stretch across multiple EMS agencies in King County.



In addition to low-acuity response, King County EMS leaders built the CMT model to allow for participating fire departments to add specific goals and services to the CMT unit serving their jurisdictions. Essentially providing a customizable CMT unit, many departments are developing add-on goals to approach other key EMS topics such as mitigation of repeat 9-1-1 use, integration of EMS providers within the broader system of healthcare providers and hospitals, referral to community-based health and social agencies, and education on the effective use of 9-1-1 in communities of care such as skilled nursing facilities, adult family homes, and medical clinics.

BLS Efficiencies

The first CMT unit is a partnership model with the Kent Fire Department Regional Fire Authority FDCARES program beginning in summer 2015. Utilizing trained "patient navigators" with backgrounds in EMS specialties, the CMT-FDCARES unit will provide services ranging from low-acuity response to proactive home visits. The Shoreline Fire Department will lead the second CMT unit in late 2015 working in concert with partner agencies of Northshore Fire Department, Bothell Fire and EMS, and Woodinville Fire & Rescue to form the North County CMT Pilot Project (NCCMTP). The third CMT unit planned for the current pilot will operate as a joint unit between South King Fire & Rescue and Valley Regional Fire Authority beginning in early 2016. Combined, the three CMT units operating between 2015 and 2017 have the potential to reach populations in twelve cities as well as unincorporated areas of King County.

King County EMS is leading the evaluation of the CMT program using a cross-section of measures and outcomes. The CMT units will operate through the end of 2017, but may continue if proving to be a valuable addition to the EMS system.

King County Medic One

King County Medic One (KCM1) is one of the six Advanced Life Support (ALS) providers in the regional EMS system. It serves approximately 520 square miles of south King County, an area with a population now close to 725,000 people. In calendar year 2014, KCM1 responded to 16,168 calls for this advanced care, including pediatric patients, mass casualty, motor vehicle crashes and cardiac emergencies.

The Triple Crown

One of the hallmark measures of a quality EMS system is the survival rate from cardiac arrest. While King County Medic One (KCM1), along with all its partners, takes great pride in the region's cardiac arrest survival rate, it is equally proud to bestow the status of "Triple Crown" on six of its paramedics over this past year. Triple Crown paramedics are those who have three cardiac arrest saves in a single month. Achievements like this are unquestionably the result of teamwork and underscore that the system's rigorous initial training and aggressive, cutting edge medicine pay off when seconds count.

EMIRF Replacement Project

Paramedics must create a detailed medical record for every patient they treat. Called a Medical Incident Record Form (MIRF), this paper record provides critical treatment information for the receiving doctors and nurses, and is also used on a regular basis to conduct research studies, quality assurance, and improve patient care.

2014 was the year that KCM1 initiated its new fully electronic patient care records management system. Now, KCM1 paramedics can document patient care information in real-time, while at the patient's side. The system also communicates with LifePak 15 defibrillators, automatically documenting vital signs, heart rhythms, EKGs, and defibrillation, which can then be transmitted to the hospital while patients are en route to the emergency department. Although this was not an effortless transition, KCM1 has already seen an improvement and standardization in documentation, improved consistency of information transfer to the hospitals, and a much increased ease of abstraction of small- and large-scale metrics for quality improvement.

Answering the call for reinforcements

Since the beginning of EMS, field providers must physically lift patients into the back of EMS vehicles in order to transport them to the hospital. Over years of repetitive lifting, musculoskeletal injuries to paramedics become a common occupational hazard. This can lead to shortened careers, decreased job satisfaction, and it can pose a serious cost to the system in medical expenses and lost time.

This paradigm is shifting as power-loading technology enters the market. Such systems let the stretcher support the patient during every phase of loading and unloading, safely lifting the stretcher into the back of the Medic unit. The Safety Committee has awaited this technology for nearly a decade, testing several prototypes over the last few

years and tracking the progress of these new load systems through the Food and Drug Administration approval process. KCM1 purchased eight new power-load stretchers in 2015. This simple-to-use system is being praised by KCM1 paramedics as a significant advancement in patient and employee safety. KCM1 and its partners are sure to see a net cost savings in the long run by its implementation.

New Offices

Regional and collaborative partnerships have contributed greatly to the success of the regional EMS system throughout King County. Medics work side by side with local fire agencies in a seamless process of providing 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 partner fire stations whenever possible, to promote a team atmosphere and to help provide continuing medical education to all of the local fire departments. This cost-effective strategy also eliminates the need for separate facilities.

This year, KCM1 headquarters moved into a shared space with the King County Fire Training Consortium. This new arrangement brings KCM1 under the same roof as specialists from different fire and EMS areas, offering greater access to a wider breadth of fire and EMS education, and fostering increased cooperation and working relationships between departments and personnel.

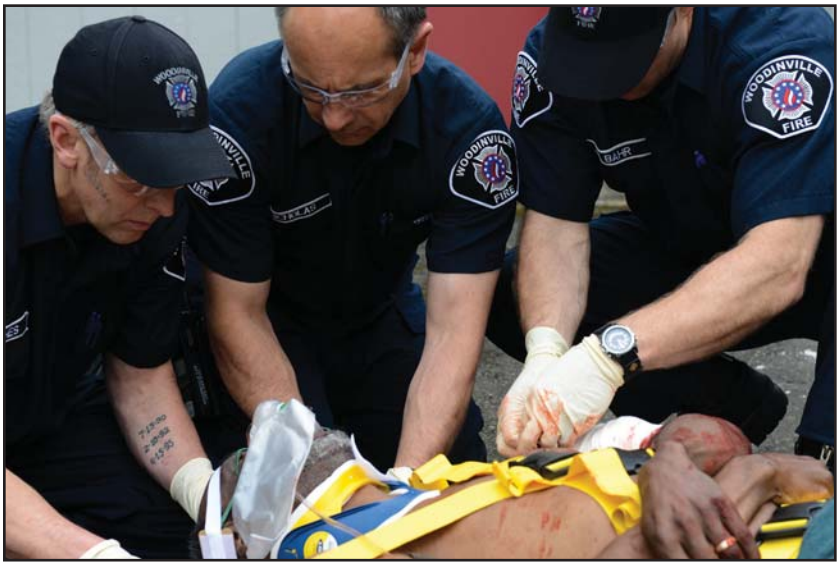
Administration

The Administrative Section provides leadership and support to internal and external customers to ensure the integrity and transparency of the EMS system. It actively engages with regional partners to implement the EMS Strategic Plan, undertakes long-term programmatic and financial planning, prepares the annual budget, monthly monitoring and projections, and is responsible for the continuity of business in collaboration with EMS stakeholders. Administration also provides essential support to all the EMS Division sections that directs a multitude of regional programs, including contract management, personnel-related activities, budget preparation, and day-to-day operational activities.

Regional leadership: BLS Working Group and Core Services program

2015 marked the creation and initial convening of the BLS Working Group. Representing a broad range of regional providers of varying size, constituencies and needs, the Group's charge is to examine and develop polices related to the provision of BLS services and its seamless integration with ALS. The focus will be on identifying what can be done regionally to improve the BLS system as a whole, while acknowledging and recognizing agencies' separate funding sources and local decision making.

The BLS Working Group's first responsibility was to design the BLS Core Services program, which was created to provide funding to help cover costs of unanticipated system changes and demands. This program was proposed when BLS agencies started experiencing instances where new or vulnerable populations were increasing system use above projected levels, and needing to absorb unreimbursed expenses related to disasters or emergent needs, like Ebola planning. BLS is the foundation of all medical responses of the King County EMS system - when BLS agencies experience service gaps, it threatens the entire EMS system. As such, there is tremendous buy-in to set aside funding to help fire agencies respond to situations and events challenging their resources.



Recognizing the need to promptly get BLS agencies the appropriate financial support they need, the BLS Working Group agreed to work under a very tight deadline to flesh out the oversight, eligibility, and principles of the Core Services program. The group met twice in early 2015 to collaboratively create a proposal outlining how Core Services funding can be used, along with the process and requirements for requesting, approving and receiving funds. The region signed off on this proposal in March of 2015, and BLS agencies should be able to apply for the program later this year.

Administration

Financial stewardship

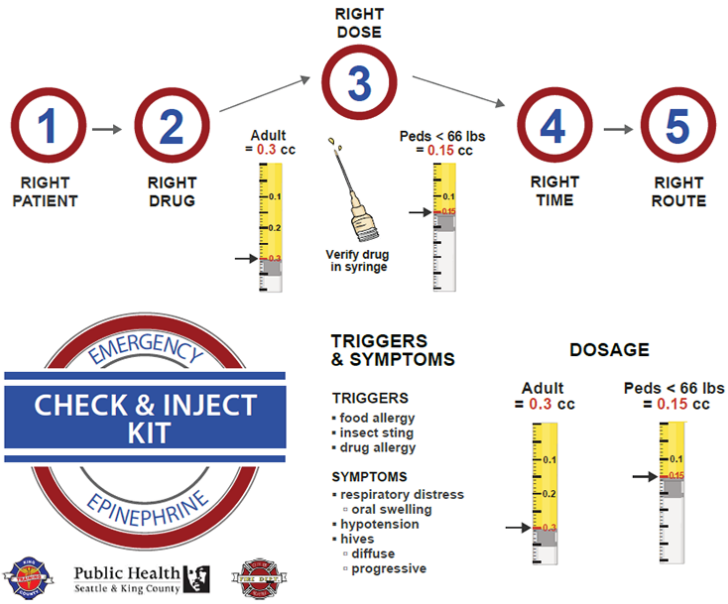
EMS has maintained financial viability and stability, even throughout economic downtimes, due to its sustained focus on fiscal, administrative and operational efficiencies. Actions related to the Public Health Financial Improvement project have led to reducing the number of financial entries needed to account for EMS services, and have resulted in a reduction of financial overhead costs. The Division will continue to identify and incorporate further efficiencies into its management practices to enhance accountability and transparency.

As the overseer of the levy financials, the Administration Section works closely with EMS supervisors to monitor and manage the costs of programs and services. Every year, EMS' Finance Team compares projected expenditures against actuals (referred to as forecasting) to evaluate the use of funds, and to allow flexibility in administering EMS programs. This past year, the year-end forecast was less than 1% than actual year-end expenses, showing a good understanding of the levels of effort and the costs associated with providing EMS's services. The EMS Division feels that accurate forecasting like this helps foster trust in how public money is spent.

Accurate "forecasting" is key because it enhances decision making by EMS and its partners on how to best serve King County EMS users.

Professional Standards

The Professional Standards Section provides initial training, continuing education, instructor education and oversight of the recertification process for nearly 3,800 Emergency Medical Technicians (EMTs) in King County. Through communication and coordination among EMS stakeholders, this 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 29 EMS/fire agencies in King County, Professional Standards relays continuing education, certification, and regulatory and policy changes to EMS agencies.



Check and Inject update

The EMS Division's "Check and Inject" program is gaining traction and attention. The Seattle Times ran a piece about the program in early January, reporting that since the program's inception, EMTs have used the kit more than 100 times. Appropriate usage increased from 48% to 98%, sparking a county-wide change in protocols for epinephrine use. Four states have adopted the protocols and are initiating their own pilots.

EMS Online

When the EMS Division recognized that EMS personnel needed an alternative method for completing the cognitive pieces of on-going training and evaluation courses, it developed the EMS Online website. Designed for local area training, the program was originally intended to serve only a small number of EMS providers in King County, and deliver only a limited number of courses. However, EMS Online has rapidly earned national and international exposure due to its high-quality content, interactive teaching tools, and its effectiveness in quickly and easily delivering time-sensitive information to its thousands of subscribers.

Front and center of it all is the current and innovative course offerings that the EMS Division creates. Continuing Medical Education (CME) courses are based on best practices, current research and local trends, ensuring that the skills taught are the most up-to-date and applicable out in the field. The training encourages EMS personnel to think more critically about the science shaping patient care, and the decisions behind specific treatments. Rather than being a "read and test" type of curriculum with a focus on rote memorization, courses are interactive, which presents a patient situation to the user who must then make decisions about how to treat that patient. These segments expose users to actual scenarios, and allow them to practice in "real-time" for experience and proficiency. Because CME modules feature topic specialists, students have the opportunity to learn from nationally acclaimed experts in their field.

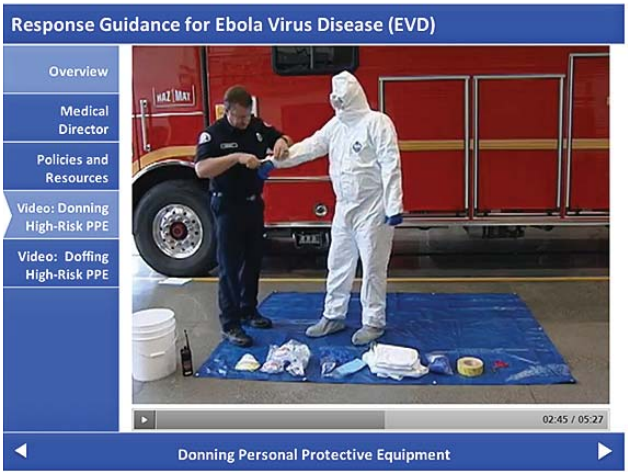
Professional Standards

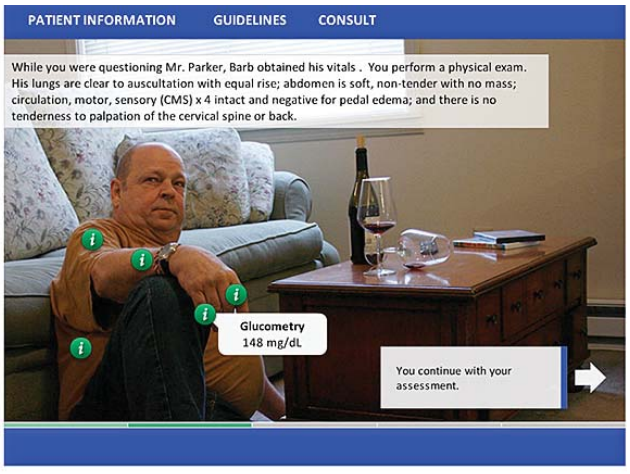
This year, new subject matter was added that moved beyond protocol-driven content to focus on other pertinent skills and concerns. One module advanced communication and teamwork between EMS personnel, and another focused on medical and legal issues, both of which will help lead to improved patient care and outcomes.

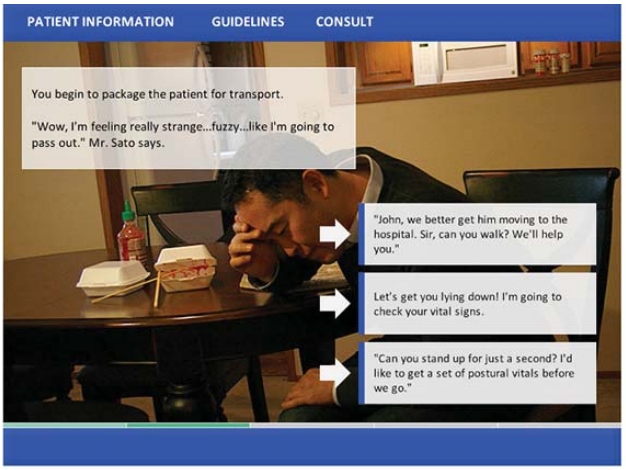
Adaptable to the changing needs of patient care guidelines and disease control, EMS Online helps the region stay current with the latest pre-hospital medical treatment. This year in response to the Ebola epidemic, EMS Online partnered with Seattle Fire to develop and launch an online training for enhanced use of personal protective equipment when working with these patients. The teaching tool was also used to circulate a new stroke destination and treatment policy directly impacting the level of care patients receive in emergency rooms.

EMS Online subscribers recently convened to discuss how the courses are meeting their needs, both from a user interface and content perspective. This is only the first of many steps for continued improvement in the content development and delivery of EMS online courses.

Future enhancements include building a resource library of courses and redesigning the EMS portal for improved usability. The Division anticipates having a more intensive user analysis as part of the program's ongoing improvement plan.







2014-2019 Strategic Initiatives

The Medic One/EMS 2014-2019 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 two re-tooled initiatives and three new initiatives planned for the 2014-2019 levy span. The CMT pilot, which was included in the Strategic Initiative section last year, is highlighted on page 22.

Retooled Strategic Initiatives feature enhancements that will support a greater range of continuous improvement projects to supplement current system performance, and better manage demand and expected growth in request for BLS assistance.

New Strategic Initiatives include targeting repeat callers, reducing the inappropriate use of EMS services, and better supporting and engaging BLS agencies with economic and quality improvement opportunities on a local level.

	Quality of care	Gain efficiencies	Contain costs
Retooled Strategic Initiatives			
BLS Efficiencies -TRP/Nurseline -Taxi Transport Voucher	x	x	x
Efficiency & Effectiveness	x	x	x
Regional CMT*	x	x	x
New Strategic Initiatives			
Regional Records Management System		x	x
BLS Lead Agency	x	x	x
Vulnerable Populations	x	x	

*highlighted on page 22 of this report

Retooled Strategic Initiatives

1. BLS Efficiencies

Background

The BLS Efficiencies Strategic Initiative builds upon key projects developed through the 2008-2013 Better Management of Non-emergency Calls Strategic Initiative. Its focus is on encouraging the development of strategies to manage current BLS demand, and delay future growth in requests for BLS assistance.

Description

The BLS Efficiencies Strategic Initiative is the culmination of many efforts, small and large, to improve the quality of care while also gaining system efficiencies and containing costs.

Objectives

- Evaluate and reduce unnecessary EMT requests for medics from scene
- Re-tool ADAPT, increase Taxi Transport Voucher option, work with clinics to accept patients transported by EMS
- Evaluate and minimize unnecessary BLS transports
- Study the potential to expand EMT scope of practice to accommodate emerging community needs; provide EMTs with more knowledge skills, and training to make more effective and confident decisions at scene, with a focus on minimizing unnecessary transports

Next Steps

As demand for BLS services rises, the BLS Efficiencies Strategic Initiatives will continue to pursue developing quality programs to manage the current and future call volume. Two projects that fall under this BLS Efficiencies Strategic Initiatives heading are the Telephone Referral Program (aka Nurseline) and the Taxi Transport Voucher Program.

1a – Telephone Referral Program (TRP/Nurseline)

Background

Since 1999, the two primary 9-1-1 call centers in King County have worked to identify and transfer low-risk, low-acuity calls to a 24-hour nurse line for assistance. Triaging these calls to a nurse line, as opposed to sending a BLS crew, saves an EMS response and allows crews to be available to respond on other calls.

Description

Calls for medical help to 9-1-1 vary widely, from questions about flu-like symptoms and tooth pain, to the need for immediate assistance for the most critical and time-sensitive events. For those lower-acuity calls, individuals may benefit more from speaking with a nurse than having an EMS crew dispatched to the scene. The nurse is able to spend much more time with individuals, compared to a busy 9-1-1 call taker, and may recommend home care or help identify appropriate locations to seek care, such as an urgent care facility or primary care provider. If needed, the nurse line can advise an EMS crew to respond to the scene as well.

The King County nurse line integrates with other efficiency programs, including the Taxi Transport Voucher program, which allows nurse line staff to issue vouchers to individuals who lack other means of transportation to receive needed care.

2014-2019 Strategic Initiatives

Objectives

- Identify at the time of the call low-risk, low-acuity 9-1-1 calls
- Transfer eligible calls to a 24-hour nurse line and
- Allow EMS crews to remain in service for other 9-1-1 requests for service

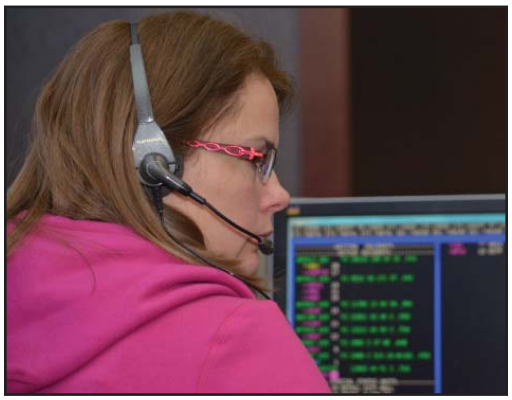
Results

In 2014 the two participating call centers transferred 965 calls to the nurse line. This compares to 1,185 call transfers in 2013 and 1,208 calls transferred in 2012. At the peak of the program in 2009, nearly 1,900 calls were transferred to the nurse line. Since the program began, approximately 15,000 calls have been transferred to the nurse line. In each of the previous five years, 1.00 to 1.65% of the total BLS call volume has been transferred to the nurse line.

Next Steps

Calls transferred to the nurse line peaked in 2009 and have slowly and steadily declined since that time. An extensive evaluation of 2014 nurse line calls and call receiver input will guide specific changes to improve the use of the nurse line.

1b – Taxi Transport Voucher Program (TTV)



Background

Following a successful pilot, the Taxi Transport Voucher program began in mid-2012. The program has grown to include 20 participating agencies throughout King County.

Description

Calling 9-1-1 for medical help often results in an individual being transported to a hospital by ambulance. In many circumstances, emergency transport of individuals with non-urgent medical conditions is not covered or reimbursable, resulting in individuals being billed many hundreds of dollars. This financial concern could lead individuals to decline transportation and delay (or even not seek) appropriate treatment.

Not every 9-1-1- call requires a transport by ambulance. For certain low-acuity medical concerns, taxi cabs are an appropriate alternative method of transportation for individuals accessing the 9-1-1 system. Providing taxi vouchers offers them the ability to access needed care and keeps emergency resources available to respond to more urgent fire and medical calls in the community.

2014-2019 Strategic Initiatives

Objectives

- Provide an appropriate and safe alternative transportation method for certain low-acuity medical concerns
- Allow EMS crews to return to service earlier and be available for other calls
- Identify individuals who may benefit from being seen at urgent care centers, clinics, or primary care provider offices, rather than the emergency department
- Provide cost avoidance to the EMS system, tax payers, and individual patients.

Results

In 2014 a total of 514 vouchers were issued by 20 participating agencies in King County. The majority of the vouchers issued were for transportation of individuals to local emergency departments, though many alternative destinations were used, including sobering centers, urgent cares, Seattle's Downtown Emergency Services Center, and a variety of other clinics.

Next Steps

Many non-participating agencies are simply beyond the reach of the taxi cab company's ability to consistently provide a timely response (within 30 minutes of the request for a taxi by EMS crews). Other agencies will be recruited in order to provide this program as a truly regional service to residents and EMS crews.

2. Efficiency and Effectiveness (E&E)

Background

This Strategic Initiative provides funding to pursue projects aiming to increase efficiency and effectiveness of the regional King County EMS system. Each project includes a strong evaluation component focusing on performance measures, system outcomes, standards, or other appropriate metrics.

Description

Funds support a range of continuous improvement projects and include "grants" to EMS organizations. Each project must have high level goals of improving quality of care while gaining efficiencies and containing costs. Eligible projects review, evaluate and/or pilot system performance and opportunities to improve system performance and outcomes. Evaluation studies focus on continuous improvement activities, other metrics, as well as piloting new concepts. EMS agencies may apply to use funds for specific studies or pilots, which require detailed performance measures and evaluation at a level equivalent to King County's performance evaluation requirements.

2014-2019 Strategic Initiatives

Objectives

- Promote efficiencies
- Promote agencies innovation and involvement in efficiencies
- Promote strong performance measurements and cost savings measurements related to these efficiencies
- Collaborate with departments that actively want to manage call volumes and other activities related to improving operational efficiencies and effectiveness

Results

Over the past year, five proposals received funding to develop and evaluate methods to improve the EMS system. Each proposal brought the potential to have wide-reaching impact on the regional EMS system.

Bellevue Fire Department C.A.R.E.S.

The Bellevue Fire Department C.A.R.E.S. Program aims to reduce repeat low-acuity 9-1-1 calls by linking clients to appropriate medical, social, and/or community services to address the causal need. Grant money will primarily be used for a formal evaluation of the program and to institute changes to improve the program, both in terms of programmatic efficiency and overall client outcomes. The grant includes a follow-up evaluation of the program after implementing the changes identified in the initial evaluation.

Hope Academy

Enabling effective and efficient 9-1-1 communication and interaction with all individuals, including those with limited English proficiency, is a priority so that the King County EMS system can remain among the best in the country. This project partners with Hope Academy in White Center and the broader Somali community to engage in focus groups, 9-1-1 education, and work to reduce barriers to the effective flow of information.

South King Fire and Rescue

Timely identification and referral of individuals at-risk for falling is an important public health goal, particularly since falls and fall-related injuries are increasing as the aging population grows. South King Fire & Rescue aims to improve identification of at-risk fall patients and increase the number of referrals to an established fall-prevention program. Additionally, the study seeks to monitor uptake of the fall prevention services offered, a key indication of future impact on the number of 9-1-1 calls for repeat falls.

King County Paramedic Continuing Education

The Professional Standards section within the EMS Division will use the expertise of Dr. David Carlbom to increase the utilization of online paramedic training content for EMS Online. The EMS Online format provides King County paramedics consistency in learning core competency topics as well as delivers time and financial savings. The EMS Division and Dr. Carlbom will develop an evaluation framework to test the efficacy of online learning, compared to traditional classroom learning. See page 28 for more information on EMS Online.

Kent Fire Department Regional Fire Authority

Requests for non-emergency medical services (NEMS) are an increasingly significant component of the EMS System. Integrating a social worker (MSW) into the Kent FDCARES NEMS response aims to ensure that patients are able to access needed care at the appropriate time and most effective care setting. The MSW will additionally assist in gathering cost and satisfaction data to determine cost-savings and ensure navigation of patients matches expectations and needs.

Next Steps

Each activity will be evaluated at its conclusion and brought to the EMS Advisory Committee for review. Successful programs may be considered for regionalization or funding in future levy periods.

New Strategic Initiatives

1. Regional Records Management System

Background

During the Medic One/EMS 2014-2019 levy planning process, stakeholders recognized that increasing the total BLS allocation was not reasonably possible. Instead, the region committed to delivering programs on a regional basis that specifically reduce BLS costs and improve overall EMS system effectiveness.

Description

The Regional Records Management System (RMS) Strategic Initiative is designed to reduce BLS agency costs by transferring the administrative and financial responsibility of paying for patient care record software to the EMS Division.

Objectives

- Encourage use of a singular record management system for EMS records (Measurement: Percentage of records from singular regional vendor)
- Reduce total cost of managing EMS records via one contract (Measurement: Estimated cost savings)

2014-2019 Strategic Initiatives

Results

- Completed the process to implement a regional RMS contract with ESO Solutions for use of their electronic patient care record
- Six additional EMS agencies transitioned this year to use of ESO records for a total of eighteen

Next Steps

Continue to encourage use of a singular RMS for EMS records.

2. BLS Lead Agency Strategic Initiative

The BLS Lead Agency Strategic Initiative is a component of the region's on-going strategy to better support BLS through reduced costs and improved effectiveness. It is a concept to designate limited number of BLS lead agencies to develop appropriate ways to apply the successful approach of regional ALS (in terms of provision of services, quality improvement methods, procurement, cost containment and standardization) to the system's BLS services.

As envisioned, a BLS Lead Agency would better engage several small BLS agencies on a local level to conduct regionalized services. This would result in increased quality improvement, a greater depth of knowledge and proficiency among BLS crews, and more comprehensive interaction with other lead BLS agencies and the EMS Division. The value and mutual impacts on agencies and outcomes (economic and medical) would be assessed. Developing the Lead Agency pilot scope of work will continue throughout 2015.

3. Vulnerable Populations

Background

There are significant disparities in health status and access to health care in King County. Poverty, discrimination, and limited English proficiency (LEP) affect access to services, including calls to 9-1-1 for emergency medical care.

Description

The EMS Vulnerable Populations Strategic Initiative (VPSI) is a collaboration between the EMS Division, Public Health – Seattle & King County, fire departments, community-based organizations, and the University of Washington. The goal of VPSI is to conduct programmatic, scientific and case-based evaluations to ensure that the interaction between EMS and vulnerable populations is of the highest quality.

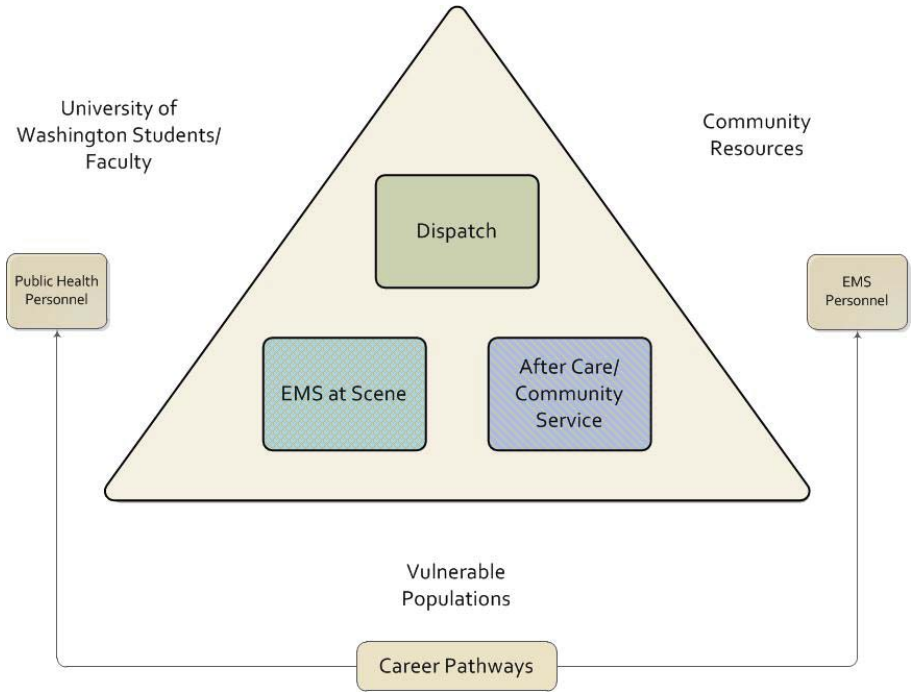
2014-2019 Strategic Initiatives

VPSI activities are focused on ensuring:

- Successful communication between vulnerable populations and 9-1-1 dispatch
- Best practices for at scene care of vulnerable populations
- Follow-up care and community services for vulnerable populations

Objectives

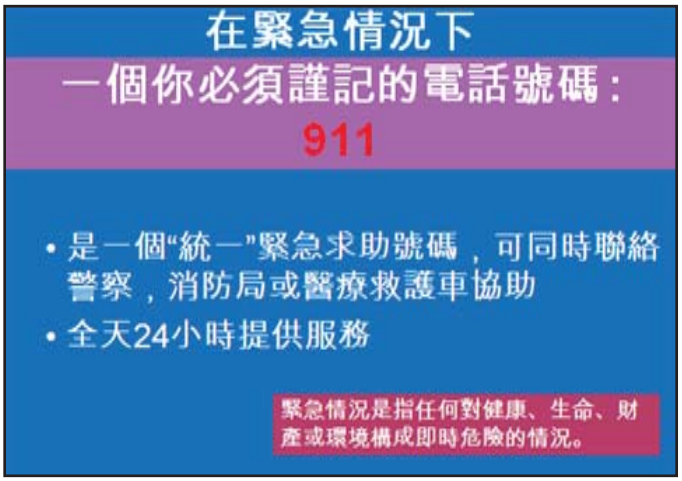
- Develop strong collaborative relationships between VPSI activities and the University of Washington by connecting students to the practice community via capstone, thesis and practicum opportunities related to VPSI
- Identify needs and develop strategies for system-wide changes that will improve EMS care for vulnerable populations
- Build a sustained approach to career paths in EMS for under-served, vulnerable populations
- Cultivate ongoing partnerships with existing agencies, networks and programs that are serving vulnerable populations in King County, Washington



2014-2019 Strategic Initiatives

Results

- Partnered with School of Public Health undergraduate program to conduct outreach and education regarding the use of 9-1-1 in Somali, Chinese and Cambodian communities. Two students created language specific 9-1-1 education videos for the Somali and Chinese population.
- Initiated a 9-1-1 education and outreach effort in senior centers across King County with School of Public Health undergraduates.
- Completed a nine-month pilot program with the Seattle Fire Department and Aging and Disabilities Services to enhance reporting of vulnerable adults at risk for elder abuse, improve connections to needed services and collect information to better understand their needs.
- Initiated a nine-month pilot program with the Shoreline Fired Department, the Center for Human Services, and other local providers to improve the coordination of care for patients with mental health and/or substance abuse illness.
- Partnered with the Seattle Office of Emergency Management to conduct emergency preparedness and 9-1-1 education and outreach in targeted immigrant communities.
- Initiated a partnership with the Tukwila School District to conduct CPR training for English Language Learners in the Nepali and Burmese student population with the intent to expand to Somali, Vietnamese and Latino students.
- Coordinated with other regional efforts, specifically the King County Health and Human Services Transformation Plan, to align efforts.



2014-2019 Strategic Initiatives

Next Steps

Continue to develop and implement specific pilot projects based on identified vulnerable populations.

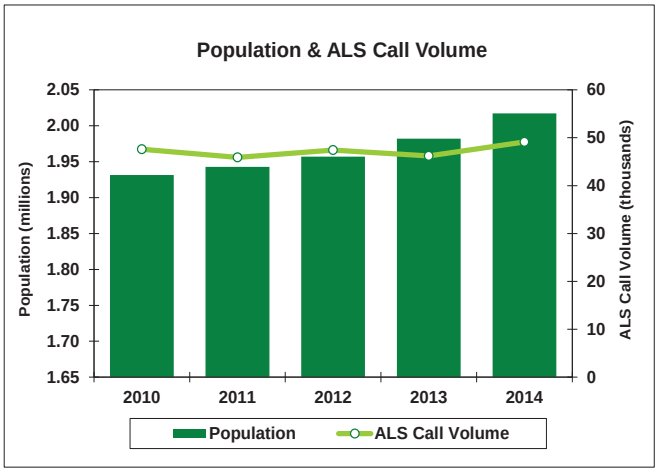
- Begin evaluations of 9-1-1 outreach and education efforts in targeted communities, including implications for regional expansion.
- Continue to coordinate with other regional efforts.

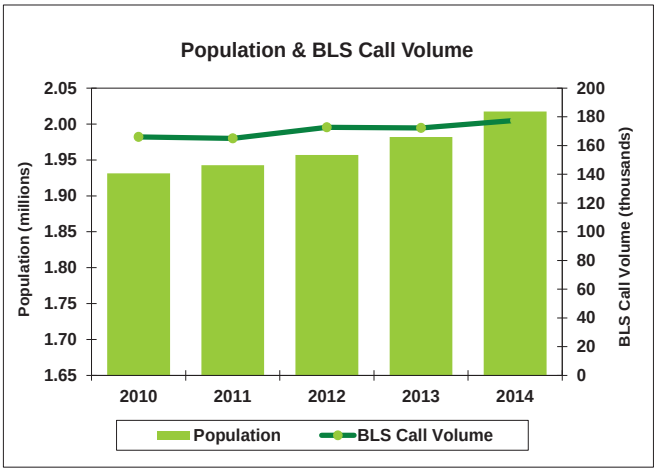
2016 Project Work Plan		
EMS Agency Projects	Community Projects	LEP Community
Seattle FD: Elder Abuse and Neglect	9-1-1/CPR Training and Education in Senior Centers	Somali Community: Dispatch, At-Scene, Community Referral, Work Force
Shoreline FD: Patients with Mental Health/Substance Abuse Illness	CPR Training for At-Risk and LEP Youth	Chinese + Cambodian + Vietnamese: Dispatch, At-Scene
Fire District #20: Partner with Somali Community	Seattle OEM Outreach and Education	New: Korean Community: Dispatch, At-Scene
South King Fire: At-Risk Fallers	New: Ethnic Media	New: Latino Community: Dispatch, At-Scene, Community Referral, Work Force
New: Kent Regional Fire Authority: Translation Services At Scene	New: 9-1-1/CPR Training and Education in ESL Classes	New: Russian Community: Dispatch, At-Scene, Community Referral, Work Force
	New: Dispatch Training on LEP Communication	

Summary of 2014 EMS Statistics (Seattle and King County)*

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%
2014	2,017,250	1.11%

Population has historically been closely correlated to EMS growth. The rate of population growth in King County is recovering from the recessional decline. The two graphs below depict the population growth relative to both ALS and BLS call volume patterns and reflect call volumes starting to respond to the increased population. Note that the scales for population and call volumes are different in the tables below.

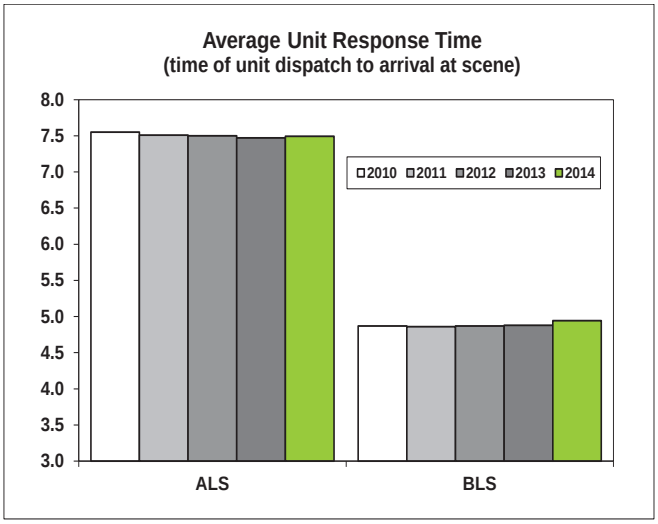




Response times are defined as follows:

Total - the time of call received at dispatch center to the time of arrival at the scene

Unit - the time of unit dispatch to time of arrival at the scene

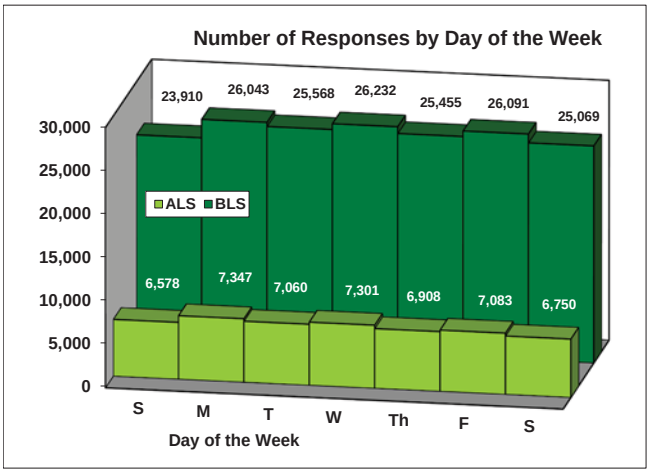


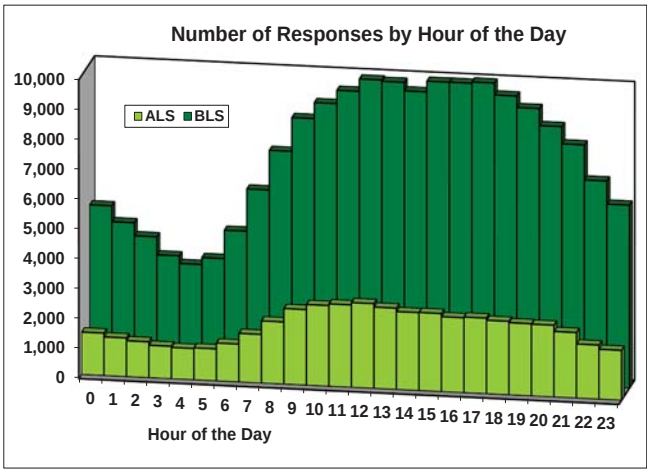
*EMS data uses a fully integrated King County and Seattle dataset. In some instances, totals differ due to missing values.

Characteristics of Responses

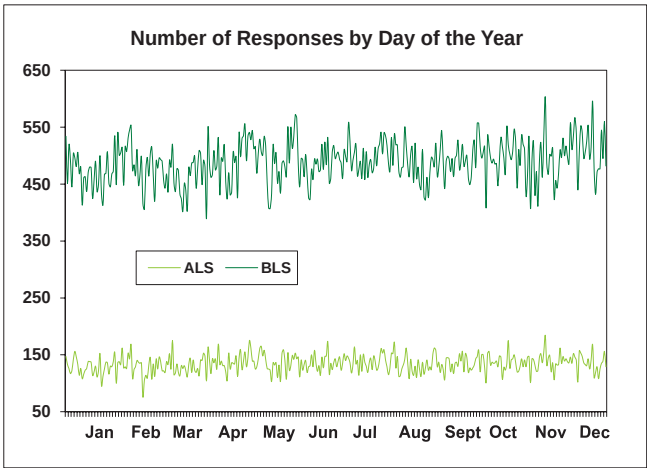
Operations

Service	ALS		BLS	
Number of Responses	49,135		177,491	
	Total RT	**Unit RT**	**Total RT**	**Unit RT**
Average Response Time	11.3	7.5	5.7	4.9
6 minutes or less			67.9%	76.0%
8 minutes or less	33.4%	64.2%		
10 minutes or less	51.5%	81.1%		
12 minutes or less	64.9%	90.4%		
14 minutes or less	74.3%	94.9%		
Cancelled Enroute Calls	9,828 (20.0%)		6,196 (3.5%)	





The average BLS unit response time has remained the same from last year indicating a stable environment. Average ALS response times also follow the same pattern. 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. As indicated in the Day of Year graph, there is a notable difference in range of BLS responses per day over time (~375-600 calls) in comparison to ALS responses (~100-150 calls).

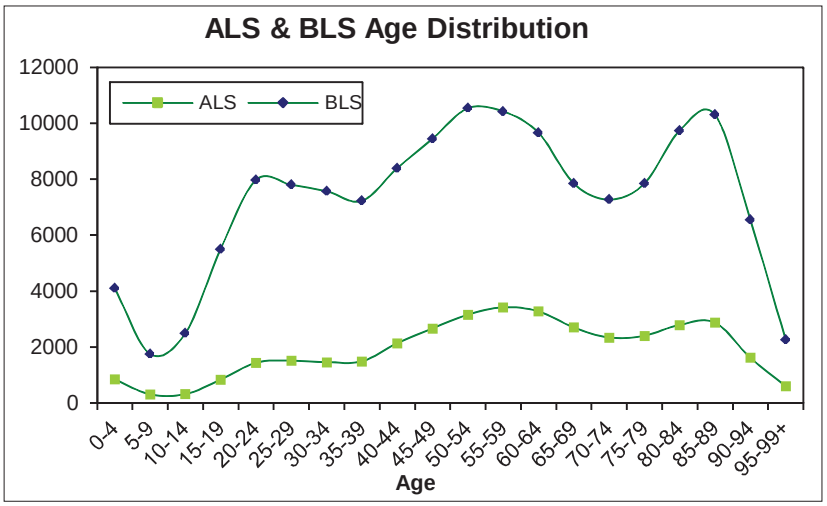


Characteristics of Responses

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	853 (2.2%)	3,849 (2.4%)
5-9 yrs	376 (1.0%)	1,996 (1.3%)
10-17 yrs	818 (2.1%)	5,401 (3.4%)
18-24 yrs	1,824 (4.7%)	10,928 (6.9%)
25-44 yrs	7,017 (18.0%)	34,004 (21.6%)
45-64 yrs	12,867 (33.0%)	43,777 (27.8%)
65-84 yrs	10,540 (27.0%)	36,828 (23.4%)
85+ yrs	4,712 (12.1%)	20,730 (13.2%)
Total	**39,007**	**157,513**

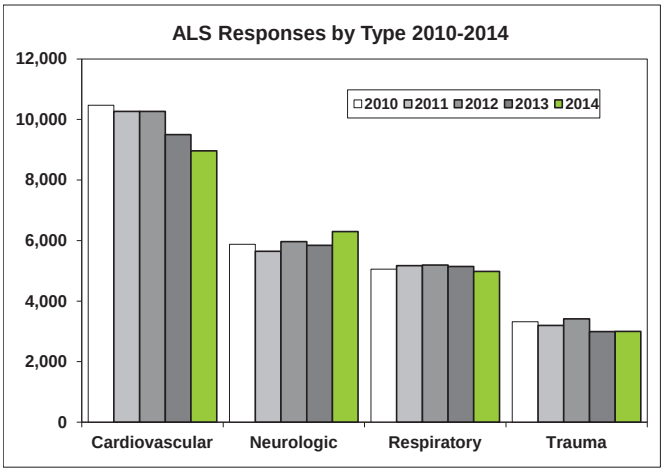


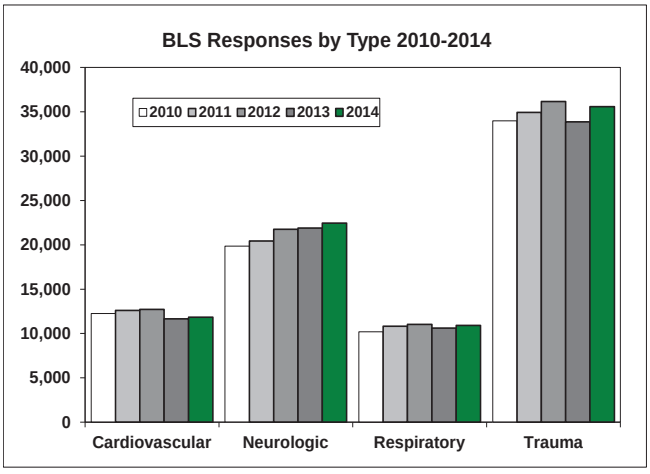
Characteristics of Responses

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 diagnosis and management.

Responses by Medical Type

	ALS	BLS
Cardiovascular	8,961 (24.3%)	11,843 (8.2%)
Neurologic	6,295 (17.1%)	22,449 (15.6%)
Respiratory	4,983 (13.5%)	10,912 (7.6%)
Trauma	3,001 (8.1%)	35,570 (24.8%)
Abdominal/Genito-Urinary	2,111 (5.7%)	12,543 (8.7%)
Alcohol/Drug	1,696 (4.6%)	7,905 (5.5%)
Metabolic/Endocrine	1,278 (3.5%)	3,404 (2.4%)
Psychiatric	1,191 (3.2%)	8,107 (5.6%)
Anaphylaxis/Allergy	511 (1.4%)	1,240 (0.9%)
Obstetric/Gynecological	401 (1.1%)	1,120 (0.8%)
Other Illness	6,386 (17.4%)	28,606 (19.9%)
Total Medical	**36,814**	**143,699**





Characteristics of Responses

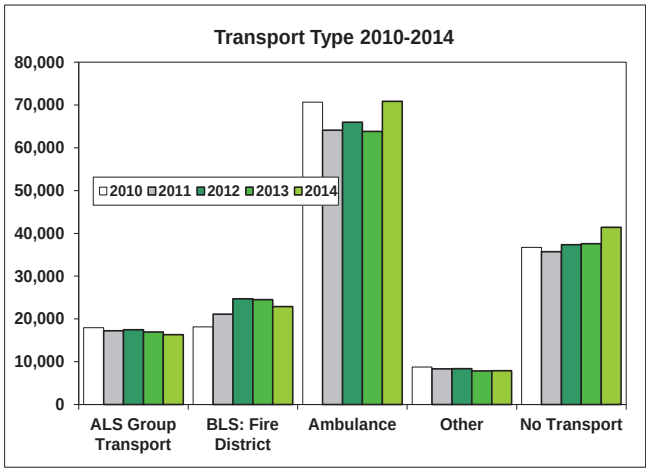
Similar to the variation reflected in the types of responses EMS agencies provide, EMS personnel respond to a variety of physical settings, again requiring a versatility of skills. For example, providers may respond to settings where they need to interact with other medical professionals or need to deliver 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.

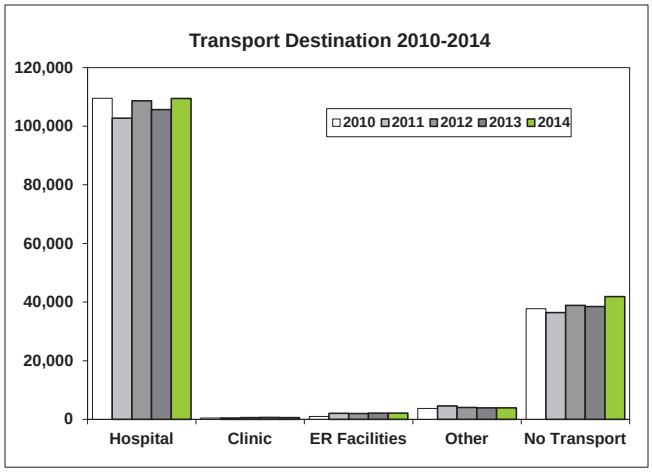
Incident Locations

Incident Locations	ALS	BLS
Home/Residence	22,292 (58.4%)	74,688 (54.0%)
Nursing Home/Adult Family Home	3,837 (10.0%)	13,337 (9.6%)
Clinic/MD Office	1,923 (5.0%)	3,703 (2.7%)
Other/Unknown Location	10,139 (26.5%)	46,639 (33.8%)
Total	**38,191**	**138,367**

Transport Type and Destinations

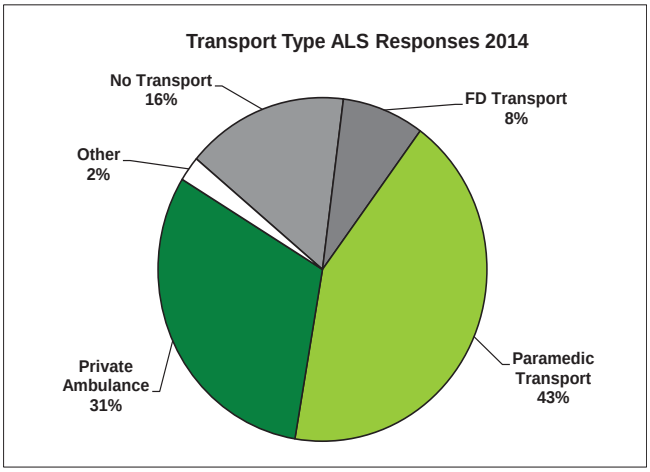
An important component of providing EMS care is appropriate triage. EMS personnel use their skills and knowledge to match the clinical need of the patient with the most appropriate transport and destination plan. The figures below reflect the transport trends over the past five years.

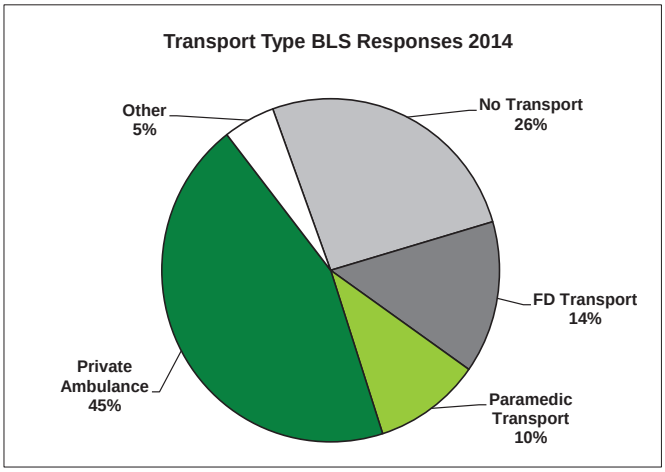




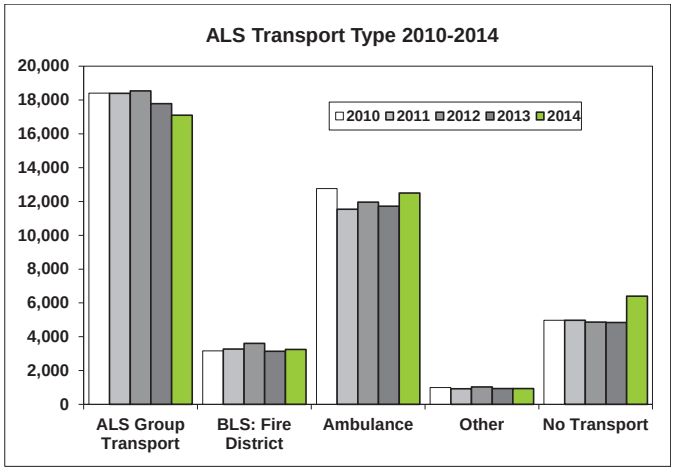
Characteristics of Responses

Transport Type			Transport Destination	
ALS Transport	16,266 (10.2%)			
ALS Air	53 (0.0%)		Hospital	109,449 (69.3%)
BLS - Fire District	22,874 (14.4%)		Clinic	612 (0.4%)
BLS - Ambulance	70,855 (44.5%)		ER Facility	2,108 (1.3%)
Other	7,913 (4.9%)		Other	3,948 (2.5%)
No Transport	41,404 (26.0%)		No Transport	41,853 (26.5%)
Total	**159,365**		**Total**	**157,970**





ALS Transport Type	
ALS Transport	17,043 (42.4%)
ALS Air	58 (0.1%)
BLS - Fire District	3,246 (8.1%)
BLS - Ambulance	12,496 (31.1%)
Other	939 (2.3%)
No Transport	6,397 (15.9%)
Total	**40,179**



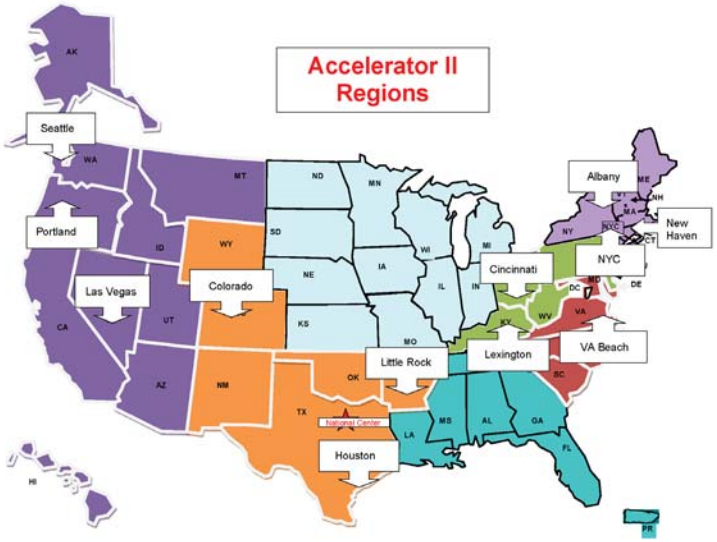
Public Health Highlight:
Introducing the STEMI Accelerator II Project

Background

The most severe type of heart attack — called ST-Elevation Myocardial Infarction (STEMI) — occurs when a coronary artery becomes completely blocked. Unless the blood flow is restored quickly, patients could face permanent heart damage, or even death.

The rapid and effective restoration of arterial blood flow relies not only on the patient recognizing the symptoms and seeking emergency medical treatment, but also on a coordinated system of care designed to best respond to such a patient. Since its inception in 2008, the Comprehensive Heart Attack Surveillance and Evaluation (CHASE) program has worked to assess and improve the overall STEMI system of care in King County, and more specifically, the role that EMS plays within that system. The goal of CHASE is to ensure the optimal treatment for any individual that suffers a heart attack in King County, regardless of where that heart attack occurred. (For more information, see the 2013 EMS Annual report.)

STEMI Accelerator II Project



Seattle/King County EMS received the opportunity in 2015 to participate in a two-year, region-wide effort to take a more comprehensive look at the STEMI systems of care in King and Pierce Counties through the STEMI Accelerator II quality improvement and implementation research project. This project is offered by a special grant provided through a partnership between the Duke University Clinical Research Institute and the American Heart Association: Mission Lifeline, and builds upon the success of the first STEMI Accelerator Regional Systems of Care Demonstration Project[1]. As one of the 12 regions in the United States selected for participation, Seattle/King EMS will analyze the care provided in the field for STEMI patients while partnering with hospitals to track patient treatment and health outcomes.

The STEMI Accelerator II project aims to ensure that regional processes for STEMI patient care are working as efficiently and effectively as possible while improving the health outcomes of patients treated for STEMI in King and Pierce Counties. The project provides a framework for common data collection, data sharing, ongoing feedback, and quality improvement between EMS providers, referral hospitals, receiving hospitals, and other community stakeholders. Additionally, efforts will focus on clinical outcomes, including the identification of patients at high risk for readmission plus implementation of best practices to reduce 30-day hospital readmission, rates and improve one-year medication adherence. Results of this intense focus will be shared not only within the healthcare community, but also through future national publications and forums for scientific and evidence-based quality improvement.

References:
1. Bagai A, Al-Khalidi HR, Sherwood MW, et al. Regional Systems of Care Demonstration Project: Mission: Lifeline STEMI Systems Accelerator: Design and Methodology. Am Heart J. 2014; 167:14-21.e3.

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 EMS-treated cardiac arrests for patient 2 years of age and older due to all causes except trauma. Survival is defined as discharge from the hospital alive.

Total Number of Cardiac Arrests for which resuscitation was attempted:

Year	2010	2011	2012	2013	2014
Cardiac arrests	1,069	1,047	1,134	1,135	1,246

2014 Highlight: Survival to Hospital Discharge Based on Arrest Before or After Arrival of EMS Personnel and Initially Monitored Cardiac Arrest Rhythm:

	Number treated	Number Survived To Hospital Discharge	Percent Survived
Arrest Before Arrival of EMS:	1,103	219	19.9%
Ventricular Fibrillation/ Tachycardia (VF/VT)	306	141	46.1%
Asystole	451	12	2.7%
PEA	237	47	19.8%
Not Shockable, but unknown if PEA or asystole	95	14	14.7%
Unknown	14	5	35.7%
Arrest After Arrival of EMS:	143	48	33.6%
Ventricular Fibrillation/ Tachycardia (VF/VT)	35	20	57.1%
Asystole	23	8	34.8%
PEA	76	18	23.7%
Not Shockable, but unknown if PEA or asystole	6	2	33.3%
Unknown	3	0	0.0%
Total	1,246	267	21.4%

Survival to Hospital Discharge for Arrests due to Heart Disease, Witnessed by Bystanders (Excludes EMS-witnessed), with an Initial Rhythm of Ventricular Fibrillation:

Year	2014	2010-2014
Survival Rate	113/209 (54%)	508/931 (55%)

CPR Initiated by Bystanders, Limited to Arrest Before Arrival of EMS Personnel:

Year	2010	2011	2012*	2013	2014
Bystander CPR	520/946 (55%)	498/919 (54%)	648/983 (66%)	691/1003 (69%)	789/1103 (72%)

*Note: in 2012, King County began reporting this statistic based on review of the dispatch recording, which accounts for the increase compared to previous years.

Cardiac Arrest Highlight: Improving survival through telecommunicator involvement

The first three links in the chain of survival are early access to care, early CPR and early defibrillation. Studies focusing on the importance of early CPR and early defibrillation have shown that for every minute that passes without chest compressions or a defibrillatory shock, the chance of survival decreases by 7% to 10%. However, this decline decreases to 3% to 4% per minute if bystander CPR is given.

In 2013 and 2014, the median time from receiving the 9-1-1 call to when EMS personnel arrived at the scene for cardiac arrests in King County was 5 minutes and 24 seconds. While this quick rapid response time is remarkable, relying on just EMS providers to initiate CPR and defibrillation means a five and-a-half minute delay in providing these lifesaving interventions during a time when seconds count.

The chain of survival describes the key elements necessary to improve survival from out-of-hospital cardiac arrest.

To get CPR started as rapidly as possible, King County 9-1-1 telecommunicators have been trained to quickly identify cardiac arrest, provide CPR instructions and prompt the caller to apply a defibrillator, if available. Developed by the King County EMS Division, the Telecommunicator-CPR course provides a comprehensive training to dispatchers in rapid recognition of cardiac arrest and timely delivery of telephone CPR instructions. The curriculum promotes recognition of cardiac arrest within one minute of receiving the 9-1-1 call, starting chest compressions within two minutes of the call, and identifying 90% of all cardiac arrests.

The table below shows how CPR was started for all EMS-treated cardiac arrests in 2013 and 2014.

Table 1. Type of CPR provided for all EMS-treated cardiac arrests in King County, 2013-2014

	Telephone-assisted CPR	Unassisted Bystander CPR	EMS CPR
Number (%)	640 (40%)	413 (26%)	569 (34%)
Median time from 9-1-1 call to the start of CPR	2:39	N/A*	6:24**
Public defibrillator applied, N	6	33	N/A
Survived to hospital discharge, %	21%	21%	22%
Witnessed VF/VT, survived to hospital discharge, %	56%	62%	50%

* 1:43 for the 101 incidents in which CPR was started after the call to 9-1-1. CPR was started before the call to 911 in other cases.
** Assumes CPR starts approximately 1 minute after EMS arrives at the scene.

What the data show:

Starting CPR with the assistance of telecommunicators saved nearly 4 minutes of critical time between witnessing a cardiac arrest and the arrival of EMS personnel.

1. The median time from the 9-1-1 call to starting CPR was 2 minutes and 39 seconds when telephone-assisted CPR (T-CPR) was provided, compared to an estimated 6:24 when no bystander CPR was performed.

2. There did not appear to be a difference in survival when looking at all EMS-treated events

3. When limiting cases to witnessed arrests with an initial rhythm of VF or pulseless VT, survival increased from 50% in the no bystander CPR group to 56% in the T-CPR group (although this is not a statistically significant difference).

Because administering T-CPR can "bridge" critical time between witnessing a cardiac arrest and the arrival of EMS personnel, why was it not performed in all cases in which a bystander had not already started CPR?

The EMS Division asked this same question and sought to identify factors that prevented or delayed the provision of Telecommunicator CPR. Through their 2012 study, they found that in 13% of calls, the caller was not with the patient, phone contact with the caller was lost, or some other factor interfered with the telecommunicator's ability to properly diagnose a cardiac arrest. When the telecommunicator was able to assess the patient, a cardiac arrest was correctly diagnosed in 92% of cases. Even in these cases, there were additional complications that prevented the successful provision of T-CPR – in many instances the caller was not able to move the patient into a position that would allow CPR.

The study showed that there were other potentially modifiable factors that, if addressed through proper telecommunicator training, could lead to increases in T-CPR rates. One such effort is the STAT 9-1-1 Study described on page 13, which aims to improve overall call taking skills, particularly the ability to more quickly identify cardiac arrest calls. Another approach is to give telecommunicators individual feedback on each cardiac arrest event. An audio recording of each 9-1-1 call for a cardiac arrest is reviewed and feedback is sent to the telecommunicator involved in the call. These results are also aggregated for each emergency communications center to determine if certain performance measures are achieved on a quarterly basis.

	N	%
Physical limitations – rescuer unable to position the patient for CPR	40	42.6%
Call Circumstances		
EMS arrived before DA-CPR could be performed	15	16.0%
CPR was deemed futile according to the caller's description	6	6.4%
Caller reported that the patient would not have wanted CPR	2	2.1%
Language barrier with caller prevented provision of CPR instructions	2	2.1%
Caller factors		
Caller left the phone and never returned	14	14.9%
Caller refused CPR instructions	4	4.3%
Caller's emotional state prevented provision of CPR instructions	4	4.3%
Technical error with recording – reason could not be assessed	7	7.4%

Table 2. Reasons bystander CPR was not provided in cases where the telecommunicator recognized the arrest

Working in tandem with early CPR is early defibrillator use. For many victims, a shock from an AED is the only chance for survival. However, as Table 1 shows, a defibrillator was applied by a bystander in only 39 cases in 2013 and 2014. This has sparked the EMS Division to pursue a number of strategies to increase early defibrillator use. One method is to work with businesses, schools, and other organizations to register their devices so that telecommunicators can alert callers to the nearest AED location during emergency calls. To date, 3137 devices have been registered throughout Seattle and King County. Another tactic is bringing law enforcement into the EMS "chain of survival" by supplying police with defibrillators and making them the "first responders" to cardiac arrest. This partnership led to an additional 84 instances in 2013 and 2014 in which a defibrillator was applied before EMS personnel arrived at the scene.

It takes time for EMS personnel to arrive at the scene of a cardiac arrest. Strengthening the chain of survival and decreasing the time to CPR and the time to defibrillation requires community involvement. In King County, the telecommunicator has taken the important role of directing this community response.

EMS Funding and 2015 Financial Plan

The Medic One/EMS system is funded by 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.

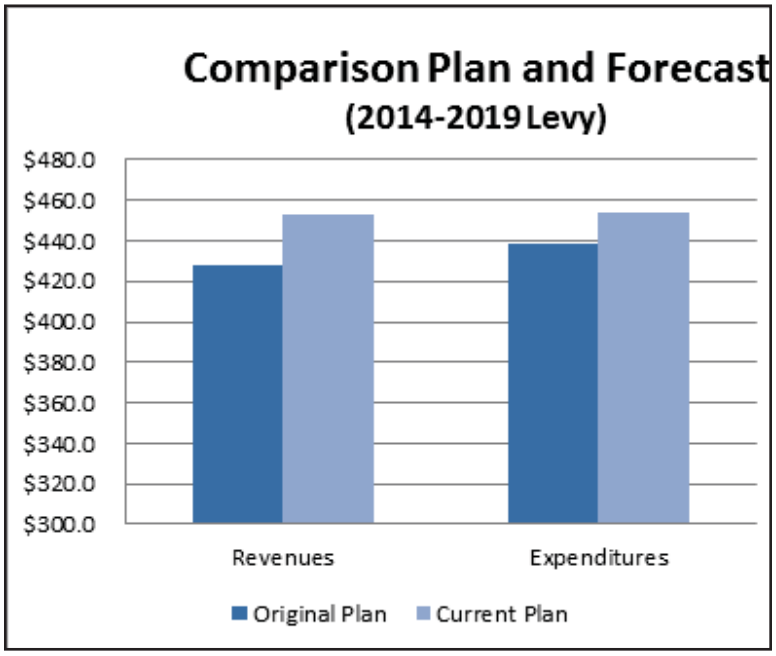
EMS levy funds are collected throughout King County and managed by the EMS Division for the region, based on RCW 84.52.069 Emergency Medical Care and Service levies, and policy guidelines outlined in the 2014-2019 Medic One/ EMS Strategic Plans. King County EMS funds are spent on four main areas: Advanced Life Support (ALS), Basic Life Support (BLS), Regional Support Services, and Strategic Initiatives.

The inter-local agreement between King County and the City of Seattle allows for Seattle to collect and manage EMS levy funds collected within the city.

SUMMARY

Two years into the current levy, both revenues and expenditures are forecasted to be higher than anticipated in the original plan - revenues are up by $21.7 million, and expenditures by $12.4 million. Both of these are due to using conservative financial modeling when developing the 2014-2019 Financial Plan. The increase in forecasted expenditures includes the use of program balances and reserves, which is shown in the Financial Plan in the "Designations and Reserves" line items, rather than in the levy base-line expenditures. More service providers and programs have used, or are planning to use, program balances and reserves because the reduced allocations have left little room for programs to adapt to expenditure challenges.

Although authorized at 33.5 cents per 1,000 Assessed Valuation, the levy rate for 2015 is 30.2 cents per $1,000 Assessed Valuation. This rate means that the average homeowner will pay not quite $115 a year in 2015 for highly trained medical personnel to arrive within minutes of an emergency, any time of day or night, no matter where in King County.



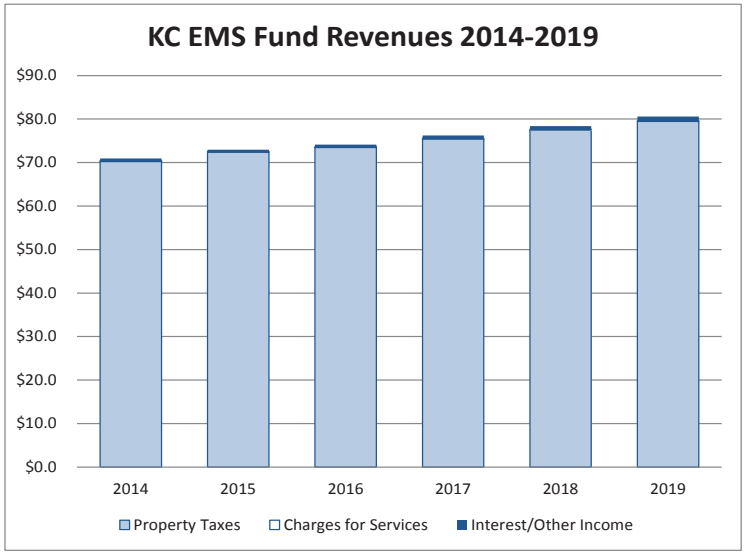
2014-2019*	Original Plan	Current Plan	Difference
Revenues	$427.6	$453.5	$25.9
Expenditures	$438.9	$453.7	$14.8

*Dollars in millions
Includes $12 million in budgeted use of reserves and program balances.

EMS Funding and 2015 Financial Plan

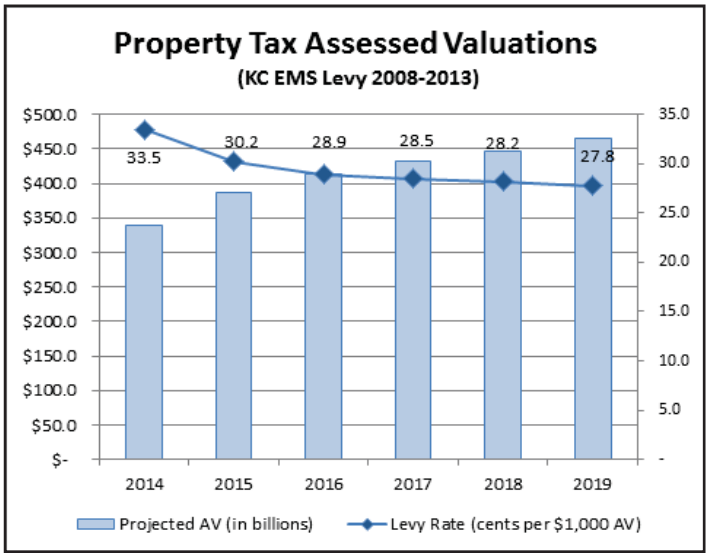
REVENUES

Over 99% of revenue for the EMS levy comes from taxes and associated income related to property taxes (interest income and reimbursements).



REVENUES	2014	2015	2016	2017	2018	2019	Total
Property Taxes	$70.3	$72.4	$73.5	$75.4	$77.5	$79.5	$448.5
Charges for Services	$0.3	$0.2	$0.2	$0.2	$0.2	$0.2	$1.2
Interest/Other Income	$0.6	$0.4	$0.5	$0.6	$0.7	$0.9	$3.7
Total	$71.1	$73.0	$74.1	$76.2	$78.4	$80.6	$453.5
Change		2.8%	1.6%	2.8%	2.7%	2.7%	

Dollars in millions

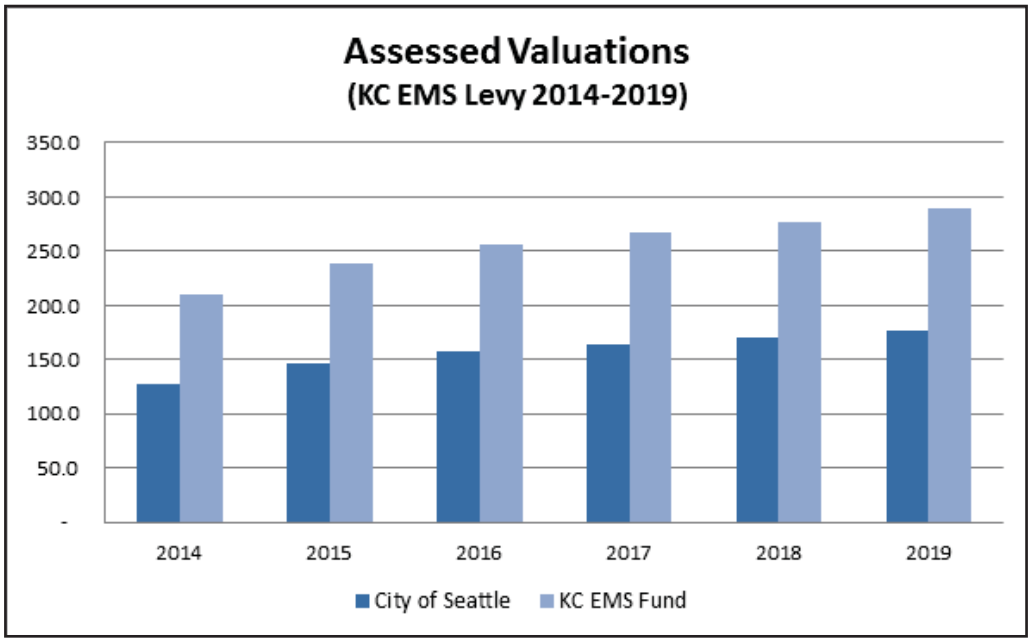


Assessed Valuations (AV)

The economic downturn and depressed Assessed Valuations (AV) from the previous levy span led the 2014-2019 levy rate to begin at 33.5 cents (including a one cent "buy-down" from the 2008-2013 levy). AV is projected to increase at a rate higher than the limit factor of 1% throughout the levy period, which will result in the levy rate decreasing from 33.5 cents/$1,000 AV to 27.8 cents/$1,000 AV in 2019.

EMS Funding and 2015 Financial Plan

2015 brought a significant increase in assessed values, which, for the first time since the economic downturn, exceeded 2008 AV ($340 billion). New construction AV is also projected to grow, but is not anticipated to exceed the high of $8.1 billion from 2009 (the current projected high is $7 billion in 2019). The split between the City of Seattle and the KC EMS fund is not projected to fluctuate much during the 2014-2019 levy.



Taxable Assessed Valuation						
	2014	**2015**	**2016**	**2017**	**2018**	**2019**
City of Seattle	128.2	147.1	157.8	164.4	169.9	177.1
KC EMS Fund	210.6	239.3	256.6	267.6	277.3	288.9
Total	338.8	386.4	414.4	432.0	447.2	466.0
% KC EMS Fund	62.2%	61.9%	61.9%	61.9%	62.0%	62.0%
% City of Seattle	37.8%	38.1%	38.1%	38.1%	38.0%	38.0%
Change in AV		14.0%	7.3%	4.3%	3.5%	4.2%

*Does not include AV related to Milton (Milton receives taxes directly from County)

EMS Funding and 2015 Financial Plan

EXPENDITURES

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

Advanced Life Support (ALS) Services (paramedics):

- Over 60% of EMS expenditures
- Uses a standard unit cost allocation consisting of an operating and equipment allocation
- Allocations increased by a compound inflator that considers the different inflators for labor, pharmaceuticals, equipment and benefits
- Eligible for use of reserves

Basic Life Support (BLS) Services:

- 24% of EMS expenditures
- Distributed to individual agencies based on an allocation that includes the assessed valuation of the district and demand for services (call volume)
- Includes the addition of a BLS Core Services Program beginning in 2015

Regional Support Programs:

- 13% of EMS expenditures
- Supports eight major areas – Professional Standards, Community Programs, Emergency Medical Dispatch, Operations, Regional Medical Control/QI, Management & Finance, Infrastructure, and Overhead and Indirect costs
- Allocation increased by CPI inflator
- Eligible for use of reserves

Strategic Initiatives:

- 1% of EMS expenditures
- Funded with lifetime budgets (budgeted amount by year is adjusted to reflect changing cash flows based on project needs
- Includes carryover of SEND, and Emergency Medical Dispatch initiatives from the 2008-2013 levy period

In addition to these four main areas, other important line items are:

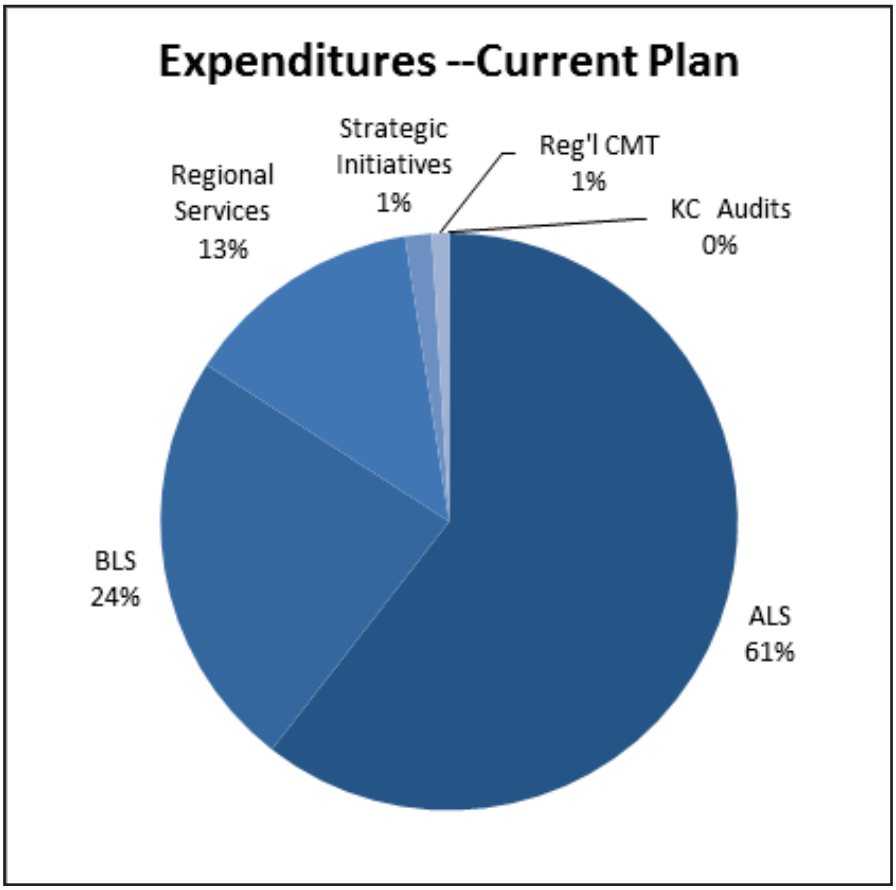
Community Medical Technician (CMT) Units:

- 1% of EMS expenditures
- New for 2014-2019 levy period

Audits:

- .1% of EMS expenditures
- Financial review and audits by the King County Auditor's office complement and augment the oversight and accountability of the King County EMS Fund.

EMS Funding and 2015 Financial Plan



2015 snapshot of the 2014-2019 levy

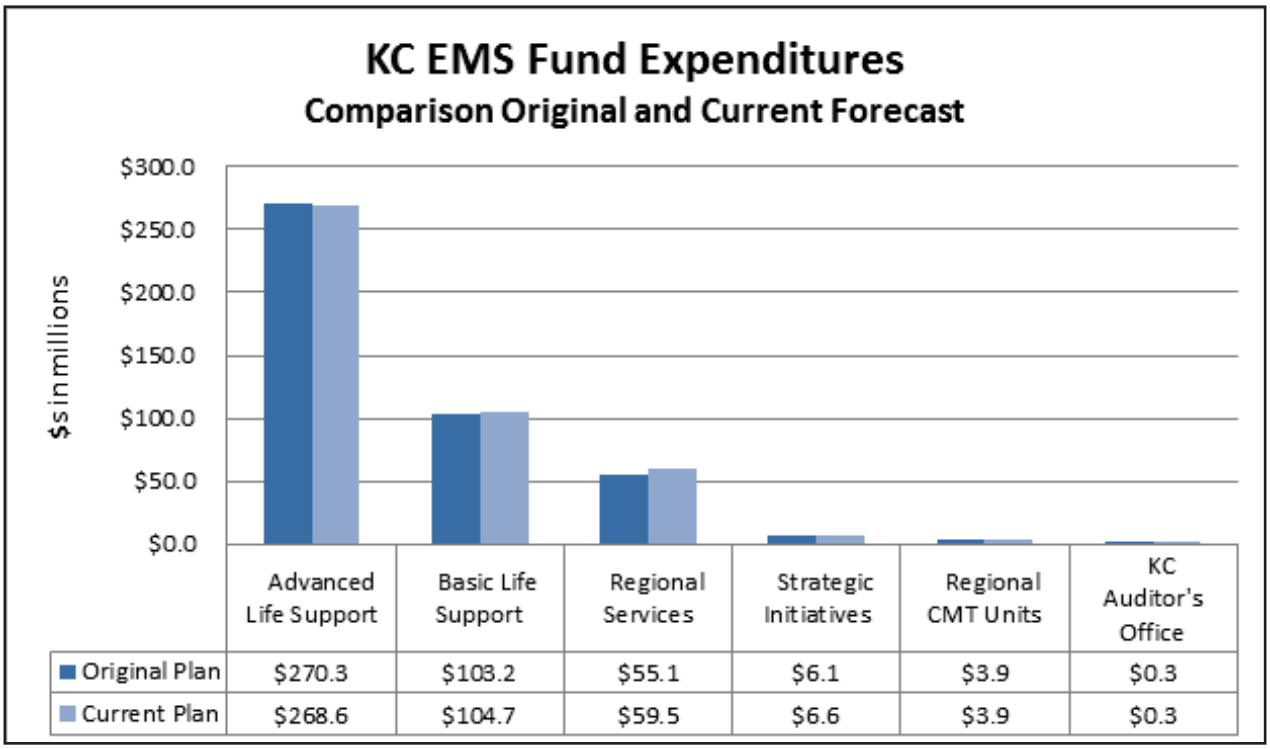
Program Areas	Current Plan	%
Advanced Life Support (ALS)	$268.6	61%
Basic Life Support (BLS)	$104.7	24%
Regional Services	$59.5	13%
Strategic Initiatives	$6.6	1%
Regional CMT	$3.9	1%
King County Audits	$0.3	0%
Total	**$443.6**	**100.0%**

EMS Funding and 2015 Financial Plan

Overview of Expenditure Areas

The main focus of the levy continues to be on fully funding ALS units. BLS expenditures were projected to be proportional to the previous levy. The Regional Services portion of the total levy expenditures increased due to incorporating previous successful Strategic Initiatives into ongoing core programs. While program area allocations are down due to lower than projected economic indices (particularly CPI-W), overall program expenditures are projected to be 1% higher due to a number of reasons:

- Lowered allocations and increased costs have led to ALS providers and Regional Services needing to access reserves and designations;
- The BLS allocation was supplemented in 2014 so allocations would not be less than 2013;
- The new BLS Core Services program (see page 26) was added to supplement the BLS allocation; and
- Strategic Initiatives supporting the SEND project and Emergency Medical Dispatch were carried over from the 2008-2013 levy to the current levy.



	Advanced Life Support	Basic Life Support	Regional Services	Strategic Initiatives	Regional CMT Units	KC Auditor's Office
Original Plan	$270.3	$103.2	$55.1	$6.1	$3.9	$0.3
Current Plan	$268.6	$104.7	$59.5	$6.6	$3.9	$0.3

EMS Funding and 2015 Financial Plan

Strategic Initiatives

The 2014-2019 Strategic Plan contains five Strategic Initiatives. Three are newly initiated - the Regional Records Management System, the BLS Lead Agency, and the Vulnerable Populations Initiative – and two are revised versions from the previous levy – BLS Efficiencies and the EMS Efficiency & Effectiveness Studies. In addition, funding from two 2008-2013 levy period initiatives (Emergency Medical Dispatch and System-wide Enhanced Network Design) has been carried over into the current levy.

	2014 Actuals	2015 Forecast	2016 Forecast	2017 Forecast	2018 Forecast	2019 Forecast	Total Lifetime Forecast
STRATEGIC INITIATIVES - 2014-2019							
Reg'l Records Management System	33,750	148,500	157,771	164,000	171,299	179,391	854,711
BLS Lead Agency			197,372	415,046	427,640	440,820	1,480,878
Vulnerable Population	80,148	225,000	299,737	301,850	311,230	315,684	1,533,649
BLS Efficiencies	8,389	25,000	54,700	106,532	112,532	114,911	422,064
Efficiency & Evaluation Studies	42,472	100,000	363,740	419,654	426,654	430,391	1,782,911
Total 2014-2019 SIs	164,759	498,500	1,073,320	1,407,082	1,449,355	1,481,197	6,074,213
STRATEGIC INITIATIVES - 2008-2013							
Emergency Medical Dispatch (EMD)	77,523	173,411	100,000	44,400			395,334
Enhanced Network Design (SEND)	68,960	100,900					169,860
Total 2008-2013 SIs	146,483	274,311	100,000	44,400			565,194
TOTAL STRATEGIC INITIATIVES	**311,242**	**772,811**	**1,173,320**	**1,451,482**	**1,449,355**	**1,481,197**	**6,639,407**

EMS Funding and 2015 Financial Plan

Reserves:

Reserves were added and further refined during the 2008-2013 levy span. For the 2014-2019 levy period, they were collapsed into four ALS reserves – ALS Capacity, ALS Equipment, ALS Operational, and ALS Risk Abatement – along with a Community Medical Technician (CMT) reserve and a cash flow reserve. As outlined in the Strategic Plan, Regional Services may access the ALS Operational Reserve to cover those expenses that are higher than anticipated. In 2014, a Rate Stabilization reserve, similar to the millage reduction reserve in the previous levy, was added. In addition, a designation of $230,842 from previous levy periods exists that could be used at the discretion of the EMS Division Director.

All Use of Reserves are reviewed and recommended by the EMS Advisory Committee (EMSAC) Financial Subcommittee and reviewed by EMSAC.

2014-2019 Reserves	2014	2015	2016	2017	2018	2019
ALS Capacity Reserves	(1,067,700)	(1,067,700)	(1,067,700)	(1,067,700)	(1,985,700)	(3,358,700)
ALS Equipment Reserve	(488,900)	(488,900)	(488,900)	(488,900)	(488,900)	(488,900)
ALS Operational Reserve*	(981,900)	(981,900)	(981,900)	(981,900)	(981,900)	(981,900)
ALS Risk Abatement Reserve	(1,510,000)	(1,510,000)	(1,510,000)	(1,510,000)	(1,510,000)	(1,510,000)
CMT Unit Reserve	0	(363,546)	(704,299)	(679,502)	(1,104,770)	(1,091,217)
Cash Flow Reserve	(4,795,426)	(8,791,644)	(7,133,906)	(6,373,589)	(5,529,515)	
Rate Stabilization Reserve**	(5,114,510)	(5,114,510)	(5,114,510)	(5,114,510)	(5,114,510)	(5,114,510)
TOTAL RESERVES	**(19,108,422)**	**(18,318,200)**	**(17,001,215)**	**(16,216,101)**	**(16,715,295)**	**(12,545,227)**

*Can also be used by Regional Services to cover increased infrastructure, indirect and overhead costs.

** Similar to Millage Reduction Reserve in 2008-2013 levy

Use of Reserves/Designations	2014
ALS Operating Reserve	
Excess Paid Time Off (PTO)	214,000
Regional Services	306,261
Subtotal	520,261
Designations	
Supplement BLS Allocation	219,144
Subtotal	219,144
TOTAL	**739,405**

EMS Funding and 2015 Financial Plan

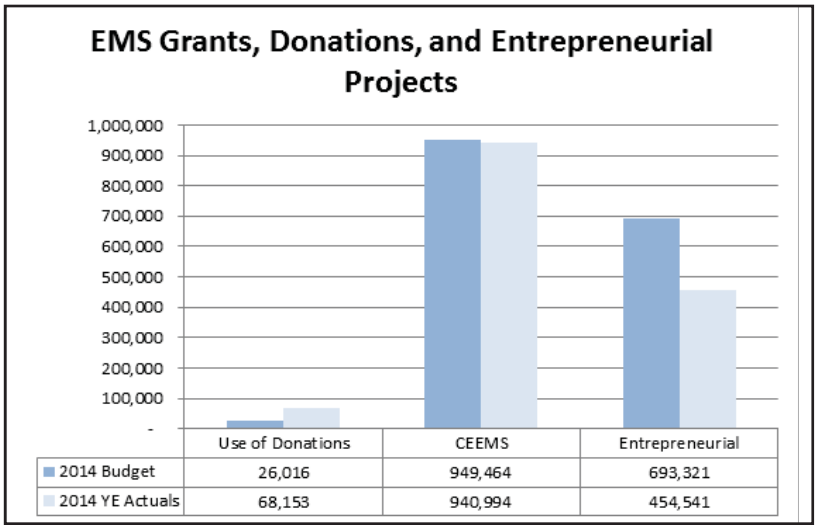
EMS Grants, Donation, and Entrepreneurial Projects (Public Health Fund)

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 highly successful in competing for research grants. This group concentrates 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 largest grant in 2014 was a five-year $1.3 million grant from the Medtronic Foundation awarded in 2011 to implement the HeartRescue Flagship Program. This program improves outcomes from sudden cardiac arrest throughout Washington state by focusing on community, pre-hospital, and hospital response levels of care. A Life Sciences Discovery Fund grant started in 2009 concluded in 2014. It supported the Program to Integrate Technology and Cardiac Arrest Resuscitation (PITCAR). PITCAR includes a collection of projects aimed at developing and advancing new technologies to improve the treatment of out-of-hospital cardiac arrest. For more information, visit: http://www.kingcounty.gov/healthservices/health/ems/ceems.aspx

The EMS Online Entrepreneurial Project provides online training to agencies outside King County as a subscription service. 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.

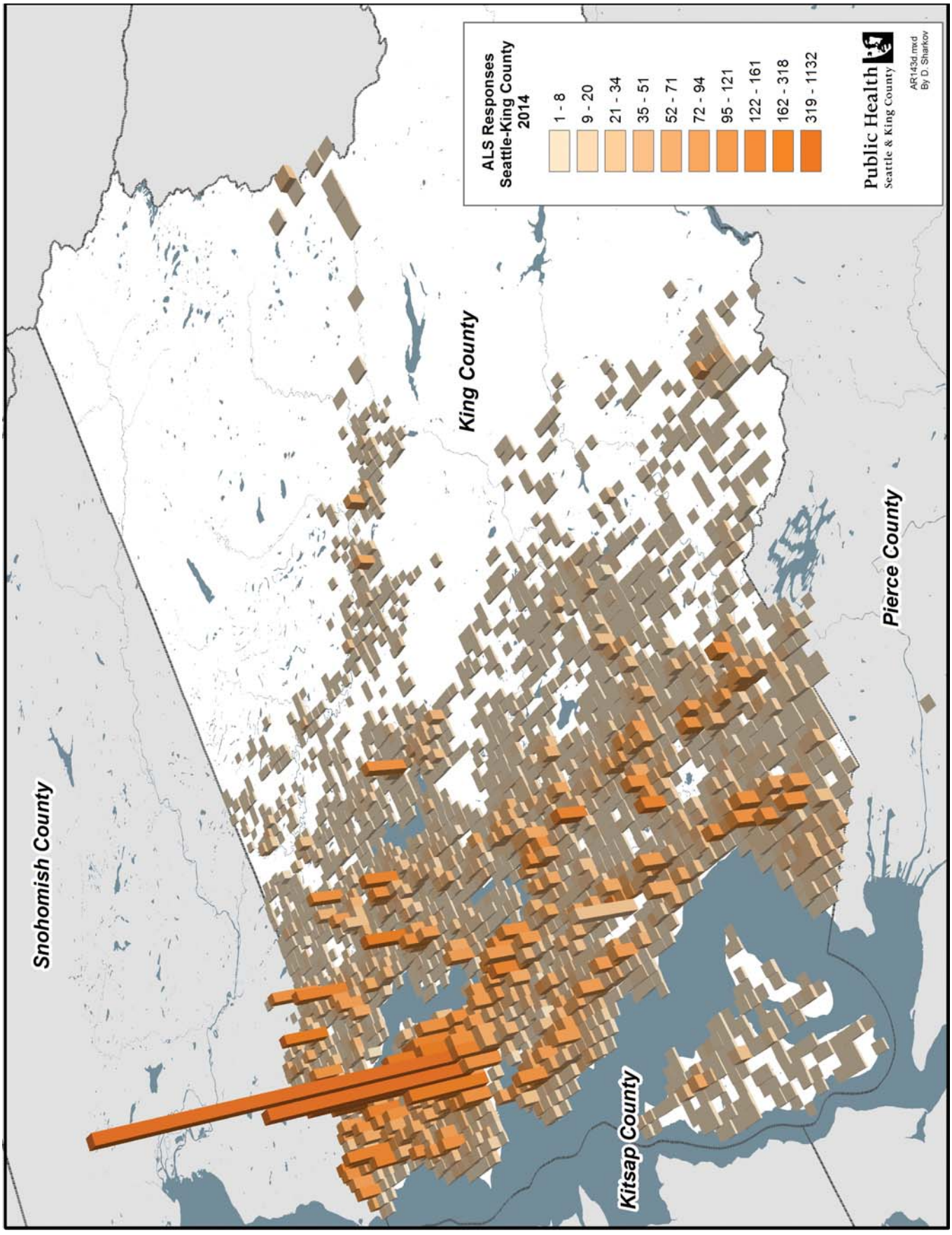
King County Medic One may receive donations from private citizens. In 2014, donations were used to purchase equipment for the agency's new training space in Kent. While KCM1 invested more donations than originally anticipated and budgeted in the training equipment, donations fully funded these purchases.



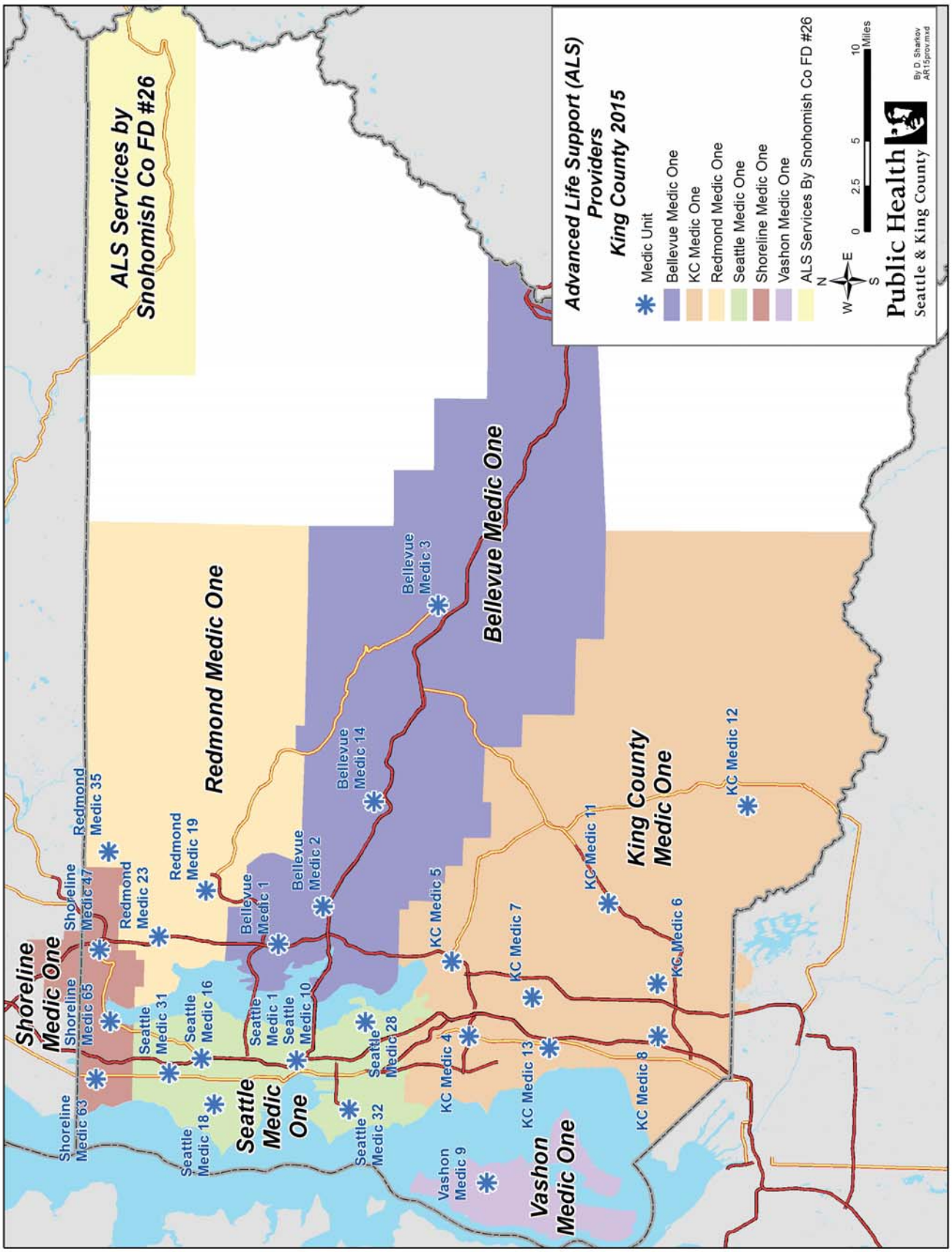
Conclusions

A theme that has emerged recently is that expenses are increasing at a greater rate than allocations. While this may require accessing reserves to cover expenses, it is important to note that the Financial Plan contains sufficient reserves to cover these types of situations. The region continues to work together to manage expenses, review and recommend prudent use reserves, and manage the overall health of the EMS Fund.

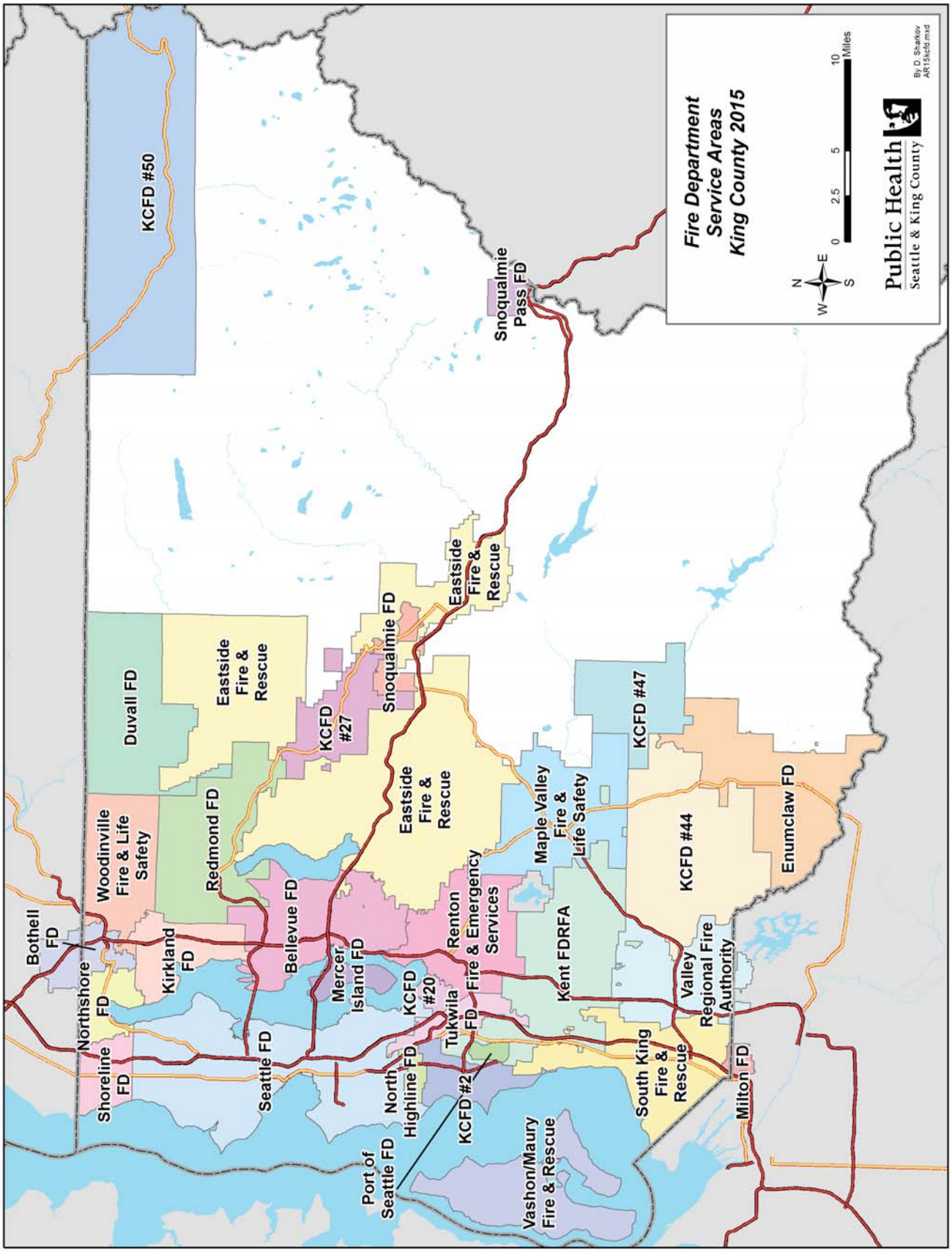
Appendix A: Regional Map of 2014 Total ALS Call Volume



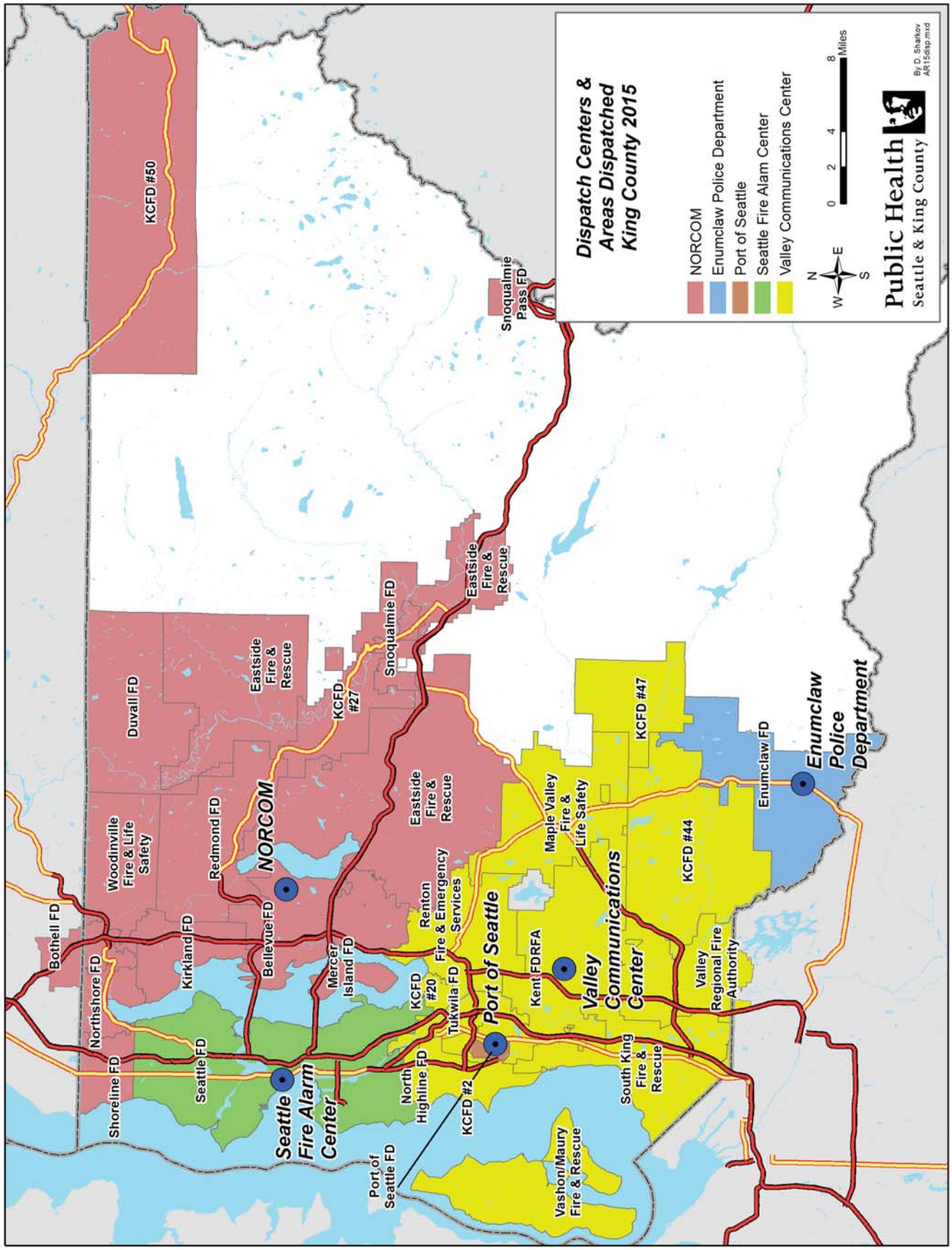
Appendix B: Regional Map of ALS Provider Areas



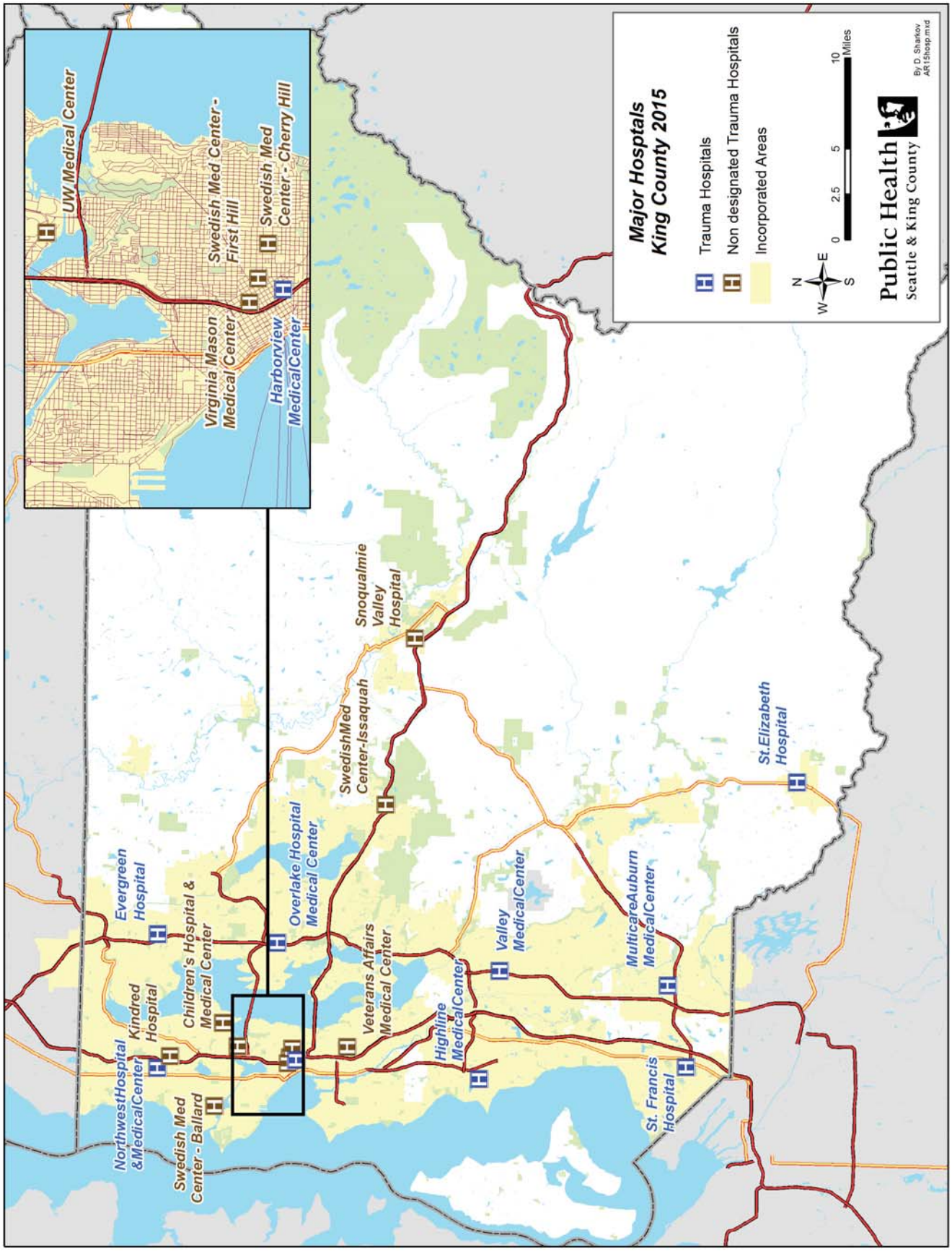
Appendix C: Regional Map of BLS Provider Areas



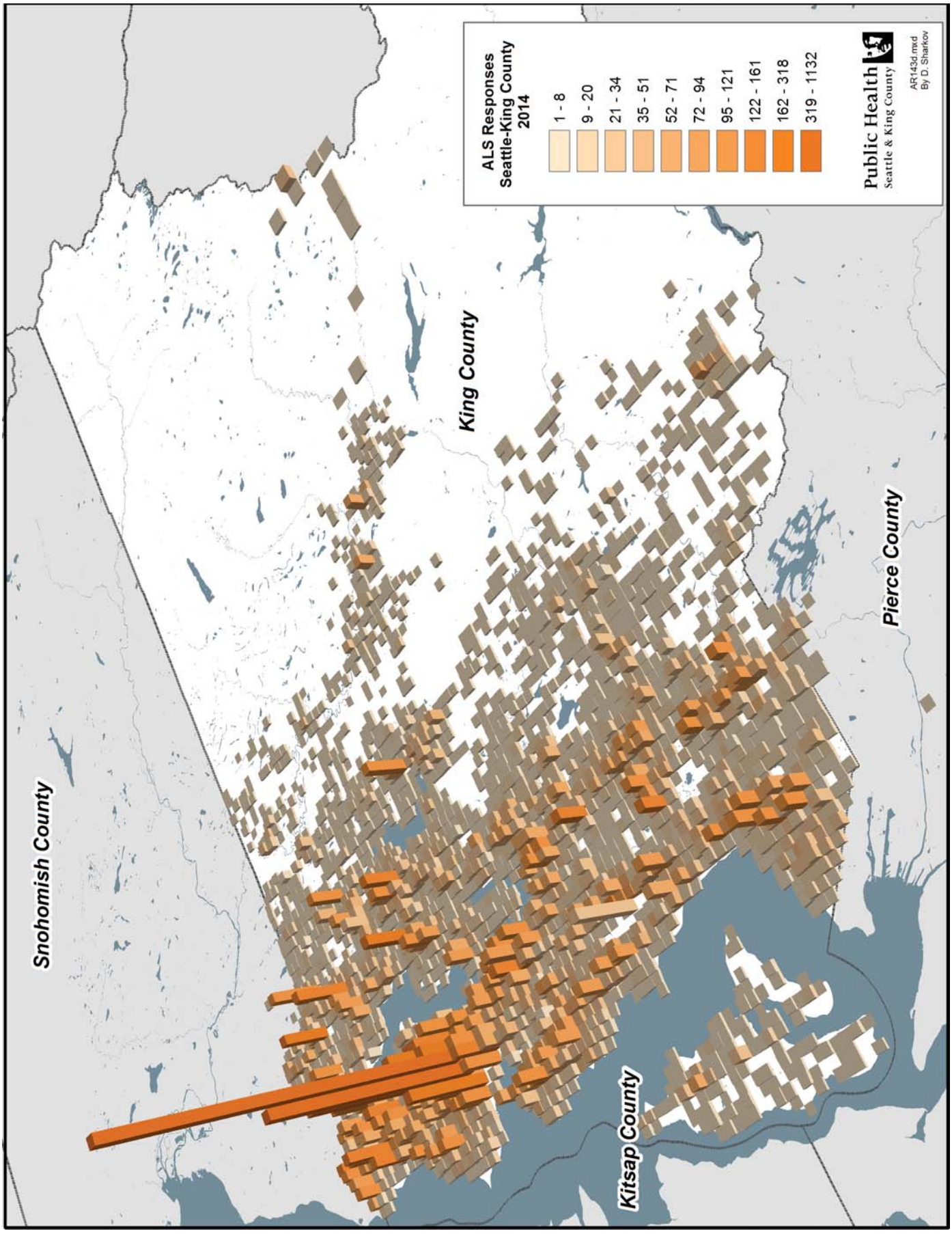
Appendix D: Regional Map of Dispatch Center Service Areas



Appendix E: Regional Map of EMS Hospitals



Appendix F: Map of Public Access AEDs



Appendix G: 2015 EMS Advisory Committee Listing

Name	Representation	Title/ Organization
Jim Fogarty, Chair	KC Emergency Medical Services	Director, KC EMS Division
Patty Hayes	Public Health - Seattle & King Co.	Interim Director Public Health
Matt Cowan	ALS Providers – Shoreline	Chief, Shoreline Fire Department
Harold Scoggins	ALS Providers – Seattle	Chief, Seattle Fire Department
Mark Risen	ALS Providers – Bellevue	Chief, Bellevue Fire Department
John Herbert	ALS Providers - KC Medic One	Chief, King County Medic One
Tommy Smith	ALS Providers - Redmond	Chief, Redmond Fire Department
Hank Lipe	ALS Providers - Vashon Medic One	Chief, Vashon Island Fire & Rescue
Al Church	BLS in Cities > 50,000	Chief, South King Fire & Rescue
Kevin Nalder	BLS in Cities > 50,000	Chief, Kirkland Fire Department
Mark Peterson	BLS in Cities > 50,000	Chief, Renton Fire and Emergency Services
Jim Schneider	BLS in Cities >50,000	Chief, Kent Fire & Life Safety
Brent Swearingen	BLS in Cities > 50,000	Deputy Chief, Valley Regional Fire Authority
Dr. Michael Sayre	Seattle Medical Program Director	Medical Program Director, Seattle
Dr. Mickey Eisenberg	EMS Medical Program Director	Medical Program Director
Dr. Tom Rea	Chair, Medical Directors' Committee	Medical Director, KCM1
Jon Kennison	KC Fire Commissioner's Assn. - Rural	Fire Commissioner, Shoreline
John Rickert	KC Fire Commissioner's Assn. - Urban	Fire Commissioner, South King Fire & Rescue
Doug McDonald	Labor – BLS	EMT, Renton Fire Department
Steve Perry	Labor - ALS	Paramedic, KC Medic One
Lora Ueland	Dispatch	Valley Communications Center, Director
Brandt Butte	Ambulance, General Manager	American Medical Response, Seattle
Wayne Corey	Citizen Representative	

Appendix H: EMS FUND 1190 Revenue/Expenditures Summary

	2014 Actuals	2015 Estimate	2016 Estimate
BEGINNING FUND BALANCE	34,911,888	39,515,583	39,948,467
REVENUES			
Property Taxes	70,300,059	72,366,548	73,470,403
Grants	1,473	1,473	1,473
Intergovernmental Payment	-	0	-
Charges for Services	251,047	197,765	197,942
Interest Earnings/Miscellaneous Revenue	534,755	373,725	457,200
Other Financing Sources	56,358	23,099	12,000
EMS REVENUE TOTAL	71,143,692	72,962,610	74,139,018
EXPENDITURES			
Advanced Life Support Services	(42,155,732)	(44,164,258)	(44,162,517)
Basic Life Support Services	(15,871,030)	(16,157,442)	(16,388,494)
Regional Services	(8,460,204)	(9,851,922)	(9,830,545)
Strategic Initiatives	(311,242)	(906,823)	(1,159,912)
Regional CMT Units		(324,127)	(1,086,767)
King County Auditor's Office		(90,000)	
Use of Designations/Program Balances1		(125,154)	(1,304,520)
Use of Reserves[1]		(160,000)	(1,117,000)
BLS Core Services Support Contingency		(750,000)	(750,000)
EMS EXPENDITURE TOTAL	(66,798,208)	(72,529,726)	(75,799,756)
Difference Revenues & Expenditures	4,345,484	432,884	(1,660,738)
Other Fund Transactions	258,211		
ENDING FUND BALANCE	39,515,583	39,948,467.02	38,287,729.17
RESERVES AND DESIGNATIONS			
Designations (incl Program Balances)	(10,194,974)	(9,119,820)	(7,253,741)
Reserves[2]	(19,108,422)	(18,318,200)	(17,001,245)
TOTAL RESERVES AND DESIGNATIONS	(29,303,396)	(27,438,020)	(24,254,986)
ENDING UNDESIGNATED FUND BALANCE	10,212,187	12,510,447	14,032,743
[1] Forecast Use of Program Balances & Reserves included in program line items for 2015			
[2] For detail on reserves see Financial Section			

King County Medic One Donations

Fund 6980/21800/DEP0023	2013	2014
Beginning Balance	35,716	52,835
Donations	17,119	41,878
Expenditures	0	0
Ending Balance	52,835	94,713

Appendix I: EMS Division 2014 Bibiliography

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Appendix J: EMS Performance Measures

Resource Category	Performance Measure	Definition	2014 Results
SYSTEMWIDE	Rate of cardiac arrest survival	% discharge from hospital for all witnessed cardiac arrests due to cardiac etiology in VF/VT. Includes only circulatory arrests of non-traumatic etiology receiving ALS care in patients > 2yo.	54%
BYSTANDER	Rate of bystander CPR in cases of cardiac arrest	% of bystander CPR provided for all cases of cardiac arrest. Includes only circulatory arrests of non-traumatic etiology that received ALS care in patients aged > 2 yo.	70%
DISPATCH	Rate of correctly identified cardiac arrest by telecommunicator	% of confirmed cardiac arrest cases that were correctly identified by dispatcher when provided opportunity to assess	96%
	Rate of correctly identified resource used by telecommunicator	% of total number of reviewed calls that received correct EMS resource	90%
	Rate of correctly transferred T-IDC calls	% of T-IDC calls that were sent to the Nurseline vs received a BLS response	"T" IDC calls sent to the Nurseline: 53%
BASIC LIFE SUPPORT	% that response time standards are met for emergency BLS calls	Urban response areas: Ten minutes or less, eighty percent of the time; Suburban response areas: Twenty minutes or less, eighty percent of the time; Rural response areas: Forty-five minutes or less, eighty percent of the time; Wilderness response areas: As soon as possible.	Urban: 4.79 Suburban 5.43 Rural 6.45 Wilderness: --
	Rate of EMTs documenting FAST and glucometry in stroke patients	% of hospital- and pre-hospital-diagnosed stroke patients for whom FAST exam and glucometry were documented by EMTs on MIRFs	56%*
	Rate that "on scene time" standards are met	% of suspected CVA and suspected TIA patients with < 15 minute BLS scene time	51%*
	Rate of taxi transported patients	% of taxi transports of all BLS transports	0.6%
	Compression fraction during resuscitation attempts	% of time that compressions are actively applied to the chest during the first 20 minutes of the case, until efforts are ceased, or until sustained ROSC is achieved (whichever event comes earliest).	87%*
PARAMEDICS	% that response time standards are met	Respond on average < 10 minutes, and <= 14 min 80% of the time.	<=10 = 81.1% <=14 = 94.9% MEAN = 7.5 min.
	Rate of paramedics using a 12-lead ECG for STEMI patients	% of suspected STEMI cases where paramedics documented the use of a 12-lead ECG	68% *
	Rate that "on scene time" standards are met	% of suspected STEMI patients with < 15 minute on scene time	29%*
	Rate of paramedics documenting Glasgow Coma Scale for trauma patients	% of trauma patients transported to HMC by paramedics where GCS was documented	80%
	Rate of scene time for trauma patients	% of trauma patients taken to HMC by paramedics with < 15 minute ALS scene time	47%
	Rate of successful first attempt intubations	% of successful first attempt intubations	77%
REGIONAL	Rate of cancelled enroute ALS calls	% cancelled enroute ALS calls to all ALS calls	20%
	% of calls where no upgrade or downgrade was needed	% of calls where ALS was not cancelled and not requested from scene	66.5% ; RFS 17.1%
	Rate of ALS requests from scene	% of BLS request for ALS from scene of all ALS calls	17.1%
	# of paramedic hours above planned 2PM unit staffing	# of paramedic hours above planned 2PM unit staffing	3,853 hrs
	Rate of satisfied customers	% satisfied or very satisfied with service as reflected in survey results	Not available

*Results reflect King County data excluding the City of Seattle.

Appendix K: 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 (206) 296-8550
www.kingcounty.gov/healthservices/health/ems/MedicOne.aspx

Professional Standards Programs (206) 263-8054
www.kingcounty.gov/healthservices/health/ems/training.aspx

CPR/AED Training Programs (206) 263-8562
www.kingcounty.gov/healthservices/health/ems/aed.aspx

Emergency Medical Dispatch Programs (206) 263-8636
www.kingcounty.gov/healthservices/health/ems/emdprogram.aspx

Injury Prevention and Public Education Programs (206) 263-8544
www.kingcounty.gov/healthservices/health/ems/community.aspx

Regional Medical Control and Quality Improvement (206) 263-8659
www.kingcounty.gov/healthservices/health/ems/quality.aspx

Center for the Evaluation of EMS (CEEMS) (206) 263-8564
www.kingcounty.gov/healthservices/health/ems/CEEMS.aspx