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Division of Emergency Medical Services

2007 Annual Report to the King County Council

September 2007

Preface

I am very pleased to present the Emergency Medical Services (EMS) Division 2007 Annual Report to the King County Council.

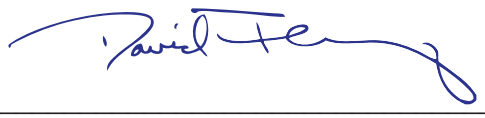
King County Ordinance #12849 requested annual updates from the EMS Division on the status of the operational, programmatic, financial, and planning aspects of the regional EMS system and on the progress of EMS Strategic Initiatives. This document represents the ninth EMS Annual Report. The EMS Annual Report summarizes both the activities of the EMS Division as well as the wide range of services and programs presented by the dispatch agencies, fire departments and districts, paramedic providers, and EMS Division staff.

This is my first opportunity to introduce the EMS Division's Annual Report, and I have been struck especially by two aspects of the regional EMS system.

First, our regional system is quite remarkable in the success it has achieved in providing excellent, standardized services countywide. Patient survival from cardiac arrest – one of the most critical measures of success for any EMS system – was at 41% in 2006 for ventricular fibrillation patients with witnessed arrests. This achievement, unmatched anywhere in the world, is a testament to the effectiveness of the delivery system and the organization of the service; standardized training for dispatchers, EMTs and paramedics; ongoing research and evaluation; and quality improvement and oversight efforts.

Second, our region has clearly benefited from a coherent strategic plan, which is understood and supported by providers and reviewed and approved by elected officials in cities, fire districts, and King County. The plan serves as the policy document that sets out major program goals and initiatives, and it is taken to the voters to accompany the six-year EMS levy. It permits flexibility to respond to unanticipated events and has built-in provider and elected official oversight mechanisms to ensure that levy funds are expended in accordance with specific program policy directions.

This year, development of the ***Medic One/EMS 2008-2013 Strategic Plan*** was a regional effort and reflected the strength of our regional system. This is the final year of the current 2002-2007 EMS levy. The ***Medic One/EMS 2008-2013 Strategic Plan***, now authorized by cities and the King County Council, will serve as the policy document for the next six years. As this Annual Report amply demonstrates, this region can expect continuation of excellent emergency medical services into the future.



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

Acknowledgements:

The Emergency Medical Services (EMS) Division would like to thank all of the individuals who contributed to the ***EMS 2007 Annual Report***, including managers of the various EMS projects and programs depicted in the report; **Leonard Roberts, Craig Coulsen** and the Seattle Fire Department; **David Solet**, Epidemiology, Planning and Evaluation Unit, Public Health - Seattle & King County; and the EMS Division data analysis team of **Linda Becker**, **Carol Fahrenbruch**, **Dan Henwood**, and **Dmitry Sharkov**.

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

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Commonly Used Acronyms:

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

Executive Summary

The following highlights the major Emergency Medical Services (EMS) Division activities of the past year:

Part I - EMS System Review: In anticipation of the 2002-2007 Medic One/EMS levy expiration, the region spent the past two years engaged in planning and discussing the programmatic goals, strategic directions, and initiatives for the ***Medic One/EMS 2008-2013 Strategic Plan***. In general terms, the goals of this planning process were to ensure a thorough regional discussion and consensus building process and develop programmatic and financial recommendations that would be approved by elected officials in cities, fire districts, and King County. The plan would serve as the core of the levy proposal brought to voters in November 2007.

As a combined regional effort, this three stage process was highly successful. Providers thoroughly reviewed the current program and financial recommendations which were in turn reviewed by elected officials from cities and fire districts across the county and the King County Council. There were improvements and additions at every stage of this process which improved the program quality of regional EMS proposals and put in place useful financial and policy oversight measures that will help ensure continued success of the regional system.

The result of this process is a Medic One/EMS Strategic Plan and levy proposal for a six-year, $.30 cent levy that will be brought to the voters of King County in November 2007. The Strategic Plan includes full funding for existing paramedic services for the next six years, planned addition of three new paramedic units if needed (one in Seattle, two in King County), an increase in the levy share of BLS funding (largely supplied by local city and fire districts), continued funding of Regional Services, and Strategic Initiatives designed to manage growth in calls and make the overall regional system more efficient and cost-effective. A new regional program designed to improve system-wide medical quality improvement for dispatchers, EMTs and paramedics and overseen by the EMS medical directors will begin in 2008.

Part II - EMS Division Programs and Activities: The EMS Division is dedicated to increasing survival and reducing disability from out-of-hospital health emergencies in King County. The ***EMS 2002-2007 Strategic Plan Update*** has provided a cohesive, comprehensive regional plan for achieving this goal. It is notable that the 2002-2007 Strategic Initiatives were completed and have had effective impacts on the regional EMS system. The regional ***Medic One/EMS 2008-2013 Strategic Plan*** will continue to set general program, policy, and financial directions, and provide a regional guide for the next six years.

The following program highlights represent the variety and scope of the strategic initiatives that are a major component of the strategic plan and have been developed through strong partnerships with EMS agencies in the region.

- Dispatch Revisions: One of the strategies used to decrease the rate of growth of

ALS calls was a data-driven approach to revising the Criteria Based Dispatch (CBD) Guidelines. The CBD Guidelines are medically-approved dispatch criteria used by dispatchers to determine the level of medical care required by patients and the urgency with which that care needs to arrive at the scene of the emergency. During this levy period, the CBD Guidelines were revised two times, in June 2004 and July 2007. The dispatch initiative to manage the rate of growth in paramedic calls was successful in lowering the annual rate from 5.4% to less than 1% (see page 22).

- EMS Online: An online website that delivers Competency Base Training (CBT) modules was developed for the first time in 2001. Thirty-three modules are now available online with over 10,000 EMTs and paramedics enrolled in the program throughout Washington state (100% of the approximately 4,000 EMTs in King County use this program). Over 150,000 examinations have been completed resulting in a dramatic reduction of CBT training costs to agencies ($18/EMT per year versus $133/EMT per year). The vision to offer this high quality, on-line educational tool outside the state of Washington was realized for the first time through a pilot program with Wayne Township Fire Department in Indiana (see page 45).
- Supporting Public Health with Emergency Responders (SPHERE): The SPHERE acronym denotes an effort by the EMS Division to use EMS data to identify and manage patients with major public health problems in partnership with EMS agencies in King County. SPHERE is an innovative approach to creating an interface between the larger public health arena and the realm of emergency medical services. SPHERE is currently designed to help identify and control two major public health problems: hypertension and diabetes (see page 40).

Part III - EMS Funding and 2007 Financial Plan: The EMS system in King County is funded primarily by a six-year EMS levy and is expected to expire on December 31, 2007. The EMS Financial Plan assumes modest growth in property values and new construction, continued low inflation, and a one-percent limit on revenues from existing properties. These assumptions have allowed the EMS system to grow as planned and accommodate paramedic needs not identified in the ***2002 EMS Strategic Plan Update***. Forecast revenues are expected to cover forecast expenditures through the end of the levy period.

Year 2006 Statistics: In Seattle and King County, the EMS system responded to 166,941 total calls to 9-1-1 in 2006 and 52,136 responses for advanced life support (ALS). Despite a 6.9% increase in ALS calls from 2005, the average medic unit response time remained steady at 7.5 minutes. The *Public Health Highlight* this year reviews Pedestrian - Vehicle incidents analyzing seriousness of injury with gender, age, time of day, and day of week (see page 58).

The EMS Division's 2007 Annual Report is available online through the Public Health - Seattle & King County website: www.metrokc.gov/health/ems.

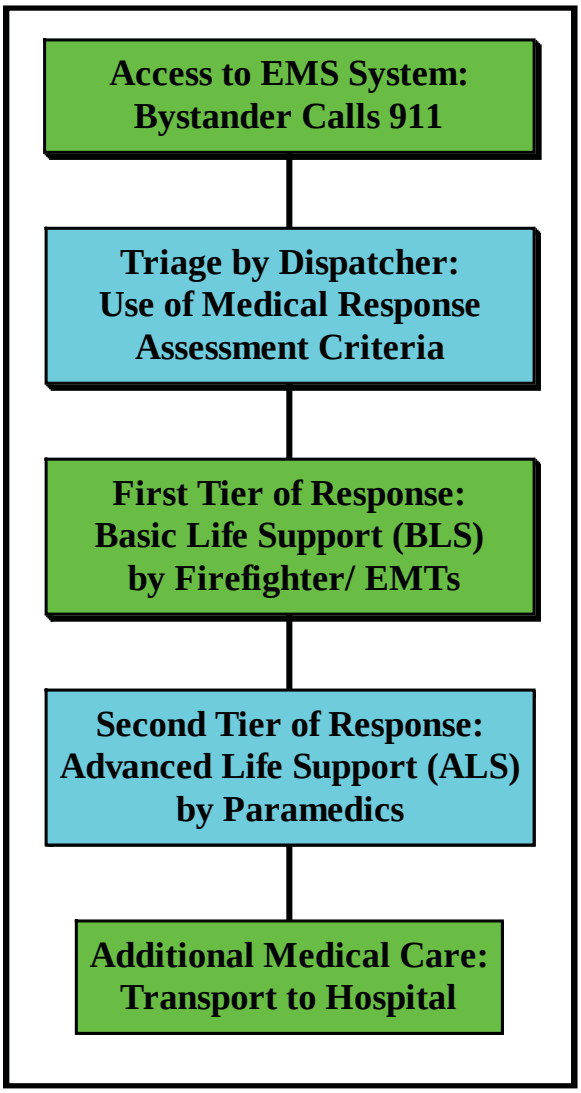
A Brief Description of the EMS/Medic One Tiered System

The **Emergency Medical Services (EMS)/Medic One system** provides an internationally renowned regional service to the residents of Seattle and King County, responding in an area of 2,134 square miles and serving a population of over 1.8 million. The EMS/Medic One system operates in a coordinated partnership among King County, various cities, fire districts, private ambulance companies, local area hospitals, and others involved in providing high quality pre-hospital medical care. The EMS response system is tiered to ensure that 9-1-1 calls receive medical care by the most appropriate care provider.

There are five **major components** in the regional tiered EMS/Medic One system, and they are described below:

- **Universal Access:** Patient or bystander accesses the EMS system by calling 9-1-1 for medical assistance.
- **Dispatcher Triage:** Calls to 9-1-1 are received and triaged by trained professional dispatchers in five dispatch centers throughout King County. A majority of dispatch centers use the Criteria Based Dispatch (CBD) Guidelines to provide uniform triaging to callers.
- **Basic Life Support (BLS) services:** BLS personnel provide the first level of response to most calls and are staffed by firefighters trained as Emergency Medical Technicians (EMTs). On average, BLS units arrive at the scene in under five minutes.
- **Advanced Life Support (ALS) services:** ALS services are provided by seven paramedic agencies responding to patients with more critical or life-threatening injuries and illnesses. Paramedics respond on average to about 31% of all EMS responses.
- **Transport to Hospitals:** Some patients require additional medical care and are transported to hospitals for further attention.

Tiered EMS Response System



Part I: EMS System Review

The Value of EMS Strategic Planning

Thomas Hearne, Ph.D., Division Director

It is useful to periodically look back over several years and appreciate the major themes and trends that the regional EMS system has followed since the current EMS 2002-2007 levy period began, review program accomplishments, and generally take stock and see where we have been. Although an 'annual report' is by definition primarily focused on the past year, a longer retrospective also assists in planning for the future, helps identify some of the challenges that we faced as a regional EMS system, and lets us begin the discussions around how best to resolve future issues.

My topic this year is to discuss the value and importance of the strategic planning process and what an effective Medic One/EMS strategic plan brings to the provision of EMS in this region. I want to highlight the importance of a strongly supported regional Medic One/EMS strategic plan, developed in partnership with the regional EMS stakeholders and reflecting a consensus of providers and elected officials regarding future policy, program, and financial directions.

Before we review some of the benefits of the strategic plan and the planning process, a few comments on the ***EMS 2007 Annual Report*** itself are in order. This report first began in 1998 in response to a mandate by the County Council as a means to update them annually on the status of the Medic One/EMS system and the implementation of the ***EMS 1998-2003 Strategic Plan*** and Strategic Initiatives; and the status of the EMS fund. By 2000, the EMS Division and the region had made this annual report its own and – while it continues to report mandated items – has expanded to fully reflect the programmatic, strategic, and financial aspects of the regional EMS system and the EMS Division.

The task of preparing this report every year is primarily the work of the program section leaders in the EMS Division, although it captures directly and indirectly the daily efforts of EMTs, paramedics, dispatchers, and program staff across the county. It closely reflects the work which the division carries out in conjunction with physicians, hospitals, fire departments, paramedic providers, dispatchers, private ambulance service providers - all the EMS partners countywide.

Although, the program work and writing is carried out by many, the editor of the EMS Annual Report since the first edition was produced (as well as the monthly EMS newsletters) has been the responsibility of Michele Plorde, the Planning and Evaluation Section Manager in the EMS Division. She deserves our thanks and commendation for the excellent way in which she energetically and thoughtfully guides the production of the annual report, and makes the different sections of the report 'fit' with each other. Without her diligent efforts, this report would be a different and poorer product. Thank you for the sustained, excellent work with the production of the EMS Annual Report and EMS Newsletters.

The Value of Regional Strategic Planning

The overall mission of the regional EMS system is to increase patient survival and reduce disability from out-of-hospital emergencies in King County. BLS and ALS providers from 31 fire departments and seven paramedic providers do this in very direct ways every day by responding to calls and treating patients. In 2006, there were almost 167,000 BLS calls for service and over 52,000 paramedic calls to 9-1-1 from residents requesting emergency medical assistance.

Regional Service Programs – such as medical direction, BLS and ALS training and continuing medical education, dispatcher training, CPR/AED training – support these direct service activities and may also enable early effective medical assistance to patients in need. Planning and centralized data reporting provide essential operational and statistical pictures of what types of responses are being made, where they occur, and how best to provide services in the future; and provides the statistics that allow the EMS system to measure how well it is doing in its mission. EMS injury prevention programs also help limit or prevent responses to some types of medical emergencies.

The standard EMS measure of success – patient survival from out-of-hospital cardiac arrest – indicates that the region's primary mission is being carried out very successfully. Cardiac arrest survival of patients in ventricular fibrillation with witnessed arrests in 2005 was 46% and in 2006 was 41%. While we expect that survival rates will vary slightly every year based on patient age, underlying medical conditions, heart rhythm, and other variables, the increases we have observed in 2005 and 2006 reflect the results of new treatment protocols with CPR and defibrillation. This improvement is significant when comparing cardiac arrest survival rates to other metropolitan areas. Although there is no known national average, other major cities have reported cardiac survival rates as low as 1-5%.

In addition, the new protocols themselves demonstrate the willingness of the EMS medical directors and EMS providers to apply the latest in research results to ensure that citizens have the best opportunity for successful resuscitation. This clinical medical success is the result of a very effective, remarkable, medical model. However, it also reflects the ability of the region to organize and achieve consensus about the directions the regional EMS system will take in the future, and embody that effort into the six-year ***Medic One/EMS 2008-2013 Strategic Plan***.

Medic One/EMS Strategic Plan

The major policy document that has provided regional guidance over the course of the current levy period has been the ***EMS 2002-2007 Strategic Plan Update***. Adopted by the King County Council as part of the ordinances that authorize a regional EMS levy ballot measure, it sets forth – in ways no other planning document has ever done in our regional EMS history - the major program directions and financial elements for the current EMS levy period.

Most importantly, the ***EMS 2002-2007 Strategic Plan Update*** identifies the method in which the medical model and layered response system – first developed in Seattle nearly 40 years ago – will be funded and enhanced. The first strategic plan was developed in 1996 and 1997 as a policy document intended to cover the 1998-2003 levy period. However, voters did not authorize

the levy proposal at the super majority level required for passage. Following that levy failure, there was an extensive regional review of the medical model, comparisons with other urban EMS systems that demonstrated the effectiveness and efficiency of our model, and the exploration of 12 funding alternatives, including an EMS levy. The final outcome from that review was the emergence of general agreement that a regional, six-year levy represented the best funding source. The ***EMS 1998-2003 Strategic Plan*** was also updated for the period of 2002-2007.

The ***EMS 2002-2007 Strategic Plan Update*** identifies the scope and funding levels for BLS and paramedic services, projects when new paramedic services will be added (if needed), and provides the funding to support those new paramedic services. It provides direction to the Regional Support Service programs, and defines the strategic initiatives that the region will follow in order to make our regional system as cost-effective and efficient as possible.

In addition, the strategic plan reflects the fact that our regional system depends on a complex partnership of providers, all of whom recognize the strong value for residents in maintaining the layered response system. It provides an ideal opportunity to review systematically in a very open and cooperative manner the status of the regional system and discuss new emerging issues. The plan also acknowledges that the EMS system is supported and made possible by a combination of a regional tax EMS levy and local taxes. Finally, the plan defines regional EMS governance and oversight through the EMS Advisory Committee.

The ***EMS 2002-2007 Strategic Plan Update*** has been effective, in part, because it reflects a thorough regional planning process by providers, careful review of policy and financial implications, and continued oversight by elected officials. The Medic One/EMS levy itself is brought to the voters themselves for approval every six years, seeking consent for the way in which EMS services are delivered regionally. In a very real sense, the strategic plan describes the consensus and agreement in the region about how EMS service provision will proceed for the next six years, and how and at what level it will be funded.

The latest Medic One/EMS strategic plan, developed specifically for the 2008-2013 levy period, represents further steps in partnerships, cooperation, and consensus. This regional planning process, which began in 2005 (almost two years before the measure will appear on the ballot) replicated some of the planning that has characterized previous strategic plans. The region needed to assess the number of new paramedic services that would be added during that period, and provide funding for ongoing paramedic services as well as the new services that were added during the 2002-2007 levy period. In addition, regional service support programs needed to be assessed as did the nature and scope of new and ongoing strategic initiatives.

There were also several new issues for regional review. Perhaps the most important of these issues was the request by regional fire departments that the level of BLS funding provided by the regional levy be reviewed and increased. This represented the first such request by fire departments since the levy's inception in 1979. Led by Chief Marcus Kragness from Shoreline Fire Department, the BLS subcommittee first developed a standard EMS costing template that would enable a factual comparative review of this issue.

This information helped demonstrate that BLS costs were increasing faster than the levy allocation provided, and that the proportion of BLS support from the levy had substantially decreased over the past ten years. As a consequence, the BLS allocation was increased for 2008, with regular inflationary increases annually for the duration of the levy.

The review process for the Medic One/EMS 2008-2013 levy allowed for the development of and consensus about recommendations for the regional levy, and thorough review and approval by elected officials across the region. As a regional process, it was extremely successful. Elected officials were not only able to review and approve specific programmatic and financial recommendations, but also to add additional oversight and reporting requirements that will make the EMS system more accountable both to citizens and their elected representatives.

The entire Seattle-King County region has benefited tremendously from the consensus-driven, extremely thorough strategic planning process that was undertaken. The ***Medic One/EMS 2008-2013 Strategic Plan*** captures both the programmatic and financial directions for the Medic One system, and provides oversight mechanisms to ensure accountability within the system. This productive regional process will enable the residents of this region continue to receive the excellent Medic One services they have come to expect.

Part II: Status of EMS Division Programs and Activities

Introduction

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. The ***EMS 2002-2007 Strategic Plan Update*** provides the regional policies and financial direction to accomplish these goals, including adherence to the medical model of an integrated EMS/Medic One system, a philosophy of cooperative regional decision-making, and the development of innovative strategic initiatives that address the demand for services and encourage system efficiencies.

In this the final year of the current levy period, the EMS Division would like to highlight the extraordinary efforts of all those involved in implementing the various programs and activities identified in the ***EMS 2002-2007 Strategic Plan Update***. EMS Division is committed to developing and maintaining strong partnerships with other EMS agencies in the region and providing leadership and innovation in the emergency medical field. This section summarizes the primary programs and activities involving the EMS Division.

A. King County Medic One Program: *A Message from Chief Jim Fogarty*

King County Medic One (KCM1) is one of seven Advanced Life Support (ALS) providers within King County. The highly skilled KCM1 paramedics are what makes this system unique, unlike any other system in the world. KCM1's service area includes most of south King County, spanning well over 450 square miles and serving a growing population over 700,000. Each and every moment of each and every day, KCM1 paramedics are prepared to respond to 9-1-1 calls for medical emergencies.

King County Medic One's mission is to provide residents of south King County the critical link in high quality, advanced patient care. KCM1 paramedics work in collaboration with 15 local fire agencies in a seamless process of providing emergency medical care 24-hours a day, every day of the year. Medic units co-locate inside fire stations to promote a team atmosphere while eliminating a need for additional facilities. In 2006, KCM1 responded to 13,845 advanced level calls, providing ALS treatments to more than 2% of the population served in south King County.

Physicians provide medical direction for both the clinical care decisions and the strategic planning decisions that guide the organization. This 'medical model' provides the most appropriate level of service to patients and is recognized worldwide. KCM1 is organized into functional areas

of Administration, Operations, Training, and Health Safety & Emergency Management. The following provides a brief summary of each of these areas:

Administration: King County Medic One is part of Public Health - Seattle & King County. Administration works closely within the Public Health framework and utilizes the existing infrastructure to realize economies of scale in areas of Human Resources, Information Technology, Risk Management and some Fleet Services.

- Administrative Support: Provides payroll, procurement and records management in addition to oversight of highly sophisticated software systems that manage the details of emergency operations.

- Technology Support: Software programs help track inventory, manage scheduling, create remote access to vehicle data, provide mapping and vehicle destination locations, and enable record keeping. KCM1 uses a combination of Public Health MIS support and in-house subject matter expertise to stay current with state-of-the-art software tools.

- Medic Unit Vehicles: All frontline medic units are employee-designed vehicles from Braun Industries and will serve KCM1 needs well into the future. Each medic location also maintains access to a reserve fleet to provide minimal interruptions in service should any vehicle malfunction occur. KCM1 has eight Advance Life Support primary response units each with a defined geographical area in south King County.

- Quality Assurance: Quality assurance and review is conducted by hospital-based physicians who meet regularly with paramedics to provide feedback on patient care. Medical director oversight and review of patient care is conducted through this team of physicians, one for each of the four paramedic shifts. In addition, KCM1 administration has access to electronic records for review and analysis of call patterns within our area and conducts quality review of administrative processes to assure the most error-free and efficient conditions.

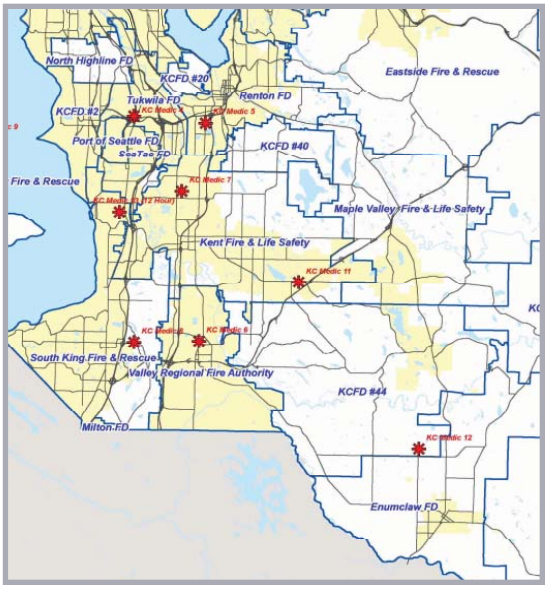
- Research: KCM1 has quality caregivers and are often participants in research that sets the standards for pre-hospital emergency medicine. Each research project receives close review and oversight by public health institutional review board and is monitored continuously during the project.

- Supervision: Shift supervisors known as Medical Services Officers (MSOs) provide administrative and clinical oversight while maintaining their skills as paramedics. In addition to providing administrative oversight and patient care, they serve command officer roles on large scale events under the Incident Command Structure.

Operations: The Operations Division ensures that daily core functions remain solvent. These functions include response to emergency calls, planning, personnel oversight, station management, inventory control, and vehicle maintenance.

- Medic Unit Locations: King County Medic One has eight stations serving residents located

south of Seattle and Bellevue. Each station will receive a medic unit replacement truck this year as planned. This three-year replacement plan allowed for an economy of scale purchasing discount and permitted King County Medic One to have a reserve fleet of medic units to handle disasters, special events, and routine maintenance coverage.



- Medic 13 Implementation: This year King County Medic One opened a new station located in Des Moines to better serve that area during a 12-hour peak period. This station serves the Cities of Des Moines, SeaTac, Kent and Normandy Park enabling other medic units to remain in their jurisdictions and reducing overall medic unit response times.

- Station Relocations: King County Medic One is working with the Cities of Kent, Renton, Maple Valley and Covington on potential station relocations. Unit relocations are reviewed on a regular basis to ensure residents are provided a timely medic unit response. Partner cities are included in the review to ensure that their future growth and special needs are considered.

- Electronic Records: King County Medic One has been a 'data collection' national leader for many years contributing to countless evaluations of paramedic practice and protocol. In April 2007, the Electronic Medical Incident Report Form (EMIRF) project was implemented allowing paramedics to enter critical information directly into a secure database. This information will be used for system review, quality assurance, and patient care improvement.

- Web-Operations: King County Medic One is working on a Web-Ops application that allows paramedics and supervisors to view critical program information related to operations. This information would include tasks, procedures, weather, road construction, special events, etc.

- Paramedic Safety: King County Medic One is purchasing replacement body armor for paramedics to wear on high risk calls, including stabbings, shootings, civil disturbances and SWAT incidents.

- Supplies and Equipment Purchasing: King County Medic One is the lead contract agency responsible for both Regional Purchasing Program contracts (see page 51). These contracts are used by most fire departments in King County and enable economy of scale purchasing for medical supplies and equipment.

- Medical Inventory: King County Medic One must replace medical inventory for all eight paramedic units located throughout south King County. Logistically this is a challenge and KCM1 will begin using a 'warehouse on wheels' to stock stations on a weekly basis.

- Station Alerting: Valley Communications Center, King County Medic One's dispatch center, is converting to alphanumeric pager alerting. This conversion will allow medics to be dispatched more expediently.

Emergency Preparedness: Emergency Preparedness is dedicated to maintaining the integrity of the King County Medic One program during extraordinary circumstances, such as earthquakes, inclement weather, or pandemic outbreaks. KCM1 works within the framework of regional services and partners, including Public Health - Seattle & King County, the Seattle Fire Department and other EMS providers, the King County Regional Communication and Emergency Coordination Center (RCECC) and regional hospitals to strengthen the entire county's ability to withstand unique and challenging conditions.

- Emergency Operations Center (EOC): King County Medic One is currently updating its local EOC which coordinates responses during heavy call load, unusually large incidents, and disasters. This upgrade includes expanded video, web and communication capabilities.

- Regional Drills and Exercises: King County Medic One continues to provide leadership in emergency preparedness by participating in regional fire and EMS Mass Casualty drills and exercises. Personnel have participated in simulated incidents, including terrorist attacks, earthquakes and aircraft crashes throughout the greater King County region.

- Equipment Purchasing: King County Medic One participates in the regional Multi-Disciplinary Equipment Purchasing Group and has secured federal and state grant funding from Homeland Security sources for the purchase of medications (nerve gas auto-injectors and cyanide kits) and emergency respirators (PAPRs) for all regional ALS providers.

- Infectious Disease & Pandemic Preparations: King County Medic One assumed a leadership role in preparing the Seattle - King County EMS community for infectious disease and pandemic conditions. The result has been development of a ground breaking plan that establishes 'best practice' guidelines for managing infectious disease incidents at both the BLS and ALS levels. The pandemic plan, arguably one of the first in the nation, provides directions for operational considerations during the outbreak of a pandemic pathogen, including specific guidelines affecting dispatch/communications centers, BLS providers and ALS responders.

  Several of the specific topics discussed are modifications to the EMS dispatch guidelines, increased Personal Protective Equipment recommendations, new Standing Orders for treatment and transport during a pandemic, new triage guidelines for pandemic patients, and utilizing the ALS providers as regional 'hubs' for dispensing medications and vaccines to responders. These infectious disease and pandemic guidelines provide an important new 'bridge' between the fire and EMS responders of the region and the public health system, and may prove critical in keeping systems functioning during a prolonged pandemic outbreak.

Training and Quality Assurance: The Training Division ensures that paramedic skills and techniques are practiced and maintained throughout the KCM1 organization, providing consistent emergency medical care for the residents of south King County.

- Grand Rounds Training (GRT): GRT is an ongoing, bi-monthly training activity designed to train on-duty paramedic crews. The emphasis is primarily on manipulative skills, but operational updates, equipment changes, and safety awareness training are often included in GRT. Each session provides KCM1 paramedics the opportunity to practice high-risk, low-frequency procedures. Subject matter for future GRT classes will continually involve manipulative skills development, but the goal is to incorporate incident management, hybrid vehicle extrication, collapse rescue, low angle rescue, swift water rescue awareness, among other subjects, to broaden the depth of paramedic knowledge.

- Medication of the Month (MoM): Each month the King County Medic One Training Division tests paramedics on a medication carried on the medic units in addition to commonly prescribed medications that patients are often taking. This practice helps keep paramedics informed about newer and older prescription medications frequently encountered in the pre-hospital setting. In addition, testing paramedics reinforces and augments the paramedic's knowledge of pharmacology and application. Beginning in 2006, KCM1 began writing MoM quizzes that focused on medication classification, not just specific medications. For example, the term 'water pill', as described by many patients, is a diuretic. There are numerous diuretics within this classification; each potentially acting differently. Having a broader knowledge of medication classification(s) will further our paramedics' working knowledge of pharmacology.

- Quality Assurance and Improvement: King County Medic One and the EMS Division have been diligently working on new processes and procedures to streamline the Quality Assurance and Improvement program. Revisiting standing processes has been very effective in identifying the importance of asking questions relevant to patient care and outcome, measuring individual and system performance, and identifying and addressing operational and training issues the paramedics and physicians raise. The KCM1 Medical Program Director and the Training/Quality Improvement MSO continue to develop and refine quality management processes with the goal of assuring patient care remains 'Always Exceptional.'

- 'Doctor's Meetings': Doctor's Meetings are quarterly shift meetings with paramedics, the Associate Medical Director, Shift MSO (Medical Services Officer) and Training/Quality Improvement MSO to review specific medical cases. Paramedics receive feedback regarding patient admitting diagnosis, in-hospital care, and final disposition. Often the Associate Medical Director will provide a brief lecture on a specific illness or disease process, and answer questions regarding specific cases. The 'Doctor's Meetings' provide an invaluable opportunity for paramedics to learn from Emergency Medicine physicians.

- Case-of-the-Month: Case-of-the-Month is a discussion of an actual response by one of the KCM1 paramedic teams and provides an opportunity for paramedics to learn from each other

due to the atypical and challenging circumstances. Case of the Month is designed as a single subject, disease process, or injury, formatted with an overview and summary followed by a quiz, providing another source for paramedics to gain valuable continuing medical education.

Medical Direction:

King County Medic One is the only paramedic agency that provides advanced life support medical care to the residents of south King County. As part of a regional EMS system, King County Medic One coordinates efforts with dispatch, local fire departments, and area hospitals in an effort to provide optimal patient care. Paramedic care is provided as part of a 'medical model' whereby paramedics are trained and practice as an extension of the emergency physician. To achieve this medical model approach, King County Medic One paramedics undergo a rigorous year-long physician-led training program through Harborview Medical Center and the University of Washington, where field and didactic training far exceeds national paramedic certification requirements.

Following training, paramedics continue to work in collaboration with physicians, including the KCM1 Medical Director, Dr. Tom Rea. Active and immediate paramedic - physician communication is sustained through online medical control whereby paramedics contact hospital-based emergency physicians from the field during patient evaluation to discuss their patient and generate a care plan. Paramedics also meet regularly as a group with physicians to discuss important issues or cases with the goal of providing ongoing educational opportunities. These sessions include monthly regional conferences hosted by Harborview Medical Center as well as quarterly small-group sessions.

Initial and ongoing paramedic education and physician involvement are coupled with the efficient two-tier EMS system. Compared to many communities, the design of this emergency response system enables a relatively small number of paramedics to care for critical patients. As a consequence, paramedics quickly gain and then maintain a critical level of experience both in evaluating critically-ill patients and also in performing highly technical, lifesaving skills. These skills and their performance are physician-reviewed and tracked as part of paramedic certification requirements and programmatic evaluation. Going forward, the regional approach that involves rigorous training, ongoing physician involvement, and a high-volume of critical skills will continue to be important aspects of the medical model practiced by King County Medic One in its effort to deliver optimal care.

King County Medic One Donations: KCM1, like most paramedic providers, has a separate account for donations from residents. These funds are used to supplement EMS levy funds and are specifically targeted to purchase equipment or support training of paramedics. Donations are a strong expression of the community support for the services provided for KCM1. In 2006, these funds were used to purchase Mobile Data Computers (MDCs) for medic units, an additional Lifepak 12 heart monitor, a radio, and support final changes to King County Medic One's electronic data collection program. Please refer to ***Appendix G: EMS Division Revenue/Expenditure Summary*** for information on donation fund - page 95.

King County Medic One remains one of the premier paramedic providers in the nation. Its high cardiac-arrest survival rate and superior customer service and customer satisfaction levels help

maintain its reputation and define its performance standard. The personnel who provide this core service are dedicated to public service at the highest level.

B. 2002-2007 Strategic Initiatives

The term 'strategic initiative' was first introduced in the ***EMS 1998-2003 Strategic Plan*** and was used almost exclusively to describe new and innovative approaches to improving the EMS system in King County. The original 12 strategic initiatives, such as the Regional Purchasing Program (page 51) and the Revision of the Criteria Based Dispatch (CBD) Guidelines (page 22) were allocated specific funds to ensure their implementation and were successfully completed in 2001.

The ***EMS 2002-2007 Strategic Plan Update of the 1998-2003 EMS Strategic Plan*** continued in this manner by supporting continuation of some of the strategic initiatives already in progress, integrating those initiatives proven to be successful into as ongoing programs, and identifying new programs and initiatives that were thought to contribute to the successful achievement of the plan's policy and financial goals. The EMS Division supported the development and implementation of new strategic initiatives designed to meet the following objectives:

- Enhance existing programs and add new programs to meet emerging community needs to maintain or improve current standards of patient care.
- Use existing resources more efficiently to improve operations of the system to help contain costs.
- Manage the rate of growth in the demand for EMS services.

The ***EMS 2003 Supplemental Plan*** streamlined the strategic planning effort by identifying three major areas of focus for the implementation of the strategic initiatives. These included:

- Dispatch Enhancements
- Advanced Technology Projects
- EMS System Efficiencies

These new programs included enhancements to the Web-based Training for EMS Personnel (page 29), Paramedic and EMT Procedure and Patient Treatment Evaluations (page 31), and Enhanced Care for Specific Populations (page 40). This final set of strategic initiatives was allocated additional dedicated funds to ensure adequate financial support for successful implementation. Tremendous progress has been made since the first year of the current levy period in developing strategic initiative project plans, building the often complex infrastructure to support the projects, and managing the day to day challenges that accompany such activities. The table below summarizes the status of each strategic initiative (a Summary Financial Report is located on page 72) and is followed by individual project descriptions and project accomplishments during this levy period.

Complete 2002-2007 Strategic Initiative Summary Table

Strategic Initiative	Current Status
I. Dispatch Enhancements:	
Revision of the Criteria Based Dispatch (CBD) Guidelines	Completed: Revisions in 06/04 and 07/07; planned integration into Regional Services in 2008 (except CAD integration)
EMD Quality Improvement	Completed: Planned integration into Regional Services in 2008
Enhanced CBD Basic Training and Continuing Education Curricula	Completed: Planned integration into Regional Services in 2008
II. Advanced Technology Projects:	
Web-based Training for EMS Personnel and Dispatchers	Completed: Planned integration into Regional Services in 2008
Regional Electronic Data Collection Project	Completed: 12/03; program maintenance through Regional Services
Regional EMS Tracking Resource - Online (RETRO) Project	Completed: Phase I-12/05;Phase II-07/07; Initiated: Phase III-07/07; planned integration into Regional Services in 2008
III. EMS System Efficiencies:	
Financial Review of EMS Sub-Funds	Completed: Incorporated into annual budget review process
Paramedic and EMT Procedure and Patient Treatment Evaluations	Completed: glucometry-01/01/07; planned integration into new Medical Quality Improvement Section in 2008
Injury Prevention Programs	Completed: planned integration into Regional Services in 2008 (except Falls Program)
Enhanced Care for Specific EMS Patients	Completed: planned integration into new Medical QI Section in 2008
Assessment of the Impact of State Budget Cuts on the EMS System	Initiated: 10/04 Completed: 01/05
IV. Strategic Plan	Initiated: 07/05 Completed: 07/07

I. Dispatch Enhancements

There are four 9-1-1 communication centers in King County, not including the city of Seattle, that play a critical role in managing the use of high cost of Advanced Life Support (ALS) resources. The ***EMS 2002-2007 Strategic Plan*** identified several strategic initiatives related to dispatch with the intent of reducing the growth in calls for paramedic services. These initiatives included data-driven revisions to the King County Criteria Based Dispatch (CBD) Guidelines, enhanced quality

improvement practices for dispatch, and expanded emergency medical dispatch training, including an innovative on-line training project. In 2006, these dispatch centers managed 103,010 EMS calls. Over the current levy period, the annual call volume was as follows:

Year	EMS Call Volume
2002	92,536
2003	96,442
2004	98,070
2005	100,845
2006	103,010

During the 2002-2007 levy period, implementation of these initiatives clearly demonstrated improved effectiveness and efficiency of ALS dispatch. The following describes the impacts and accomplishments of these major dispatch-related strategic initiatives over the current levy period.

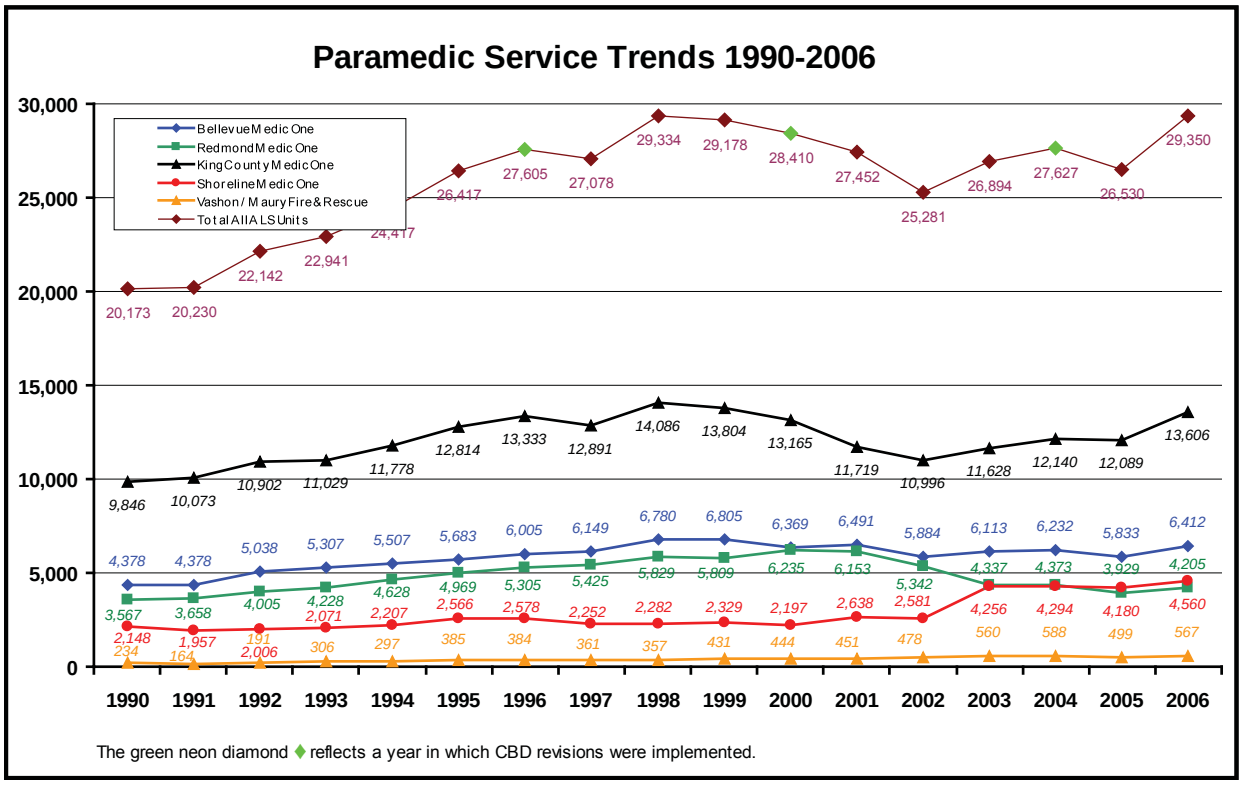
Revision of the Criteria Based Dispatch (CBD) Guidelines (ALS Triage Criteria): A major emphasis of the current EMS strategic plan was EMS system efficiency. One of the strategies used to decrease the rate of growth of ALS calls was a data-driven approach to revising the CBD Guidelines. The CBD Guidelines are medically-approved dispatch criteria used by dispatchers to determine the level of medical care required by patients and the urgency with which that care needs to arrive at the scene of the emergency. During this levy period, the CBD Guidelines were revised two times, in June 2004 and July 2007.

The revisions process includes a thorough review of the data available on each of the 360 medical criteria within the dispatch guidelines document. Data related to total call volume, transport type (ALS, BLS, or No Transport), cancelled calls and requests for ALS units by BLS units is analyzed. The King County Dispatch Review Committee makes final recommendations to the medical directors who approve the final revisions to the CBD Guidelines. This entire process takes between 12-18 months.

Analysis of King County paramedic service trends from 1990 - 2006, as shown in the figure on the next page, demonstrates an encouraging trend in the reduction in total ALS call volumes in years immediately following the revision of the CBD Guidelines. After revisions were implemented in 1996, ALS call volume in King County dropped from 27,605 to 27,078 in 1997 (527 fewer calls). Following revisions in 2000, the ALS call volume dropped from 28,410 to 27,452 in 2001 (958 fewer calls). And finally, after revisions in 2004, the ALS call volume dropped from 27,627 to 26,381 in 2005 (1,246 fewer calls). This is an average annual reduction of 910 calls in the years immediately following revisions to the dispatch guidelines. In succeeding years following these reductions in call volume, the ALS call volume tends to move upward again, likely due to population growth.

Of particular interest is that the average increase in ALS calls prior to the development of this strategic initiative was 5.4% per year (1990 through 1996) while the rate of growth for ALS calls

declined to 0.77% per year during the 10-year period following the revisions effort. A significant increase in ALS call volume was seen in 2006. Although a portion of this increase can be directly attributed to a large increase in ALS chest pain calls following training adjustments for chest pain at dispatch centers, further analysis is warranted to fully understand the impact. However the end result of these periodic reductions in ALS call volume is a large reduction of calls when compared to long range predictions of ALS call volume.



Both of the above observations, 1) reductions in calls immediately after CBD Guidelines revisions, and 2) a spike in chest pain calls immediately following specific dispatch training, are excellent indications of the critical role dispatch plays in the use of ALS resources and in the ability of the system administrators to dictate decreases or increases as desired. This strategic initiative is expected to continue as part of the ***Medic One/EMS 2008-2013 Strategic Plan*** as a primary strategy in managing the rate of growth in demand for paramedic services.

CBD Guideline Integration: In an effort to improve the efficiency of the Criteria Based Dispatch Guidelines, the EMS Division developed custom software to automate the paper-based Criteria Based Dispatch Guidelines. The objectives include:

- Improve dispatch efficiencies in call processing by creating a user-friendly electronic interface for dispatchers.
- Enhance quality improvement and dispatcher feedback activities by capturing detailed call

processing data, including call processing times.

- Improve the ability for the EMS Division to analyze dispatch trending data.

Activities conducted during the 2002-2007 levy period included development of a stand-alone version of the software that could be used by dispatch centers that were not heavily reliant upon Computer Aided Dispatch (CAD) systems. This was Phase I of the project which began in October 2005 and was completed one year later in July 2006. Two small dispatch centers in King County, Enumclaw Police and the Port of Seattle Police/Airport Operations, currently use this stand-alone version of the CBD software.

Phase II of software development process integrated the CBD Guidelines with a Computer Aided Dispatch (CAD) system used by Eastside Communications Center in Bellevue. Phase II began in October 2006 and was implemented in July 2007. 9-1-1 dispatchers at Eastside Communications now use an efficient version of the CBD Guidelines that flawlessly integrates with their existing CAD system. The CAD software is a sophisticated application that is used for all 9-1-1 call processing and for communicating with responding EMS units. Eastside Communications handles approximately 45,000 EMS calls annually and use of this integrated version at this large communications center is a significant project milestone. This project is under King County IT Governance by the Project Review Board.

CBD/CAD Integration at the Port of Seattle, Airport Communications Center, is Phase III of the project and is included as part of the ***Medic One/EMS 2008-2013 Strategic Plan***. It is scheduled for implementation in Fall 2008. CAD integration at Valley Communications Center is on hold until they purchase a new CAD system. They have initiated the Request For Proposal process and expect the system to be in place in late 2009.

Emergency Medical Dispatch (EMD) Quality Improvement: The development of an EMD Quality Review Program was an integral part of the ***EMS 2002-2007 Strategic Plan Update***. In 2001, the EMS Division, in cooperation with King County Dispatch centers, began a formal process for the review of dispatch tapes and associated EMS reports for the purpose of EMD quality improvement. The process included the identification of cases meeting certain review criteria, the retrieval of dispatch tapes and reports from dispatch centers related to these cases, and a review of these cases by a team consisting of a paramedic and a dispatcher.

As of June 2007, approximately 4,080 cases have been reviewed since the program was implemented. When appropriate, feedback from this case review process is provided to the individual dispatcher and is also used in the development of continuing education when systemwide trends for

improvement are identified. The Quality Review teams have found that using this focused training has had a positive impact on dispatchers by improving their decision-making abilities. Since ALS providers are now all using electronic record management systems, efforts are underway to examine the possibility of a paperless or electronic EMD Quality Improvement system that could further streamline the entire process.

The ***Medic One/EMS 2008-2013 Strategic Plan*** also includes development of a standard set of criteria for Dispatch Centers that can be tied to specific funding based on performance measures. The plan also creates a new medical Quality Improvement Section that is expected to coordinate closely with existing EMD QI activities.

Enhanced CBD Basic Training and Continuing Education Curriculum: A priority for enhanced dispatch training included revisions to both Basic and Continuing Education training in Criteria Based Dispatch (CBD). Three major changes to this training occurred between July 2002 and June 2007.

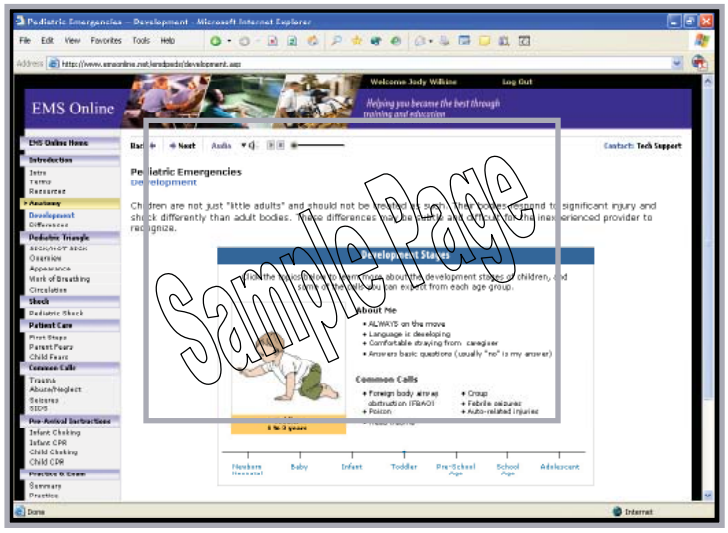
1) Addition of Pre-course Anatomy and Physiology Class: A prerequisite course of Anatomy and Physiology was first added in October 2004 and is currently being delivered as a requirement prior to attending the basic CBD course. The objective is to provide students with baseline knowledge so as to enhance their good decision-making skills with the additional medical training once they become dispatchers. As a prerequisite, this course provides the student with a basic understanding of human anatomy and physiology and thus allows for more scenario-based discussions in the basic CBD course. Students are then able to focus on the application of their knowledge of the body systems as they relate to CBD response codes and pre-arrival instructions.

An online version of the Anatomy and Physiology course was developed and delivered in Fall 2006 and is designed to provide the same baseline instruction as the in-class module. Additional enhancements include the distribution of 'Anatomy and Physiology' educational materials to assist students in the basic course as well as the continuing education they will subsequently attend as emergency medical dispatchers in King County. The basic CBD course continues to provide students with a review of anatomy, physiology, and pathophysiology. The ***Medic One/EMS 2008-2013 Strategic Plan*** includes plans for development and delivery of advanced level emergency medical dispatch training.

2) Problem/Scenario-Based Method of Delivery: One of the main projects during the EMS 2002-2007 levy period was to update and revise the method of training delivery to include more student-centered learning activities such as problem-based scenarios, role-playing, and other methods that involve students in the learning process. The curriculum consists of carefully selected and designed problems that demand from the learner an acquisition of critical knowledge, problem solving proficiency, self-directed learning strategies, and team participation skills. The continuing education courses have been designed primarily in this format. Portions of the Basic course have also been converted. The complete reconstruction of the entire basic course should be completed in 2008. Studies have shown that the participants in a course with this style of delivery are able to apply their knowledge and seek out information more effectively than those students receiving a lecture-based method.

3) Online Web-based Training for Dispatchers: The web-based curriculum for dispatchers is designed to allow the participant an opportunity to use internet links and other additional tools to enhance their knowledge base. In King County the web-based format is supplemented with in-classroom training which allows the students to ask questions of the instructor and apply the knowledge from their web-based training to specific scenarios and guided group discussions.

In December 2003, the first module of web-based continuing education was delivered. The subject was 'Telephone CPR/Cardiac Arrest'. This module included a variety of student activities as well as audio scenarios that supported the objectives of the course. In 2005, two more courses were added, 'Decreased Level of Consciousness' and 'Pediatric Emergencies,' and were well-received by the student participants. The Spring 2006 module, 'Infectious Disease,' was developed and delivered online and is supplemental to the Pandemic Influenza class-room training for dispatchers delivered throughout King County. The subject for Fall 2006 was 'Sick/Not Sick' and the Spring 2007 module was "Basic Anatomy and Physiology". The Fall 2007 module will be 'Decreased Level of Consciousness/Stroke and Seizure'.



This new curriculum will focus on the importance of identification of stroke, types of stroke, prevention and rehabilitation from stroke and the EMD triage for seizure. These courses have been very well-received by dispatchers in the King County region and requests for additional opportunities to participate in web-based training are common. In June 2007, a contract with a dispatch center not using the King County Criteria Based Dispatch Program was signed to enable them to participate in these web-based continuing education modules.

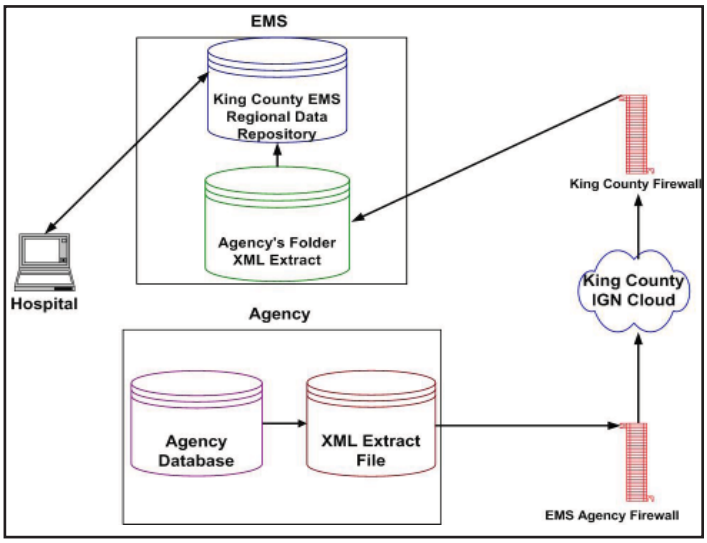
With the enhanced CBD curricula, dispatchers and call-receivers are able to participate in discussions pertaining to system trends and new accepted practices in the medical field. The in-class trainings also provide them with an opportunity to address any issues or questions they have regarding the triage and response of both general and specific calls for service. The feedback from the course participants regarding both the content and the method of delivery of these courses has been overwhelmingly positive. The ***Medic One/EMS 2008-2013 Strategic Plan*** includes enhancement and expansion of the EMS Online program.

Implementation of strategic initiatives that target enhancements to the EMS dispatch system relate directly to all three strategic directions identified for the 2002 - 2007 levy period. A multifaceted approach to improving the dispatching of EMS personnel has reduced the demand for paramedic response, used innovative teaching techniques to improve patient care, and used resources in an efficient and thoughtful manner.

II. Advanced Technology Projects

The development of projects that incorporate advancements in technology offers a variety of opportunities for improved efficiencies in the EMS system. This includes electronic data collection, on-line training of personnel, and electronic record-keeping. Current technologies allow for rapid and direct communication between EMS agencies, accurate and secure transmission of information, and simplified management and oversight of EMS activities. The following section describes the three major technology-related strategic initiatives and summarizes the accomplishments achieved during the 2002-2007 levy period.

Regional Data Collection Project: One of the strategic initiatives identified in the ***EMS 1998-2003 Strategic Plan*** and continued in the ***EMS 2002-2007 Strategic Plan Update*** was the development of an enhanced EMS monitoring system that would allow for improved oversight of the EMS system. The Regional Data Collection (RDC) Project was a five-year countywide effort to implement a system that enabled EMS providers in King County to complete an electronic version of the Medical Incident Report Form (MIRF) and electronically transfer data directly to a central EMS repository. The RDC Project was initiated in September 1999 following approval by the Office of Information Resource Management's Project Review Board, completed as a pilot project in December 2003, and integrated into the regular programs and activities within the EMS Division.



Currently, 24 of the 32 EMS agencies (including King County Medic One) collect data electronically across King County, including Bellevue Fire Department, Eastside Fire & Rescue, Fire District #27, Fire District #40, Fire District #44, Kent Fire & Life Safety, King County Medic One, Kirkland Fire Department, Maple Valley Fire & Life Safety, Mercer Island Fire Department, North Highline Fire District (#11), Northshore Fire Department, Port of Seattle Fire Department, Redmond Fire Department, Renton Fire Department, SeaTac Fire Department, Seattle Fire Department, Shoreline Fire Department, Snoqualmie Fire Department, South King Fire & Rescue, Tukwila Fire Department, Woodinville Fire and Life Safety, Valley Regional Fire Authority, and Vashon Island Fire & Rescue. These departments represent over 94% of the over 200,000 MIRFs generated each year.

The collection and consolidation of data via electronic means has vastly improved the accuracy and completeness of EMS data regionwide, enabled secure access to the aggregate data by individual service providers for better local area system oversight, allowed for more intensive analysis of the data regionwide, and facilitated the assembly of system summary reports such as the annual report to the King County Council and the EMS strategic plan.

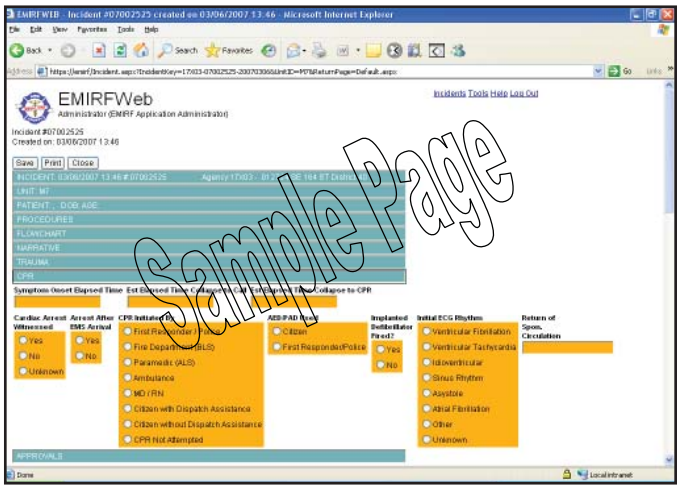
Another major objective of the Regional Data Collection Project was to establish secure connectivity with local area hospitals. The immediate benefit of such a network was to allow current quality improvement activities to include patient outcome information, a critical element of patient care review, affecting EMS patient care protocols, policies, and procedures. A long-term objective for hospital connectivity is the ability for EMS personnel to provide hospitals with a medical incident report in advance of patient arrival at the facility. This is exceptionally useful to hospitals in instances where patients require mobilization of medical resources such as a catheterization lab or a specialized surgical team.

Initiated as a pilot in March 2005, Valley Regional Medical Center (VRMC) worked diligently with Kent Fire Department, Fire District #40, South King Fire & Rescue and the EMS Division to create a methodology for linking pre-hospital patient records to hospital-based records. Testing of the model was completed in June 2007 and ongoing delivery of hospital outcomes for EMS patients delivered to VRMC over secure lines was established in July 2007. This model is expected to be used to establish connectivity to other regional hospitals.

In all cases of data collection and transfer, the strictest policy of patient confidentiality is maintained. This includes utilization of secured methods for data transfer and limited access to confidential information in accordance with the Washington State Uniform Health Care Information Act (RCW 70.02) and Health Insurance Portability and Accountability Act (HIPAA) regulations.

As a subset of the Regional Data Collection Project, the Alternate Input Device (AID) Project was designed specifically to evaluate development of an electronic data collection application that could be loaded on mobile hardware devices for use in the field. The AID software was modeled after the current King County paper Medical Incident Report Form (MIRF).

Initiated in May 2002, the AID Project was implemented in three phases. Phase I focused on methods for capturing the different types of EMS data and developing the electronic form. Phase II applied the user feedback from Phase I to develop a more robust electronic field data collection form. Phase III added the capacity to import dispatch center data and created professional field-ready printouts of incident data. The AID Oversight Committee reviewed the findings and was highly supportive of the AID form and the direction of the AID Project. However, the committee suggested any efforts to move forward would need to be fully integrated into a new regional technology plan.



With the expected expiration of the current 2002-2007 EMS levy in December 2007, efforts to prepare for the next levy period are underway. This includes development of the Enhanced Network Design Project, a proposed strategic initiative that builds on the completed Regional Data Collection Project and focuses on

a countywide fully integrated EMS data collection network that would include dispatch centers, hospitals, and field devices.

Web-based Training for Dispatchers and EMS Personnel: Development of training programs that utilize current web-based technologies allows for expedient and cost-efficient delivery of training services for dispatch and EMS personnel. The web-based training strategic initiative (EMS Online) targets the development of new basic and continuing education modules for dispatchers and ongoing development of continuing education modules for EMTs and paramedics.

This method of delivery allows project participants an opportunity to log onto the Web and access training modules during non-peak service hours and receive training in intervals that best meet the needs of the participant. Lessons are interactive with a focus on application of the objectives, and include a participant feedback mechanism built into the lesson plan allowing students immediate response on both test questions and scenario responses.

For details regarding the current status of web-based training projects for dispatchers please refer to page 26, and for EMTs and paramedics, please refer to page 45.

Regional EMS Tracking Resource - Online (RETRO) Project: The RETRO Project, an approved strategic initiative in the ***EMS 2003 Supplemental Plan***, was designed to build a centralized database to track and store information essential about the approximately 4,000 EMS personnel who work in King County, including the dates and requirements related to certification and recertification, reciprocity, practical skill set completion for certification, and teaching certification requirements.

Phase 1 of the project consisted of hiring an Information Technology Project Manager to conduct a feasibility analysis to determine if the benefit was worth the effort. Phase 1 was started in January 2006 and was completed in December of the same year. The findings from Phase 1 indicated that steps should indeed be taken to implement an Electronic Records Management (ERM) system (Phase 2) to replace the existing paper-based program as there were multiple benefits over paper-based records, including enhanced search and data extraction capabilities.

Implementation of Phase 2 began in January 2007 and required searching for a scanning solution that could convert the paper records into the ERM system for storage and retrieval. Image Source, Inc. was selected as the partner to bundle and configure the records and the ERM system was put into place in early February 2007.

The ERM database hosts information that links to the scanned images, thus ensuring that the EMS Division is better able to track state-certified EMS personnel certification and recertification requirements critical to maintaining or improving current standards of patient care. In addition, the system is used to collect and track information for each individual entered into the EMS system in King County eliminating the intensive, time-consuming use of paper files. Through a combination of cost savings and programmatic efficiencies, the RETRO Project was able to hire a Records Manager to run the ERM system and continue the transition of paper records into the ERM database.

The combination of a full-time Records Manager, a well-designed ERM system, and hard work allowed for completion of Phase 2 of RETRO in June 2007, six months ahead of schedule. This work included scanning and archiving more than 600,000 pages of existing licensing and certification records, continuing education, and annual workshop paper documents. With the implementation of Phase 2 ahead of schedule, an additional module was created to track the completion of initial EMS training by students and adding it to their personnel profile. This module will be available for use by the third quarter of 2007.

Phase 3 of RETRO is slated to begin in the first quarter of 2008 and will include the integration of the ERM system along with a personnel database tracking system (Workforce). This will allow for the creation of an individual electronic folder pertaining to each EMS person who completes an initial EMS training, certification recertification, or a continuing education course and works or volunteers in King County.

Development of strategic initiatives that incorporate advancements in technology into the fundamental design of EMS system programs supports strategic directions identified in the EMS 2002-2007 Strategic Plan Update***. Using the current standard practice of implementing electronic systems to improve data quality and efficiency, provide flexibility in training of EMS personnel, streamline record management, and reduce record retrieval demand meets both the Strategic Direction objectives of identifying innovative technologies to improve patient care and using resources in an efficient and cost-conscious manner.***

III. EMS System Efficiencies

The Emergency Medical Services (EMS) system provides an internationally regarded regional service to the residents of King County. Improvements and innovations regarding the management and financing of the four EMS levy-supported ALS, BLS, Regional Services and Strategic Initiative sub-funds, review of EMS standards of practice, continuation of injury and illness prevention programs, and analysis of particular EMS sub-populations that could benefit from enhanced care are integral to the provision and maintenance of any high quality EMS system.

The following section describes these four primary efficiency-related strategic initiatives:

Financial Review of EMS Sub-Funds: The EMS levy in King County provides full support for Advanced Life Support (ALS) services, Regional Services, and Strategic Initiatives; and contributes to Basic Life Support (BLS) services. As part of the Medic One/EMS 2008-2013 levy planning process, elected officials and representatives of cities and unincorporated reviewed areas conducted a review of each of the sub-funds and the programs funded by each area. This review process was useful in educating decision-makers on how funds are being spent, identifying areas for improvement, assisting in the prioritization of projects, and providing flexibility in responding to program needs. The process resulted in program and financial recommendations that were approved by an Elected Officials Steering Committee and the King County Council; and will be placed on the November 2007 ballot for approval by the voters of King County.

ALS Sub-Fund: As part of the levy planning process, an ALS subcommittee was formed representing all paramedic providers in King County. The committee identified a number of themes related to objectives for providing ALS service in the next levy period. First and foremost, ALS needed to remain the primary recipient of the Medic One/EMS levy and the first commitment for funding within the Medic One/EMS system. The theme of fully covering the costs of ALS costs was discussed, along with the issues that tended to push costs (cost shifting) onto providers. In addition, the committee discussed developing a policy for the provision of ALS services in outlying areas when the demand did not meet the standard criteria.

BLS Sub-Fund: During the levy planning process, a BLS subcommittee was formed to evaluate and address BLS issues and concerns. This committee acknowledged that ALS was the priority with the levy and that the levy was designed to contribute limited funding to BLS providers to help ensure uniform and standardized patient care and enhance BLS services. Subcommittee members also wished to do no harm to the current Medic One/EMS system, but work to enhance it. However, since the beginning of the regional Medic One/EMS levy, increases to the BLS allocation have been limited to growth in the total levy amount, kept frozen, or limited to CPI. This concerned BLS providers as BLS costs had risen at a rate higher than the increases in the BLS allocation. Historically, there has been no method to tie the BLS allocation to the Medic One/EMS system and no rationale for how to address the increased costs. The committee also recommended evaluating the formula for allocating BLS funds among agencies.

Regional Services and Strategic Initiatives (RS/SI) Funds: A combined subcommittee reviewed for Regional Services and Strategic Initiatives for the next levy period. This committee undertook a systematic and detailed evaluation of the 2002-2007 core programs and responsibilities of Regional Services. The initial review process and discussion focused on whether each program should be maintained, enhanced, or terminated and whether the efforts of the programs might duplicate other programs' deliverables. The significance and success of the 2002-2007 Strategic Initiatives were also assessed to determined whether these programs should transition into 'on-going' programs within the King County EMS Division and receive continued operational funding. This detailed review exposed what sort of programs might be missing from the system and may need to be developed.

For more information on the subcommittees and recommendations please refer to the ***Medic One/ EMS 2008-2013 Strategic Plan***.

Paramedic and EMT Procedure and Patient Treatment Evaluations: Provision of the highest level of patient care is the primary objective of the EMS program in King County. Ongoing review of paramedic and EMT procedures and patient treatment plans is essential to maintaining a quality EMS system. The approach of the EMS Division is to use detailed evidence gathered in the community to make informed decisions about treatments and programs. In general, small pilot projects are implemented on a limited scale to allow for adequate review and analysis to determine if regional implementation is warranted. The following items characterize the variety of evaluations that were recently completed or are currently underway in the county:

Completed: Glucometry: Glucometry is a minimally invasive procedure (finger stick) that provides

rapid measurement of blood glucose levels and can be helpful in the assessment of patients with an altered level of consciousness. In July 2005, a pilot project with two fire departments was initiated whereby patients treated for hypoglycemia (low blood sugar) were evaluated to see if they could safely be left at home following appropriate response to therapy. Follow up calls to patients who had been treated by EMTs provided enough data to determine that EMTs could safely manage hypoglycemic patients, and that the policy to allow these selected patients to be left at home with instructions was a safe policy. As a direct result of these findings, glucometry performed by EMTs became an approved procedure in all of King County effective January 2007.

Completed: Intravenous vs. Intranasal Naloxone: Naloxone (Narcan) is a very effective drug that reverses the effects of narcotic overdose that can lead to accidental or intentional cessation of breathing. It may be administered intravenously or intranasally. The current standard of practice in the treatment of an overdose is for paramedics to administer intravenous naloxone. A review comparing the risks and benefits of intravenous naloxone compared to intranasal naloxone showed that while the intranasal route is safer, it has a slower onset of action. As such, both routes of delivery will be available to paramedics, and use will depend on the clinical situation.

Completed: Emesis in Cardiac Arrest: Some evidence exists that excessive ventilation during cardiac arrest may lead to emesis (vomiting) and subsequent airway compromise. In order to see if this was a problem in the EMS system in King County, cardiac arrest-associated emesis was evaluated. In the more than 1,000 episodes of cardiac arrest that were reviewed, emesis was present in 32% of the cases. Two-thirds of emesis events occurred prior to EMS arrival and the presence of emesis was associated with a decreased odds of survival. Based on these data, EMTs were determined to not be over-ventilating cardiac arrest patients.

Completed: Incidence of Upper Body Cyanosis: The purpose of this study was to determine the incidence and significance of upper body cyanosis (a bluish discoloration of the skin due to inadequate oxygenation of the blood) associated with out-of-hospital cardiac arrest. Findings from this study were important for their therapeutic implications in the management of cardiac arrest victims. All cardiac arrests were examined during the 5-year period from 2000-2005. Out of a total of 3,915 patients with cardiac arrest, 108 patients had upper body cyanosis and 38 had autopsies. There was a high incidence of hemopericardium or dissecting thoracic aortic aneurysm compared to patients without mention of cyanosis. The therapeutic implication is to administer large amounts of fluids to patients with cyanosis when they do not respond to conventional therapy.

Completed: Cardiac Arrest in Schools: Schools have been identified as a relevant location to consider emergency preparedness planning and in particular cardiac arrest care. More specifically schools have been identified as desirable locations for automated external defibrillator (AED) placement. However, population-based data on incidence, circumstances, patient characteristics, and outcome of cardiac arrest in the school setting are lacking. The current study helps address these issues by reporting a 16-year experience of cardiac arrest at schools in a large metropolitan community such as King County.

During the study period, there were 97 cardiac arrests that occurred in schools, accounting for 0.4% of all treated out-of-hospital cardiac arrests and 2.6% of public location cardiac arrests.

Approximately 90% of these cardiac arrests occurred among adults. School-based cardiac arrest occurred on average in 1 of 111 schools annually with a greater annual incidence among colleges (1 cardiac arrest per 8 colleges per year) compared to high schools (1 per 125 high schools per year) compared to lower levels schools (1 cardiac arrest per 200 lower level schools per year). These data suggest that cardiac arrest is a rare occurrence in school. Those most likely to benefit from a school-based AED program would be faculty and staff and adult visitors to the school.

Ongoing: Safety of Central Venous Lines for Critically Ill Patients: Paramedics have long practiced the placement of central venous catheters via subclavian and internal jugular routes as a means of life-saving venous access in the critically ill. This practice is well supported in the non-critical patient under the care of a physician in a surgical setting. There is, however, no known demonstration of the effectiveness of central venous access in the critically ill patient under the care of the paramedics in the pre-hospital environment. This study was undertaken to assess the efficacy and safety of central venous line placement in the pre-hospital setting.

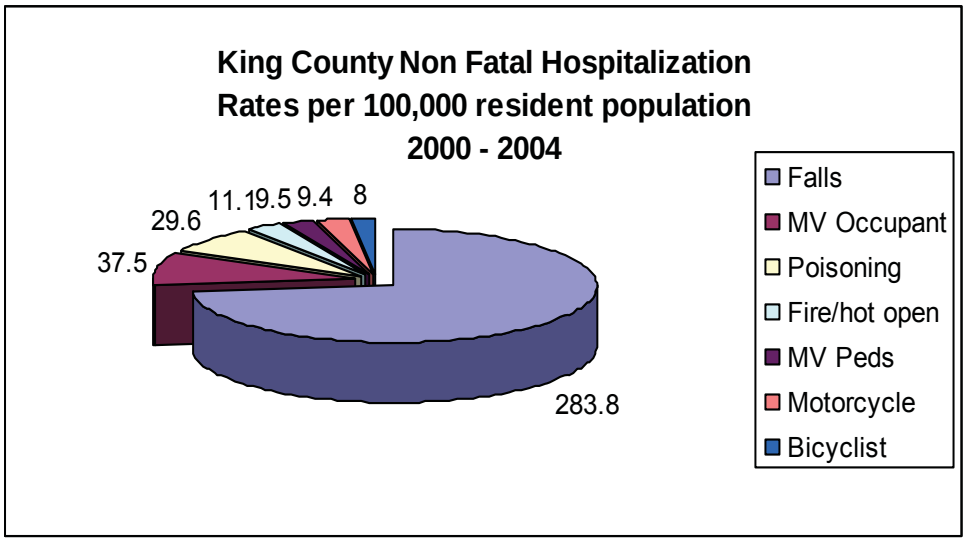
Ongoing: Cardiac Arrests in Exercise Facilities: A survey of health clubs in King County has shown that these 'high risk' locations have a particularly low adoption rate of automated external defibrillator (AED) programs. Numerous studies have demonstrated the importance of timely defibrillation in the 'chain of survival' for out-of-hospital cardiac arrest. This study seeks to evaluate the incidence of cardiac arrest at health clubs in Seattle and King County and whether or not existing dissemination of AEDs into exercise centers has a significant impact on patient survivability. Data analysis for this study is currently ongoing.

Ongoing: Dispatcher Assisted Resuscitation Trial (DART) - Limited English Proficiency: A subset of the DART trial (see page 53 for the full study), this study is reviewing calls to 9-1-1 for cardiac arrest in which the reporting party has limited English proficiency (LEP). As King County becomes more diverse due to increasing non-English speaking immigrant populations, inefficient communication between dispatchers and callers with LEP communities is a growing concern. The proposed study involves two main components. The first is an anonymous survey of dispatchers at four dispatch centers in King County to better assess communication problems, strategies used when working with LEP communities, and levels of stress during these calls. The second component is a systematic analysis of 200 9-1-1 dispatch tapes with LEP callers and 200 English-fluent controls. Information from both the survey and the dispatch tapes will be used to develop a training curriculum for dispatchers in King County about effective communication with LEP communities.

Ongoing: Aspirin Use by EMTs for Acute Coronary Syndrome: Currently, only paramedics are allowed to administer aspirin to patients; EMTs can only assist patients in taking his or her own aspirin. A pilot study of EMT administration of aspirin for acute coronary syndrome is underway at Eastside Fire & Rescue and Maple Valley Fire & Life Safety to evaluate the congruity between EMT and paramedic diagnosis of acute coronary syndrome. EMTs at these two departments have been authorized to administer aspirin to patients who meet several criteria for acute coronary syndrome in the hopes that the anti-inflammatory properties of aspirin will start working 5-10 minutes sooner. If the program is found to be safe and effective, EMTs countywide will be authorized to administer aspirin for acute coronary syndrome.

The evaluation of paramedic and EMT procedures and the assessment of patient treatment protocols was first introduced as a strategic initiative in the ***EMS 2003 Supplemental Plan***. As a result, numerous small pilot projects have been implemented across the county that have provided detailed information regarding a variety of EMS procedures and protocols and encouraged informed decision-making as to the implementation of any changes. This strategic initiative is expected to be incorporated into the new Medical Quality Improvement section as outlined in the ***Medic One/ EMS 2008-2013 Strategic Plan***.

Injury Prevention Programs: Each year in the United States, an estimated 150,000 people die as a result of injuries and an additional 39 million people require medical care for their injuries. Although the greatest cost of injury is in human suffering, the financial cost of unintentional injuries in 2002 alone was nearly $586 billion. Furthermore, injuries cause almost 5 million years of potential life lost each year, exceeding years lost to cancer and heart disease. Injury is predominately a problem for the young and is the leading cause of death for those under 45 years of age. In the elderly, falls account for many hospitalizations, and can often initiate the decline in health of an individual ending in death.



It is helpful to think about injuries using two distinct categories - intentional injuries such as homicides and suicides, and unintentional injuries such as falls, motor vehicle crashes, and burns. Injury prevention consists of the interventions that eliminate or reduce the likelihood of injury. The EMS Division injury prevention program is designed to reduce *unintentional* injuries and has devoted significant time and energy into building long term relationships with fire departments, community agencies, and organizations that work toward the common goal of reducing injury and death through injury prevention and public education programs.

Some of these injury prevention partners include the King County Fire & Life Safety Association (comprised of Public Fire Educators of fire departments and fire districts of King County), the Washington State Safety Restraint Coalition, the Washington Traffic Safety Commission, South King County Child Passenger Safety Team, the Booster Seat Coalition, the Puget Sound Educational

Service District, the Washington State Department of Health - EMS and Trauma System, Healthy Aging Partnership, Senior Services of Seattle & King County, the Seattle Mayor's Office on Aging, Visiting Nurse Services, Harborview Medical Center, Public Health Community Health Centers, Group Health Cooperative, and the Washington State Department of Licensing.

Fall Prevention – Fall Factors Program: In King County fall-related events comprised 17% of EMS responses among persons 65 years and older. Falls are a high cost health care problem in Washington State and the public pays a high proportion of these costs. The Fall Factors program started out in 1998 as a fire department-based community program to address the need for reducing fall risks in the elderly community. Fire departments and EMS Division personnel provided free home evaluations and fall prevention safety devices as well as educational information on how to reduce the risk for falls.

In the seven years the program has been active, over 1,134 people have participated in this program. As a result, an overall 21% decline in falls and 24% among those who reported a fall in the 12 months prior to enrollment was noted. Other studies in similar populations (older persons 65+ with prior falls) with comparable follow-up that have investigated the natural history of falls have reported a 50-67% risk of falls. The Fall Factors program appears to have reduced the relative risk of falls by approximately 50% compared to other fall studies.

Fall Pilot Study: From the Fall Factors program emerged the fall pilot-study entitled 'A Randomized Controlled Trial of an Emergency Medical Services Based Program to Reduce Falls among High-Risk Older Adults'. Initiated in February 2003, this pilot study was conducted in the city of Bellevue to assess the feasibility of conducting a large scale randomized trial of a multi-faceted fall prevention intervention and evaluate the degree and duration of benefit that would be expected from the intervention.

Educating participant on preventing falls

Consented participants were randomized after collection of baseline information. The intervention group received 1) individual-specific education concerning prevention of falls; 2) standardized home and personal safety assessment with appropriate modification; and 3) a notification to the patients' medical provider about the fall and potential need for medical follow-up. Environmental hazards identified by the assessment were reviewed with the participant, and where indicated, home devices were installed (including options for bath mat, tub and wall grab bars, night light, rug slip, shower chair, shower transfer bench, hand held shower, toilet safety frame, tread tape, bed assist railing and/or toilet raiser).

The intervention visit required approximately two hours for each participant. Installation of devices required an additional hour. Participants were asked to submit postcards on a monthly basis with notification of subsequent falls. In addition, participants were surveyed at the end of the 3-month pilot study to assess satisfaction with the program. Control participants received an assessment during the study period, but no modifications or notification interventions. However, once the study was complete, control participants were provided with the same interventions provided to the intervention group.

Evaluation of the baseline characteristics demonstrated adequate randomization. Participants returned > 80% of their monthly fall postcards and responses were similar between the intervention and control groups. In each of the three months of observation, participants in the intervention group reported a decreased incidence of falling as compared to those in the control group (0.23 vs. 0.33, 0.38 vs. 0.67 and 0.42 vs. 0.64 for the first, second and third months respectively). *Overall, intervention group participants experienced a 36% decrease in risk in fall accidents as compared to control participants (RR 0.64 95%CI 0.38-1.06).* Although the pilot study was completed in September 2004, due to the significance of the study findings, the fall prevention program was incorporated as a regular ongoing program. Over 185 participants have been enrolled into the program since its inception. The Falls Factors program is expected to continue as a strategic initiative as outlined in the ***Medic One/EMS 2008-2013 Strategic Plan***.

Think Again Program: Motor vehicle crashes are the leading cause of mortality among teenagers and young adults. Wearing a seatbelt can decrease the risk of death and injury that may result from a motor vehicle crash. Despite this information, some teenagers still do not routinely wear seatbelts. Consequently, efforts to increase seatbelt use among teenagers are imperative. The Think Again Program is a unique effort by the King County Fire & Life Safety Association (KCFLSA) and the EMS Division to reach teen drivers with real-life stories of the consequences of not wearing seatbelts, and of using alcohol before getting behind the wheel. The goal of the program is to reduce the rate of growth of car crashes within the 15-19 year old age category in King County.

Instructors for this classroom presentation are firefighter/EMTs and paramedics who use graphic car crash photos, personal stories, and scenarios with audience participation to depict the consequences of reckless driving decisions. The KCFLSA provides instructor training, program curriculum, promotional materials, program evaluation and instructor payment to all King County Fire Departments who join the Think Again program. Fire departments are asked to provide a department liaison, medical equipment necessary for the program, and instructors. The Washington Traffic Safety Commission and the EMS Division

provide the funds.

The program is available countywide and EMS agencies that actively provide the Think Again program to schools within their jurisdiction include: Bothell Fire Department, Eastside Fire & Rescue, Fire District #40, Kent Fire Department, Kirkland Fire Department, Northshore Fire Department, Redmond Fire Department, Shoreline Fire Department, South King Fire & Rescue, Valley Regional Fire Authority, and Woodinville Fire Department.

A wide variety of factors contribute to the Think Again program's innovation and uniqueness. The program's structure and approach was initially designed with direct input from students in the target group. Focus groups helped narrow the messages and the methods of delivery. Student feedback was the primary reason that a straight-talking, no-preaching approach to the subject of teen driving was chosen as the method of delivery. The focus of the presentation is to provide graphic facts, describe real life consequences, and encourage personal decision-making.

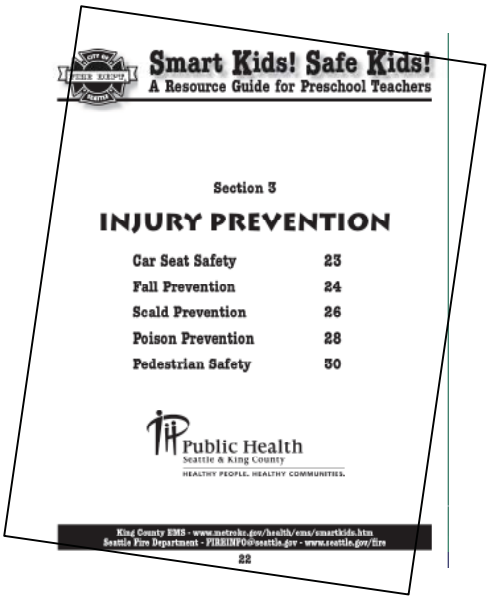
The selection of firefighter/EMTs and paramedics as instructors was very deliberate. As first responders with direct experience at the scene of traumatic car crashes, firefighters and paramedics have credibility that cannot be duplicated. Although the instructors are public safety employees, they are not associated with law enforcement and is thought to help with the acceptance of the messages by teenagers. The first hand experience of the instructors contributes to the accurate reenactment of the medical procedures at a trauma scene, and the personal stories create a true blend of factual events and emotional connection.

Although labor intensive, the individual classroom presentation style of the Think Again program allows a high level of personal interaction, promotion of critical thinking and problem solving skills, and connection between instructors and students. Despite the small group sizes, over 44,000 students have participated in Think Again from October 1998 to September 2006. At this time, the Think Again program is being managed and funded by individual fire departments.

Child Passenger Safety at Public Health Centers: Child restraint systems have contributed to a 71% reduction in death for infants in passenger cars (National Highway and Traffic Safety Administration, Traffic Safety Facts 1998). The Child Passenger Safety program was first piloted in April 2004 at the Federal Way Public Health Center where monthly classes were held for pregnant moms or patients who were in need of a car seat for their infant. From this pilot program, four other Public Health Centers started similar programs for their maternity support services pregnant clients.

The Child Passenger Safety program is provided by EMS staff that are Certified National Highway Transportation Administration Car Seat technicians and the class is offered once a month at each Public Health Center (Federal Way, White Center, Eastgate, Columbia, and

Northshore) to pregnant moms by appointment. Should a client need a car seat, one is provided to them. Since the inception of the program, a total of 850 clients have taken the Child Passenger Safety course, 585 were pregnant moms and 265 had toddlers. This program is subsidized by reimbursement to the EMS Division from the Public Health - Seattle & King County 'First Steps' program.


Smart Kids! Safe Kids!
A Resource Guide for Preschool Teachers

Section 3
INJURY PREVENTION

Public Health
Seattle & King County
HEALTHY PEOPLE. HEALTHY COMMUNITIES.

King County EMS - www.metrokc.gov/health/ems/smartkids.htm
Seattle Fire Department - FIREINFO@seattle.gov - www.seattle.gov/fire
22

Smart Kids! Safe Kids!: Among children ages 1 to 4 years old, falls are the leading cause of unintentional injury, followed by fire/burns, motor vehicle occupant injury, pedestrian injury, and poisonings. Injury rates vary with a child's age, gender, race and socioeconomic status. Younger children, males, minorities and poor children suffer disproportionately.

The Smart Kids! Safe Kids! curriculum was developed in collaboration with the Seattle Fire Department for preschool teachers to relay pedestrian safety, burns and scald prevention, helmet safety, and poison prevention education to their students. The program first began with a poison prevention curriculum at a couple of preschools in the fall of 2002.

As a follow up to this successful effort, the Region 4 Life Safety Council in conjunction with other child safety organizations (including the King County Fire and Life Safety Council, BIC Corporation, Fire Proof Children, Pierce and Snohomish Safe Kids, Central Region Trauma and EMS Council and the Puget Sound Education Service Districts) hosted a one day workshop in March 2004 for early child educators (i.e. preschool teachers, Head Start, daycare providers, fire and life safety educators). The workshop provided knowledge on best practices for utilizing existing safety curriculum in preschool settings as well as the importance of developing disaster preparedness measures. In addition, participants developed an understanding of the risk of fire, burns and unintentional injuries to preschool children and the preschool child's role in these incidents and the prevention of them. Participants also learned the importance of teaching preschool children-specific fire safety and injury prevention skills and the role of practice and positive reinforcement.

Subsequently, two other similar workshops have been hosted in May 2005 and March 2007. Course evaluations reflected a positive gain in knowledge about the risk to young children and what proper behaviors need to be taught to young children to help reduce and prevent unintentional injuries. Both the fire and injury prevention curricula have been evaluated and proven to be successful teaching tools. The information presented included teaching methodologies that have been proven to be effective with these young learners.

Another component of the preschool program is the 'Parent Handbook,' a resource guide for parents to educate their children on preventing injuries at home. It is estimated that the potential is there to reach over 7,000 children with valuable fire and injury prevention education. Participants learned the importance of providing these lessons throughout the school year, rather than once a year during fire prevention week, so the EMS Division is confident that not only will children have exposure to these lessons but the frequency should increase as well.


REGISTRATION FORM

Fire & Injury Prevention Workshop for Preschool Providers

Monday, March 26, 2007
Puget Sound Educational Service District (ESD)
800 Oaksdale Ave SW
Renton, WA
8:30A.M.-- 3:00P.M.
Cost $20.00

smart kids! safe kids!

Play safe! Be safe!

Workshop includes:
- Play Safe! Be Safe! fire safety curriculum
- Smart Kids! Safe Kids! injury prevention curriculum
- Disaster Preparedness for Preschools

Sponsored by
King County Fire & Life Safety Association
Smart Kids! Safe Kids! program courtesy of
Seattle Fire Department & King County Emergency Medical Services

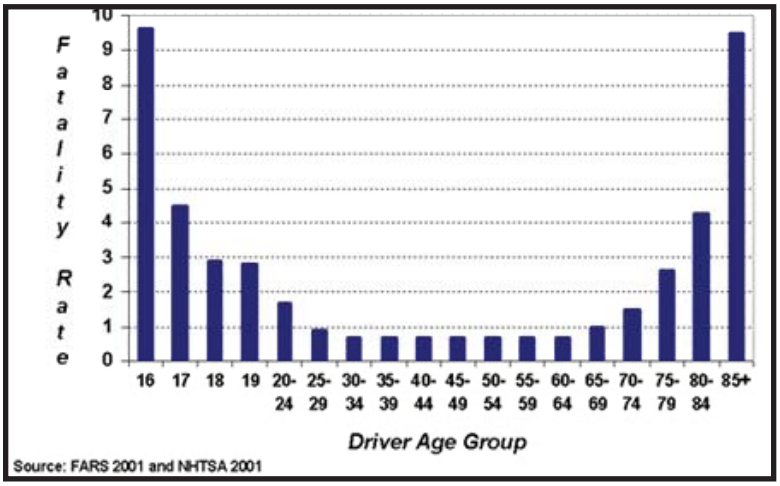
Certificate of completion provided
for 5.5 hours of STARS continuing education credits
Please arrive on time. You must attend the entire workshop to receive STARS credits.
For more information, contact
Kirsten Clemens at: 425-489-0304 or by email at: Kirsten.Clemens@ci.kirkland.wa.us

REGISTER EARLY! SPACE IS LIMITED. one form per person
Registrations must be received by March 21, 2007. Make checks payable: KFPLSA

Name: _____ Phone: _____
Mailing Address: _____ City/Zip _____
email: _____
Preschool/daycare name: _____
Number of children in your school/daycare: _____ Age range: _____
STARS ID# _____ Did you remember to enclose a check? ❑ yes
Mail with payment to:
Kirsten Clemens, Kirkland Fire and E.M.S., 10726 Beardsley Blvd., Kirkland, WA 98011

Note: STARS (a Washington State accreditation organization that approves continuing education for pre-school and child care providers) approved the King County Fire and Life Safety Association as a STARS-approved training organization, enabling the Smart Kids Safe Kids program to be eligible for the needed continuing education credits for teachers that attend these valuable workshops.

Mature Driver Program: The proportion of the population over age 65 is increasing at an exponential rate. The population in the United States is expected to increase over 29% by the year 2030, with the greater than age 65 population rising to over 104% of its current level (1998 US Census Bureau Report). As age increases, the rate of fatalities per mile driven regresses to the same rates found within the youngest driving population. While those over the age of 85 have the same fatality rates as those aged 16, reasons and causes are not similar. Half of all fatal car crashes involving those 80 years and older occur at intersections. Making left turns, merging into traffic and entering on ramps are also risky activities. Impairment of driving-related functions can begin at any age, as early as 50 years old for some and much later for others. Functions necessary for driving can be categorized into visual, mental, and physical and the most effective intervention program addresses each one of these types of functional abilities.



The *Maryland Older Driver Program* has emerged as the most promising option for testing the capabilities of drivers using a specific computerized screening and assessment tool. The program employs ten different tests of functional capacity, four addressing physical aspects and six focusing on visual and mental abilities. The findings from this program have reinforced the proposition that loss of key functional abilities predicts an increase in driving impairment and higher risk of crash involvement and evidence suggests that it would be financially feasible to conduct functional capacity screening in a driver licensing setting for as little as $5-$10 per driver.

The Maryland Older Driver Program was piloted at various King County community settings and at the Department of Licensing (DOL) office in North Seattle from January 2006 through June 2006. As a result of this pilot, the EMS Division was invited to participate on the Washington State DOL 'At-Risk' Driver Task Force. This Taskforce is expected to provide ideas and recommendations on how to reach at-risk drivers before they are involved in a collision and provide final recommendations to the Department of Licensing and the Governor's Office by Fall 2007.

As identified in the ***Medic One/EMS 2008-2013 Strategic Plan***, all injury prevention programs are expected to be integrated into Regional Services starting in 2008 with the exception of the Fall Factors program.

Enhanced Care for Specific Populations: Management of emergency medical services usually includes the development and implementation of programs that target a unique subset of EMS patients. Providing a focal point for these programs provides more appropriate patient care and contributes to the overall efficiency of service delivery.

Supporting Public Health with Emergency Responders (SPHERE): The SPHERE acronym denotes an effort by the EMS Division in partnership with EMS agencies in King County to use EMS data to identify and manage patients with major public health problems. SPHERE is an innovative approach to creating an interface between the larger public health arena and the realm of emergency medical services. The metaphor of a sphere denotes the concept of obtaining clinical information and feeding it back to the patient in a useful and consistent fashion. It is a circle of information from the patient to the EMT and back to the patient as denoted in Figure 1 below.

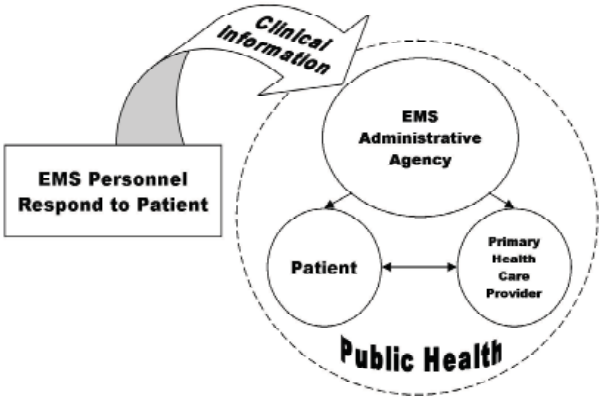
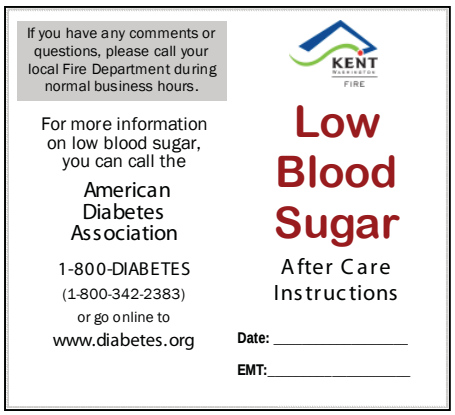


Figure 1: SPHERE

SPHERE is currently designed to help identify and control two major public health problems – hypertension and diabetes. Though SPHERE is an expansion of the traditional role that EMS personnel play in their communities, it affords the opportunity to have a large impact with comparatively modest additional effort. EMS personnel can respond to medical emergencies and simultaneously help fight serious chronic diseases in the community.

High blood pressure (HBP) and diabetes are two major public health problems. High blood pressure affects over 65 million Americans. It is estimated that one third of patients with HBP are unaware they have the condition and another third are inadequately controlled. Over 20 million Americans have diabetes (85% have type II diabetes) and another 6-7 million Americans have undiagnosed type II diabetes. Both conditions are major contributors to heart disease, stroke, and kidney failure. Since EMTs almost always determine the blood pressure as part of the routine patient care protocol and frequently check the blood glucose, there is a unique opportunity to identify new and/or uncontrolled cases of HBP and diabetes.


If you have any comments or questions, please call your local Fire Department during normal business hours.

For more information on low blood sugar, you can call the

American Diabetes Association

1-800-DIABETES

(1-800-342-2383)

or go online to

www.diabetes.org

KENT WASHINGTON FIRE

Low Blood Sugar

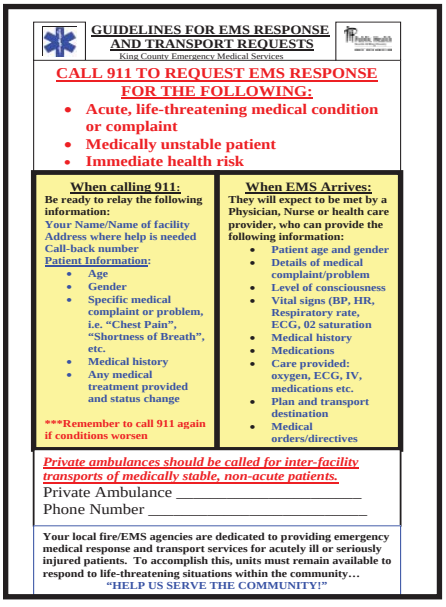
After Care Instructions

Date: _____

EMT: _____

The SPHERE team was awarded a Center for Disease Control grant in September 2006 to identify high blood pressure patients through the EMS system and link these patients to health care resources that can assist in managing the problem. The goal of the grant is to determine the best message to provide patients that will result in a blood pressure follow-up visit. The study is occurring in Shoreline, Bellevue, Renton, and Kent and will last two years.

Nursing Home/Adult Care Facilities: The EMS Division identified an opportunity in the community to educate nursing home/adult care facilities regarding the appropriate use of paramedic/ALS resources. Understanding the circumstances surrounding why nursing home/adult care facilities were calling 9-1-1 has helped focus the education efforts. Some of the reasons include calling after experiencing a delay in response from a private ambulance for patient transport, calling for a response despite having Physician's Orders for Do Not Resuscitate (DNR) on file for the patient, and calling when there is general confusion about what kind of care the patient requires. In addition, when calling 9-1-1 for assistance, facility staff did not often relay to dispatchers the appropriate and necessary patient medical information and/or did not understand the need for the dispatcher interrogation.


GUIDELINES FOR EMS RESPONSE AND TRANSPORT REQUESTS

King County Emergency Medical Services

CALL 911 TO REQUEST EMS RESPONSE FOR THE FOLLOWING:

- Acute, life-threatening medical condition or complaint
- Medically unstable patient
- Immediate health risk

When calling 911:

Be ready to relay the following information:

Your Name/Name of facility

Address where help is needed

Call-back number

Patient Information:

- Age
- Gender
- Specific medical complaint or problem, i.e. "Chest Pain", "Shortness of Breath", etc.
- Medical history
- Any medical treatment provided and status change

***Remember to call 911 again if conditions worsen

When EMS Arrives:

They will expect to be met by a Physician, Nurse or health care provider, who can provide the following information:

- Patient age and gender
- Details of medical complaint/problem
- Level of consciousness
- Vital signs (BP, HR, Respiratory rate, ECG, 02 saturation
- Medical history
- Medications
- Care provided: oxygen, ECG, IV, medications etc.
- Plan and transport destination
- Medical orders/directives

Private ambulances should be called for inter-facility transports of medically stable, non-acute patients.

Private Ambulance _____

Phone Number _____

Your local fire/EMS agencies are dedicated to providing emergency medical response and transport services for acutely ill or seriously injured patients. To accomplish this, units must remain available to respond to life-threatening situations within the community…

"HELP US SERVE THE COMMUNITY!"

In response to this community need, the EMS Division developed a nursing home/adult care facility educational intervention program consisting of a video, a job aid card (see insert at left), and in some cases, face-to-face training for health care providers. The objectives of the video were to provide facility staff with information on the EMS tiered response system and how it works, assist facility staff in getting the level of EMS response that was appropriate for the patient, and prepare facility staff about what to expect during the 9-1-1 call. The objective for the job aid card was to educate facility staff regarding what specific information they should be prepared to provide the dispatcher when calling 9-1-1 to enable the dispatcher to best help them.

EMS provider agencies assisted the EMS Division in providing this training to facilities in an attempt to reduce unnecessary requests for ALS from nursing homes, adult care facilities, and general medical clinics. Due to the large number of facilities in the region, an Emergency Medical Dispatch education specialist was hired to provide this training. Approximately 250 nursing homes or adult care facilities have received the training to date. Most of the trainings have been provided to the Nursing home/Adult Care facility administrators, and some have subsequently reviewed their individual agency policies for improvements based on the information they received in the trainings. The feedback has been positive and these trainings will continue with the objective of informing the staff about the tiered response system used in King County and improving triage and patient care for these special populations.

General Medical Clinics: The Dispatch Review Committee in cooperation with the EMS Division identified an opportunity to develop and deliver similar training as the nursing home/adult care facility training for staff in general medical clinics. An extensive QI process revealed a lack of understanding regarding the tiered response system used in King County along with an incomplete understanding of the information required by the dispatcher in order to send the most appropriate response. In late 2007 and in 2008, general clinic staff will receive training via video, job aide and in some cases face-to-face training with the objective of providing a better understanding of the EMS system and reducing the instances of inappropriate EMS demand.

Development of strategic initiatives that focus on efficiencies in EMS directly address the strategic directions identified in the EMS 2002-2007 Strategic Plan Update***. There are a variety of approaches to tackling this broad concept, including conducting periodic EMS fiscal reviews and analyses, evaluating EMS personnel protocols for opportunities to improve patient care, reducing injury and illness through community outreach programs, and developing innovative programs to better serve sub-populations in EMS. In aggregate, these programs have been successful in reducing unnecessary calls to 9-1-1, providing more appropriate care to patients, and using resources more efficiently.***

IV. Strategic Planning for Next EMS Levy Period

The ***EMS 2002-2007 Strategic Plan Update*** outlines the operational and financial recommendations for the 2002-2007 funding period and expires on December 31, 2007. The process for discussing and developing a regional strategic plan for the next EMS levy period began in earnest in October 2005 and resulted in the approval by the King County Council in July 2007 of a six-year, 30-cent EMS levy to be placed on the November 2007 ballot. This process required significant coordination and collaboration with all the EMS agencies, elected officials, and other stakeholders in King County. The approved ***Medic One/EMS 2008-2013 Strategic Plan*** incorporated all the necessary policy, programmatic, and financial aspects of the EMS system, focusing on the four separate EMS levy sub-funds of ALS services, BLS services, Regional Services and Strategic Initiatives.

C. EMS Division Programs and Activities

Introduction

In addition to the specific strategic initiative projects outlined in the ***EMS 2002-2007 Strategic Plan Update*** and ***2003 Supplemental Plan***, the EMS Division plays a significant role in developing, coordinating, managing, and evaluating other critical EMS programs throughout King County. These programs provide vital regional cohesion, including ensuring the standards for pre-hospital patient care are met by the 9-1-1 dispatchers receiving calls for medical assistance and the EMTs and paramedics responding to the scene. The importance of developing and supporting innovative regional programs is often overlooked or underappreciated. The following section describes the many varied regional programs managed by the EMS Division.

I. EMS Advisory Committee

The EMS Advisory Committee was formed in September 1997 as outlined in the ***EMS 1998-2003 Strategic Plan*** and has since met on a quarterly basis to discuss the progress of the strategic plan, review the development and implementation of the strategic initiatives, and act as a judicious forum for discussion of important EMS issues. This year the EMS Advisory Committee played a substantial role in supporting Emergency Medical Services in King County by providing critical input regarding the 2008 Medic One/EMS Levy process, ongoing oversight on the progress of the strategic initiatives, and review of the medic unit status in the region. The current EMS Advisory Committee membership and their respective representation can be found in Appendix F: 2005 EMS Advisory Committee Listing on page 93.

II. Regional Medical Control

As opposed to many other states, Washington does not have a state EMS medical director. Instead EMS legislated medical direction occurs at the county level and every county has a state appointed Medical Program Director (MPD). The King County MPD is responsible under the Washington Administrative Code (WAC) and Revised Code of Washington (RCW) for medical control and direction of certified EMS personnel in King County. Medical control is accomplished in large part through the delegation of medical oversight to the medical directors of individual paramedic programs and emergency room-based on-line medical control for ALS personnel. The King County Medical Program Director assists in training, medical quality improvement (QI), development of policies and procedures regarding ALS and BLS services, dispatch protocols, and provides written treatment guidelines for BLS personnel.

The Medical Directors' Committee, comprised of the medical directors from each ALS provider agency (Bellevue, King County Medic One, Redmond, Seattle, Shoreline, Vashon), provides program oversight for paramedic services. The committee meets on a quarterly basis to address pertinent medical issues. Topics of interest often arise from discussions initiated as part of

implementation of two strategic initiatives - 'Paramedic and EMT Procedures and Patient Treatment Evaluations' and 'Enhanced Care for Specific EMS Patients.' Specific areas of interest this past year have included a new QI form for intubated patients, development of a new QI form for central lines, review of intubation policies, and consideration of cardiac enzyme markers to identify at-risk patients for myocardial infarction.

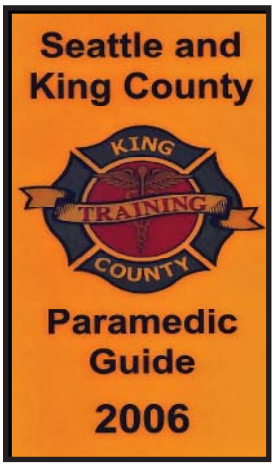
III. Basic Life Support (BLS) Training and Education Program

Helping you become the <u>best</u> through Training and Education!

The **Basic Life Support (BLS) Training and Education Program** provides initial training, continuing education, instructor education and oversight of the recertification process for over 4,000 Emergency Medical Technicians (EMTs) in King County. This requires considerable coordination and communication between the BLS Training Section staff and the EMS agencies to ensure that training and education programs are meeting agency needs as well as State of Washington requirements. In addition, the training section serves as the liaison between the Washington State Department of Health and the thirty-one fire/EMS agencies in King County. In this capacity, the EMS Division provides EMS agencies all pertinent information from the State regarding continuing education, certification, recertification, and regulatory and policy changes.

The following highlights current **BLS Training and Education Projects**:

<u>Patient Care Guidelines (PCG)</u>: The protocols used by EMTs to direct the pre-hospital care of patients are derived from the Patient Care Guidelines. The EMS Medical Program Director (MPD) is required by Washington Administrative Code (WAC) to draft and distribute these ***EMT Patient Care Guidelines*** to all EMTs in King County. The EMS system in King County is considered a national leader in EMS research and education, and as such, is committed to updating and distributing the PCG every two years to enable new and innovative techniques to be incorporated into overall EMT patient care. Revisions to the EMT guidelines were last made in January 2007 and were placed on the EMS Online training site so changes could be rapidly communicated to EMS personnel.



In addition, the first cooperative Seattle and King County Paramedic Guide debuted in 2006. This guidebook was built in cooperation with the University of Washington/Harborview Medical Center Paramedic Training Program and offers a countywide approach to paramedic guidelines/protocols. Similar to the EMT Patient Care Guidelines, this guidebook will be offered to each paramedic throughout King County with updates offered every two years.

Initial Training Classes for EMTs: Two initial EMT training courses are offered in the spring and fall of each year to personnel from all fire/EMS agencies in King County. Seattle/King County Police and King County Search and Rescue applicants are also permitted to participate in this educational opportunity. Each course consists of 120 hours of classroom and practical instruction, in addition to 10 hours of hospital observation time, using the U.S. Department of Transportation EMT-Basic curriculum as a baseline. Over 60 EMTs completed the EMT basic course in 2007 to date. This course was held in partnership with the Seattle Fire Department at the Joint Training Facility (JTC) in Seattle.

On some occasions, the Training Section partners with other fire departments to sponsor EMT classes outside the standard course structure. For example, the Training Section recently assisted Vashon Island Fire Department in conducting an EMT class on Vashon Island as a result of increased need for EMS providers on the island. A similar model was employed for Kent Fire & Life Safety, Redmond Fire Department and the Seattle Fire Department in early 2007 with excellent results. This relationship demonstrates the EMS Division's commitment to community partnership and the continued efforts toward quality regional education.

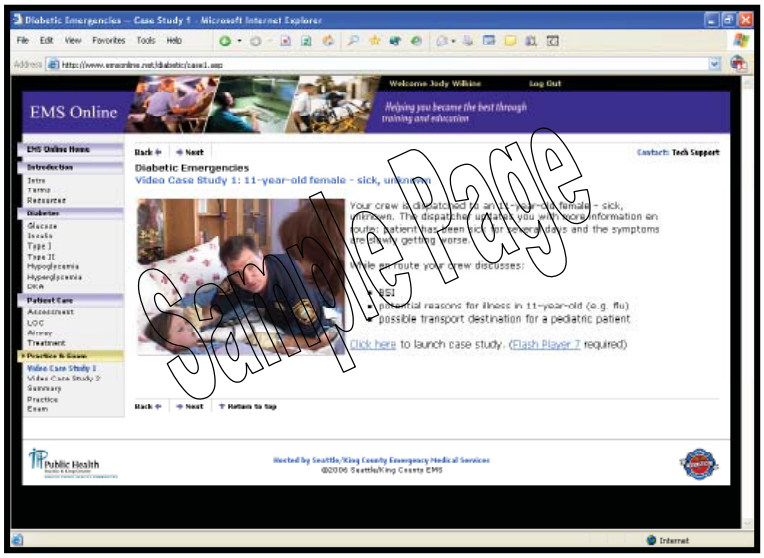
Competency Based Training (CBT): Each year, the State of Washington mandates that EMTs complete 10 hours of continuing medical education or a county-approved program of continuing medical education and evaluation. In King County, the topics are prescribed by the medical program director and include five annual modules on various emergency medical topics, a total of fifteen modules in a three-year recertification cycle. In aggregate, this program is referred to as Competency Based Training (CBT). The BLS Training staff develops, writes, performs instructional training, and implements the curriculum each year. The 2007 CBT curriculum includes the following selected topics: Sick/Not Sick, Soft Tissue Emergencies, Abdominal Pain, Altered Mental States, Pediatric Emergencies, and Infectious Disease (infectious disease is a yearly requirement).

A **CBT Online Training Website (EMS Online)** that delivers web-based CBT modules was developed for the first time in 2001 with the assistance of grant money from the Medic One Foundation. Thirty-three modules are now available online with over 10,000 EMTs and paramedics enrolled in the program throughout Washington state with 100% of the ~ 4,000 EMTs in King County using the program. Over 150,000 examinations/courses have been completed resulting in a dramatic reduction of CBT training costs to agencies (web-based training is approximately $18/EMT per year and standard classroom instruction is approximately $133/EMT per year).

EMS Online is designed for EMTs and paramedics to study the required subject matter in an interactive format, including realistic video case studies with complete online evaluations, all produced by BLS Training staff. The test results are automatically stored in an electronic database for centralized record keeping and reporting to county fire departments and EMS agencies. Each

module has a practical skills evaluation conducted by an onsite instructor to ensure clinical skills meet King County standards. BLS Training staff provides full-time technical support for the website and supports a full time instructor hotline for questions about the modules and treatment protocols. The website is currently being revised for the 2008 curriculum and will add improvements to this state-of-the-art training system including improved interactivity, site customization, new and innovative testing procedures and advanced reporting features.

The EMS Online Website was originally presented to the Washington State EMS and Trauma Licensing and Recertification committee in June 2003 and was subsequently approved for use in EMT continuing education. As a result, EMS Online was presented at the 2005, 2006 and 2007 annual Washington State Medical Program Directors (MPD) meetings, receiving overwhelming support for program innovation and excellence. The site has consistently earned high praise from the committee as an innovative and cost-effective method of delivering EMS continuing education with more than half of county MPDs in Washington state now approving and implementing the King County EMS Online program within their EMS agencies. EMS Online was officially launched *statewide* on May 1, 2005, and to date an additional 5,500 users outside of King County have been enrolled, supporting the program with a per-head user fee, with more EMTs/EMS agencies showing interest each day.



The goal was to have national/ international exposure for all EMS Online courses by the first quarter of 2007. The vision to offer this high quality, on-line educational tool outside the state of Washington was realized for the first time through a pilot program with Wayne Township Fire Department in Indiana. The department utilized and studied EMS Online for a three-month trial period and on completion determined that this program met their educational, scheduling and financial needs. Wayne Township Fire Department, the first national client, has officially incorporated EMS Online as their sole source of educational content. They pay a modest per-head fee to have this program available for each of their 250 members.

Other national pilot projects began in the fall of 2006 including EMS programs within the states of Idaho, Oregon, Utah, and Iowa, and to date, agencies in each of these states have incorporated EMS Online as their educational tool. Additionally, EMS Online has recently been adopted by the Navy (DOD) and is approved by the Department of Homeland Security as appropriate educational content for certified EMS providers. This effort is entirely consistent with the new effort by the Office of Business Relations and Economic Development to support commercial revenue generating activities and was published in the journal of Pre-hospital Emergency Care (Jerin JM, Rea TD, *Web-Based Training for EMT Continuing Education,* Pre-hospital Emer Care

2005; 9: 333-337).

EMT Defibrillation Program: In many cases of cardiac arrest, early defibrillation provides a greater chance of successful resuscitation. The chances of survival decline by up to 5% with each minute that goes by without rescuer care that includes defibrillation. This understanding produced local groundbreaking programs nearly 25 years ago that sought to train and equip EMT-firefighters with automated external defibrillators (AEDs) so that defibrillation could be delivered early after collapse. The overarching goal of the Early Defibrillation Program has remained the same over the years – to resuscitate the greatest number of persons who suffer cardiac arrest in King County through a comprehensive approach to cardiac arrest resuscitation.

The core components to achieve this goal have also remained similar and consist of a comprehensive plan that includes initial resuscitation training, continuing medical education, field documentation and reporting, equipment maintenance procedures, and quality improvement activities. These components require teamwork between local fire departments and districts and the EMS Division. The commitment to training and outstanding field care by EMS agencies is coupled with medical leadership that works hard to understand new advances in resuscitation and in turn determine their relevance and suitability to the current program. To this end, improvements in cardiac arrest survival observed in 2005 that corresponded to changes in EMT care for cardiac arrest were again evident in 2006 and provide support for the team approach employed by the EMT-Defibrillation Program. Ongoing efforts continue to try and refine and improve the interface between CPR and defibrillation and build upon the current high level of performance (see CPR Highlight on page 62).

IV. Emergency Medical Dispatch (EMD)

The EMS Division administers a comprehensive Emergency Medical Dispatch (EMD) program in King County, not including Seattle. These services include EMD Basic and Continuing Education training, web-based training, quality improvement, and medical oversight of the CBD Guidelines. There are approximately 180 emergency 9-1-1 dispatchers in King County. This program allows the dispatcher to triage callers so that the appropriate level of care is sent to the patient. During the past year, 18 dispatchers from King County completed the 40-hour Basic EMD Training class. In addition, 147 dispatchers were provided 8 hours of Continuing Education in EMD related topics. The EMD Instructor Course (train-the-trainer) is still being redesigned to meet the standards of an entirely problem-based delivery. This course will be piloted in late 2008.

The majority of dispatch activities during the 2002-2007 levy period were strategic initiatives and therefore fully described in Part II, Section B. Dispatch Enhancements on page 22. For the 2008-2013 levy period, these major dispatch enhanced programs have been integrated into Regional Services as ongoing programs.

Telephone Referral Program (TRP): The Telephone Referral Program continues to provide emergency medical dispatchers in King County an alternative method for handling non-urgent calls to 9-1-1. The TRP allows EMS calls that meet specific dispatch criteria to be transferred

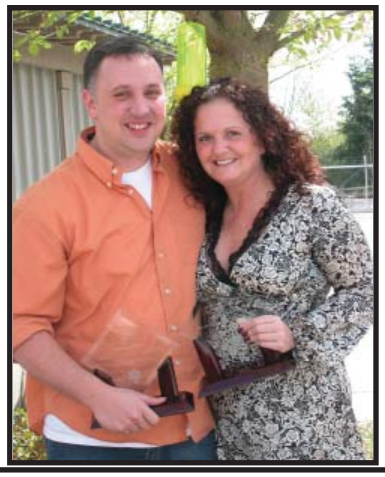
to a nurse line for patient assistance in lieu of providing a BLS response to the scene. Common examples of these low-risk, low medical need types of calls include complaints of sore throat, insomnia, sinus infection, and tooth pain. If the consulting nurse determines that a higher level of care or more urgent care is required, the caller is transferred back to the 9-1-1 dispatch center for BLS response.

Table 1: EMS Calls Referred to the Consulting Nurse Line

Year	Valley Communications	Eastside Communications
2000	269	339
2001	208	421
2002	378	335
2003	472	328
2004	521	336
2005	396	289
2006	491	275
Total	**2,735**	**2,323**

During the 2002-2007 levy period, 5,058 calls were referred to the nurse line, including 2,735 calls from Valley Communications Center serving South King County, and 2,323 calls from Eastside Communications Center serving east and north King County (see Table 1 above). The TRP program has not only had an impact on the number of BLS responses to low risk, low medical need calls for service but it has also provided for an alternate, more cost-effective method of managing calls to 9-1-1 and the nurses are able to take the time to assist patients according to their medical need.

The Telephone Referral Program is an outstanding example of how the EMS community collaborates in the development of a cost-effective solution while improving patient care. The TRP was developed as a strategic initiative pilot project in 1998 and was integrated into Regional Services as an ongoing program in 2002. A strategic initiative for the 2008-2013 levy has identified a need to further address how to eliminate unnecessary, non-urgent calls to 9-1-1 and responses to these calls by BLS units. As a part of this initiative, further analysis of the Telephone Referral Program will be conducted in order to determine if it is being utilized to the fullest extent.



TJ Bloomingdale and Karen Hanson

EMD of the Year Awards: Since 2004, the EMS Division has honored the Emergency Medical Dispatchers of King County with two awards. This year's awards for Exemplary Sustained Performance and Exemplary Handling of a Critical Incident were presented to TJ Bloomingdale and Karen Hanson from Valley Communications and Deanna Martin and Melissa Vieth from Eastside Communications. These awards, given out during

National Telecommunicators Week - April 9th - 13th 2007, recognize overall excellence and expert response to critical incidents.

Mr. Bloomingdale and Ms. Martin both received the award for Sustained Exemplary Performance throughout the year. Ms. Hansen and Ms. Vieth both received their awards for Exemplary Handling of a Critical Emergency Medical Services Incident. Ms. Hansen received her award for her skilled and calm response to a potential drowning incident, while Ms. Vieth was honored for her expert response for a patient in cardiac arrest.

V. Cardiopulmonary Resuscitation (CPR) and Automated External Defibrillators (AED)

Seattle and King County Responder AED Program: This program is an on going joint effort between Seattle Fire Department and Public Health-Seattle & King County to make AEDs available to the public in case of an emergency that warrants the use of an AED, namely individuals in cardiac arrest. Proper training and proper placement are necessary components, in addition to registering the device in compliance with the Washington State Law concerning AEDs.

Currently, there are over 2,000 AEDs registered in the Community Responder AED Program in Seattle and King County. The devices that are registered are well distributed throughout the community. Of the 2,000 AEDs, 1,301 are located in businesses, a major airport, or not-for-profit locations, 311 are in schools and 388 are placed in private homes. All Public Health clinics have at least one device and many have two on site. Both the jail health clinics in Seattle and Kent have numerous AEDs on site. Many police units in Seattle and King County carry AEDs in their vehicles and all ambulances in Seattle-King County are AED equipped. The King County Airport and SeaTac International Airport have AEDs placed throughout their sites with easy access to both staff and lay responders.

The goal for this program is that more and more AEDs will be placed with proper training and proper EMS registration so the community can become part of the life-saving team that responds when a cardiac event occurs in the community. The most recent addition to the Public Access Defibrillation (PAD) Program is the Automatic Radius Search project that is currently being implemented at Eastside Communications Center. This project enables the 9-1-1 dispatcher to notify the person calling 9-1-1 that an AED is located within 528 feet of the cardiac arrest event they are calling to report.

Information about the Seattle and King County Responder AED Program is available on the Public Health Web Page (http://www.metrokc.gov/health/ems/aed.htm). The forms necessary to register a device and request Medical Direction were added to the web site in 2007.

King County Employee CPR/AED Training Program: This employee training program is designed

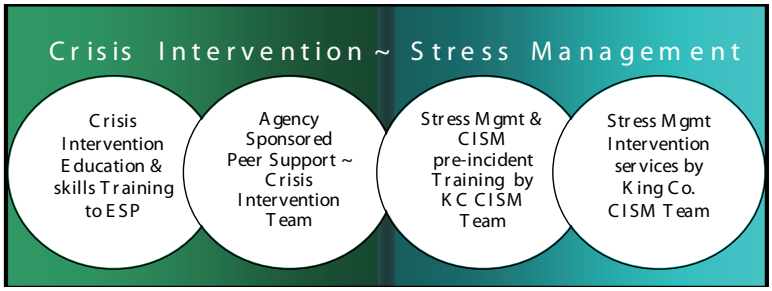
to teach CPR and AED skills to King County employees during their regular hours of work. The program trains employees to respond with the ability to perform CPR and use an AED should the need arise. The life saving skills have been used more than once on a fellow worker by employees that have been trained in one of our classes. During the 2002-2007 levy period, 8,149 county employees attended these CPR/AED classes.

King County Student CPR/AED Program: The EMS Division contracted with seven school districts and seven fire departments to provide CPR/AED training in the schools this year. The number of students (grades 6-12) that are trained to perform CPR and use an AED in King County are part of one of the largest school programs in the United States. Students are taught by local firefighters and teachers who are BLS Instructors and after completing their training, receive the nationally recognized American Heart Association card. The CPR/AED program provides the training for the firefighters and the teachers to become instructors. This past year 12,819 students were trained with over 79,000 students trained in CPR/AED during the 2002-2007 levy period.

Targeted CPR Program: The EMS Division works with several cardiologists in King County to provide CPR and AED training to patients considered high-risk for heart-related problems. This program offers in-home classes for these residents and their family and friends. CPR is taught and if an AED has been assigned to the family, AED training for the device is also provided. This year, 71 people were trained through this program with 497 trained during the 2002-2007 levy period. In 2005, the American Heart Association revised their CPR/AED guidelines. The focus of the changes was to make CPR/AED training easier to understand and simpler for the public to remember so that when a cardiac event occurs people will respond with confidence and an ability to make the right choices. It has been said that Seattle is a 'great place to have a heart attack' because of the large number of citizens with CPR/AED training. The education programs offered by the EMS Division have contributed significantly to that effort.

VI. Critical Incident Stress Management (CISM) Program

'*Helping the Helper Help*' epitomizes the mission of the Critical Incident Stress Management Program. Since 1987, the EMS Division has supported the CISM Program and its 19-member all-volunteer team who are specially trained to provide emotional and psychological services to emergency services professionals (ESP). CISM has been an age-honored acronym for the critical incident stress management services provided to the emergency services profession and is evolving to include a broader meaning of Crisis Intervention and Stress Management. Over the past year, CISM service requests have increased along non-traditional stress issues such as provider agency peer support programs, emergency services provider training, grief management services, and an emerging behavioral wellness focus.



Again this year, staff has been adhering to the recommendations outlined in the 2004 published Position Statement. At the time, CISM staff and consultants reviewed over 100 articles and texts on the subject of critical incident stress management and debriefings to publish the position statement. The primary focus of that effort was to identify the philosophy, strategies and goals of behavioral wellness issues, crisis intervention techniques and stress management educational services provided to emergency services professions in greater King County.

2002-2007 CISM Program Review

- Total requests for CISM services: **165** (plus agency administrative support)
- Volunteer hours contributed: **2142**
- Researched and evaluated the successes/failures of the Critical Incident Stress Mgmt and CISD model.
- Published the findings and Position Statement on Critical Incident Stress.
- Published an administrative manual for developing a Peer Support Team.
- Sponsored initial peer support training for emergency services professionals and agencies.
- Revised the Basis Stress Management Agency Training curriculum and lesson plan; with new multimedia.
- Lead the development of partnerships regionally and with the Washington CISM-Network, Inc.

CISM services provided by peer emergency service professionals and mental health professionals to emergency service personnel and their families are based on the following public health model of 1) Primary Prevention - Reinforcing one's resilience to extreme stressors, 2) Secondary Prevention - Mitigating the impact of occupational exposure to extreme stressors by incorporating 'Psychological First Aid', and 3) Tertiary Prevention - Follow up referrals for treatment when a higher level of support care beyond psychological debriefing/ crisis intervention is required.

The CISM Program has supported the emergency services provider agencies and their personnel (police officers, firefighters, EMTs, paramedics, dispatchers, and corrections officers) in moving towards improved behavioral health by coordinating pre-incident stress management education and providing assistance to emergency services agencies' Peer Support Teams who serve the immediate needs of their co-workers. Future objectives are focused on crisis intervention technique training to emergency services providers and identifying improved means of family support services. The King County CISM Team also partners with a Washington State and an international network of CISM teams. In 2007, King County CISM received over 29 incident related requests during the year that included debriefings, defusings, one-on-one interventions and referrals to mental health services.

VII. Regional Purchasing Program

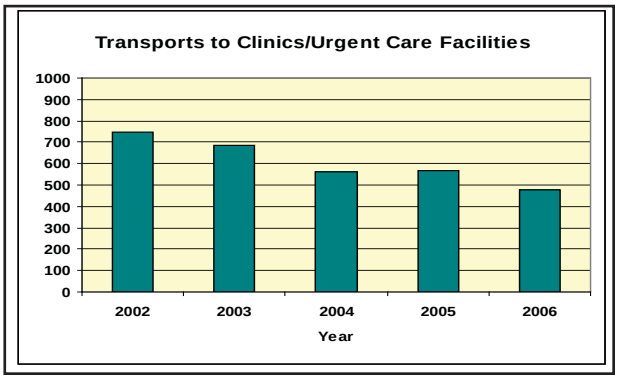
Initially developed as a strategic initiative, the EMS Regional Purchasing Program is a voluntary countywide program designed to reduce supplies and equipment expenses by maximizing the joint purchasing power of EMS providers. Since its completion as a successful one-year pilot project in 1998, the program has operated on a regional basis allowing any EMS agency in King County to purchase EMS supplies and equipment using the regional contract. Vendors for the EMS Regional Purchasing Program are selected through a competitive bid process. In 2004, the program was expanded to create a medications regional contract. Life Assist, Inc is currently in the first year

of a three-year contract for the supplies and equipment contract. Boundtree is in the final year of a three-year contract for the medications contract and the contract will be going out to bid in November 2007.

The Regional Purchasing Program is managed by an oversight committee that meets on a quarterly basis to address operational issues, review new EMS products, and evaluate the status of the program. The direct administrative costs are minimal as product orders, agency invoicing, and shipping are all managed at the agency level. During the eleven month period from 09/01/2006 through 07/31/2007, EMS agencies purchased $761,917 through the supplies and equipment contract with Life Assist, Inc, saving $221,530 when compared to the catalogue price of $983,447. The Regional Purchasing Program has consistently demonstrated significant cost savings to EMS agencies since the program was developed in 1998, reflecting a commitment to both the EMS strategic plan and program efficiency.

VIII. Alternate Destination and Patient Treatment (ADAPT) Program

In an effort to guide EMTs' decisions for appropriate patient transport, the EMS Division developed the Alternative Destination and Patient Treatment (ADAPT) program. Initially implemented in 1999 as a strategic initiative pilot study, the ADAPT program provides EMS patients with minor illnesses who require minimal treatment and have minimal medical risks with appropriate, convenient, and cost-efficient care by offering treatment at a local urgent care or clinic facility as an alternative to treatment at an emergency department. In 2005, the criteria for patient inclusion were revised and the new guidelines were issued to EMS agencies for the continued transport of patients to urgent care clinics. These guidelines were also used to develop the policy for transport of appropriate patients by taxi cab. Although utilization of this program has declined recently, the ADAPT Program continues to provide patients appropriate and safe options to alternate patient treatment locations by alternate transport modes, offering both improvements in the EMS system and patient satisfaction.



IX. Administrative Functions

The EMS Division operates under the guidelines presented in the various Master Plans, Master Plan Updates, and Strategic Plans which are approved by the King County Council. Updating these directives and implementing the specific programs identified in the plans requires significant data analysis and program coordination. An integral component of this analysis is the data modeling used to identify optimal placement of paramedic units.

The EMS Division is responsible for coordination of services with Public Health - Seattle & King County and other county agencies, councils, and offices, such as the Budget Office, Human Resources, Prosecuting Attorney, King County Executive, Risk Management, and the King County Council. Responsibilities also include the coordination and delivery of strategic planning, union negotiations, personnel and payroll, diversity management, legal compliance and liability, contract administration, and the issuance and compliance of policies and procedures.
The EMS Division administers Advanced Life Support (ALS) contracts for six primary paramedic provider groups (not including Snohomish County Fire District #26), and contracts for 30 Basic Life Support (BLS) agencies located in King County. The Administrative Section is responsible for monthly budget monitoring and projections, annual budget preparation, projection of long term financial planning, and management of levy funds for the EMS Division.

The EMS Division is also responsible for management of the Medical Incident Report Form (MIRF) data gathered in the field in compliance with Washington Administrative Code (WAC) 246-976-420. Duties related to the oversight of this data set include management of the cardiac database and the entire data warehouse system, collection and processing of over 200,000 Medical Incident Report records per year, and regular review of the EMS data set and data system. The Division provides rapid response to data requests from EMS agencies and external agencies located in King County; provides data analysis and reports for pilot projects, EMS programs, and research projects; and provides network connectivity and management for EMS Division employees.

D. Grant Funded Programs and Projects

I. Center for the Evaluation of Emergency Medical Services (CEEMS)

The Center for the Evaluation of Emergency Medical Services undertakes research efforts in the field of pre-hospital emergency care. CEEMS is supported by grants and staffed by investigators from the University of Washington and employees of the EMS Division. Known both nationally and internationally in the field of cardiac arrest, the investigators are continuously sharing their cutting-edge research through numerous articles published in EMS and scientific journals. A summary of the primary CEEMS activities of the past year is as follows:

The DART Study: The Dispatcher Assisted Resuscitation Trial (DART) is an international, multi-center clinical trial with participating dispatch centers from King and Thurston Counties in Washington State and London, England. The study was initiated in June 2004 and will determine the best method of providing telephone Cardiopulmonary Resuscitation (CPR) instructions to individuals calling 9-1-1. The two options under examination are standard CPR with chest compressions and mouth-to-mouth ventilation, or chest compressions only. There are a total of 2,517 cases enrolled to date, with 985 enrolled during the last year. The study will take approximately another 1.5 years to complete and may serve to define the national standard for the delivery of telephone CPR instructions.

At-Home Automated External Defibrillator (AED) Training Study: This is a four-year study funded by the National Institutes of Health (NIH). Enrollment of participants began in September 2004. This randomized study is evaluating four types of AED training methods (two video-based training and two in-home training methods) in 300 high-risk heart patients and their families recruited following hospitalization at a King County hospital for a heart emergency. The study will determine the most effective training method in terms of AED skills retention and psychological adjustment for both the patient and family members. Participants receive an AED and lifesaving skills training at no cost as part of study. Enrollment is expected to continue through the spring of 2008.

Medical Outcomes after Cardiac Arrest: This investigation involves interviewing survivors of cardiac arrest and reviewing their hospital medical records. The goal is to evaluate the care and outcome of survivors of cardiac arrest in King County to determine whether current hospital-based care is consistent with American Heart Association and American College of Cardiology guidelines for these patients. To date, over 100 cardiac arrest survivors have been interviewed by phone. The study will run through the end of 2007 with data analysis and results reported in 2008.

The Resuscitation Outcomes Consortium (ROC): The Resuscitation Outcome Consortium was established in 2004 by the National Heart, Lung, and Blood Institute to evaluate important research questions involving pre-hospital care in the areas of cardiopulmonary arrest and life-threatening injury. The ROC consists of 10 communities across North America and Canada. The Seattle/ King County area was selected as one of the participating communities. Clinical trials will be conducted over several years to evaluate promising approaches to improving outcomes from cardiac arrests and traumatic injuries. The first trauma-based study began in December 2005 and is a randomized clinical trial to evaluate what resuscitation fluid produces best outcome for traumatic shock and head-injured patients. Patients will receive either regular saline, hypertonic saline, or hypertonic saline with dextran. All fluids have been extensively studied and are considered safe. The first cardiac-based study began in August 2007 and is a randomized trial of an impedance threshold device that may improve circulation produced by CPR as well as immediate shock by EMTs versus three minutes of CPR prior to the first shock.

Paramedic Fellowship: Thanks to funding support from the Laerdal Foundation for Acute Medicine, CEEMS began a paramedic fellowship program in 2005 for the purpose of providing research opportunities to the many paramedics working in King County. This is the first program of this nature in the country. The program offers special opportunities for paramedics under the guidance of a UW faculty mentor. The first paramedic fellow, Ben Griner, began the program in July 2005. He completed a study of pre-hospital central lines for critically ill patients and the report is in preparation. A second paramedic fellow, Tod Levesh, will be studying the accuracy of pre-hospital diagnosis of acute coronary syndrome.

Graduate Student Research Assistant: Thanks also to funding support from the Laerdal Foundation for Acute Medicine, a PhD student in epidemiology joined CEEMS and spent 50% of her time assisting in projects and research studies. These included a review of the cost-effectiveness of public access defibrillators (PAD) in public locations, published in January 2007. She wrote a paper on the increased incidence of cardiac arrests following the 2001 Nisqually earthquake in

Washington State, which will be published in November 2007. She is writing a paper on changes in survival rates as time to treatment with CPR and defibrillation is delayed. Additionally, the student is analyzing data for a paper on trends in out-of-hospital cardiac arrest in King County over the last thirty years. She is also beginning an investigation of whether ventricular fibrillation events declined in King County as a result of a ban of public cigarette smoking that was implemented in December 2005.

Medical Student Projects: CEEMS sponsors approximately 10 University of Washington students per year who are completing a medical school graduation requirement to conduct a research project. Each student is assigned a faculty mentor who helps the student design the project and develop the methodology. CEEMS has been fortunate in that approximately 80% of these research projects are published in peer-reviewed scientific journals.

During 2006, medical students worked on the following projects:

- Analysis of socioeconomic factors and cardiac arrest
- Study of 9-1-1 calls from persons with limited English proficiency
- Neurological outcomes and survivors of cardiac arrest
- Upper body cyanosis and outcomes from cardiac arrest
- Emesis and outcomes from cardiac arrest
- Patients left at scene following evaluation by EMTs and paramedics
- Literature review of safety and efficacy of nasal naloxone for overdoses

E. Conclusion

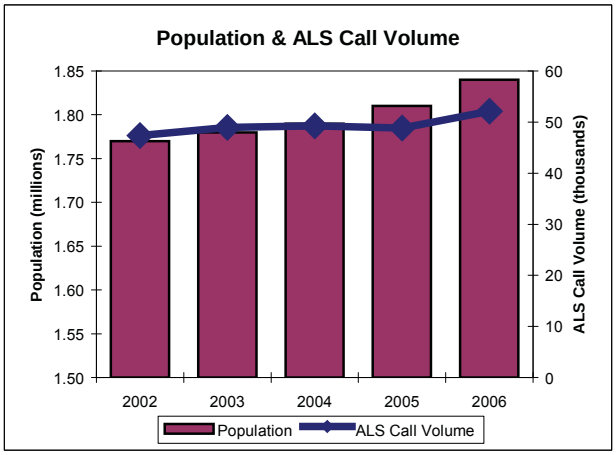
The EMS Division is committed to providing the highest level of pre-hospital care to the residents of King County. EMS programs are developed and maintained through strong partnerships with other EMS agencies in the region and innovative leadership in the emergency medical field in accordance with the strategic directions outlined in the ***EMS 2002-2007 Strategic Plan Update***. Examples of this effort are the thoughtful and diligent evaluation of the Criteria Based Dispatch guidelines used to control the growth in demand for paramedic services, the successful and popular web-based EMS training program that is proving to be both innovative and cost-efficient, and the SPHERE programs that are redefining the meaning of emergency medical personnel roles and responsibilities . The EMS Division is proud to encourage and support these types of contributions to the EMS system.

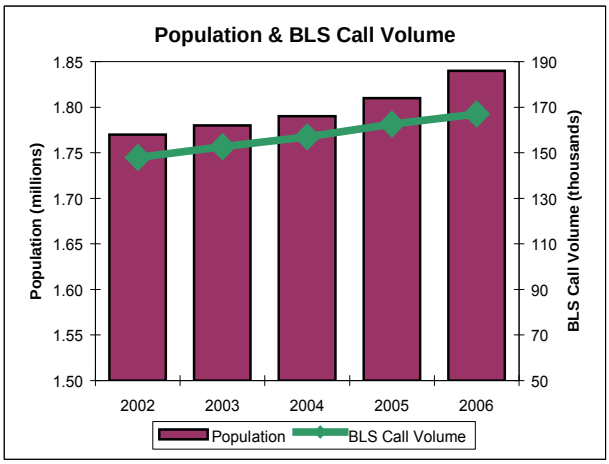
Summary of 2006 EMS Statistics (Seattle and King County)*

The following statistics are derived from the data collected on the Medical Incident Report Forms (MIRFs) and submitted by EMS agencies to the EMS Division for the year 2006.

Population	Seattle-King County	% Growth
1980	1,269,898	
1990	1,507,305	18.7% (10 yr)
2000	1,737,034	15.2% (10 yr)
2006	1,835,300	5.7% (6 yr)

Population has often been a factor related to EMS call volume growth. Over the past two decades, the population in King County has grown well above an average rate of 1% per year. However, starting in 2002 the yearly rate of increase has declined to just under 1% per year. The two graphs below depict the population growth relative to both BLS and ALS call volume patterns. The ALS call volume growth has remained stable since 2002 due largely to the success of the ALS Dispatch Criteria Revisions (page 22). Please note that the scales for population and call volumes are different.

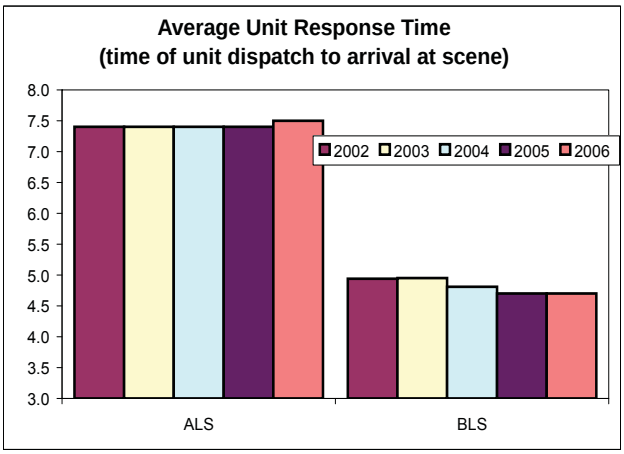




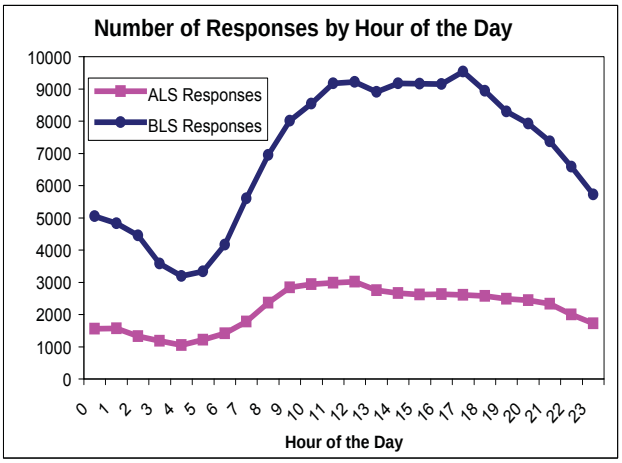
Operations:

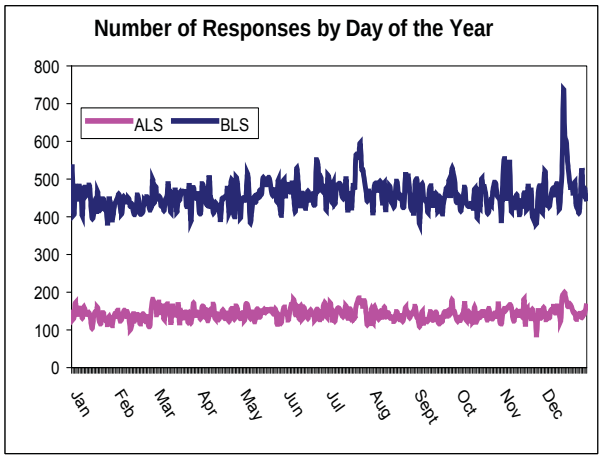
		ALS			BLS	
Number of Responses:		52,136			166,941	
	Total		Unit	Total		Unit
Average Response Times (minutes):	11.0		7.5	5.9		4.7
6 Minutes or less				73.1%		84.1%
8 Minutes or less	44.5%		68.4%			
10 Minutes or less	60.8%		83.2%			
12 Minutes or less	71.8%		91.5%			
14 Minutes or less	79.4%		95.6%			
Cancelled Enroute Calls		7.6%			1.4%	

*The 2006 EMS data uses a fully integrated EMS Division and Seattle data set. Response times are defined as follows: **Total** - the time of call arrival at dispatch to the time of arrival at the scene, and **Unit** - the time of unit dispatch to time of arrival at the scene. In some instances, totals differ due to missing values.



Although the growth in population and BLS call volumes over time has steadily increased over time, average BLS unit response times have remained stable as reflected in the graph to the left. This may not reflect, however, local area stresses to the system and regular assessment of core ALS unit indicators are conducted to ensure adequate response. The two graphs located directly below reflect the patterns of ALS and BLS response during the day and throughout the year. Variation occurs in BLS responses per day over time (~375-750 calls) in comparison to ALS responses (~90-200 calls). Of note is the spike in calls during the December 2006 windstorm.



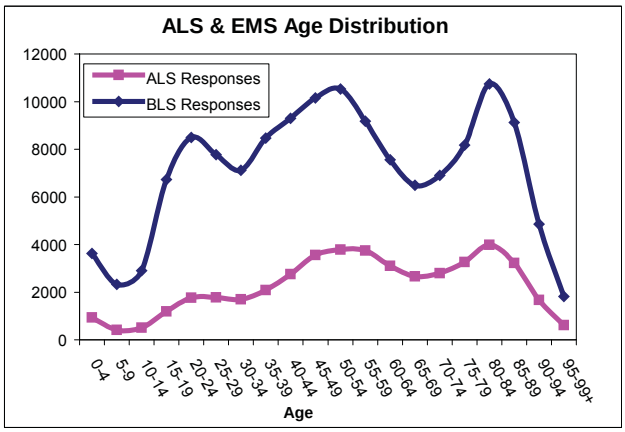


Characteristics of Responses:

The following information reflects data that characterizes 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. As indicated below, paramedics providing advanced life support are more likely to attend to older patients for cardiac conditions, while EMTs often tend to trauma in young adults. An aging population will likely affect ALS call volumes and is a trend the EMS Division has been monitoring.

Responses by Age Group:

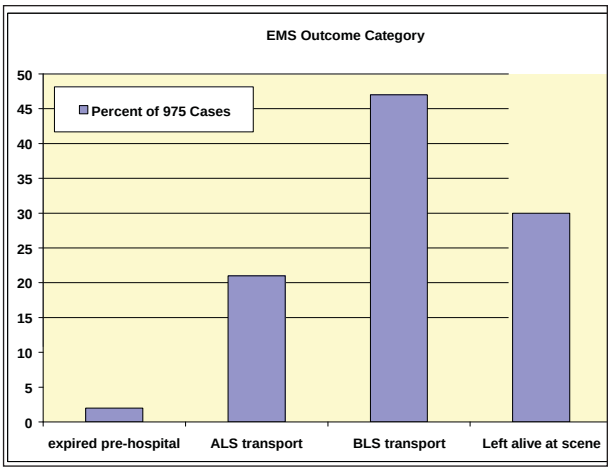
	ALS	BLS
0-17 yrs	2,474 (5.4%)	12,390 (8.7%)
18-24 yrs	2,348 (5.2%)	11,694 (8.2%)
25-44 yrs	8,315 (18.2%)	32,665 (23.0%)
45-64 yrs	14,204 (31.2%)	37,407 (26.3%)
65-84 yrs	12,713 (27.9%)	32,316 (22.7%)
85+ yrs	5,512 (12.1%)	15,801 (11.1%)
Total	**45,566**	**142,273**



Public Health Highlight: Pedestrian-Vehicle Incidents in 2006

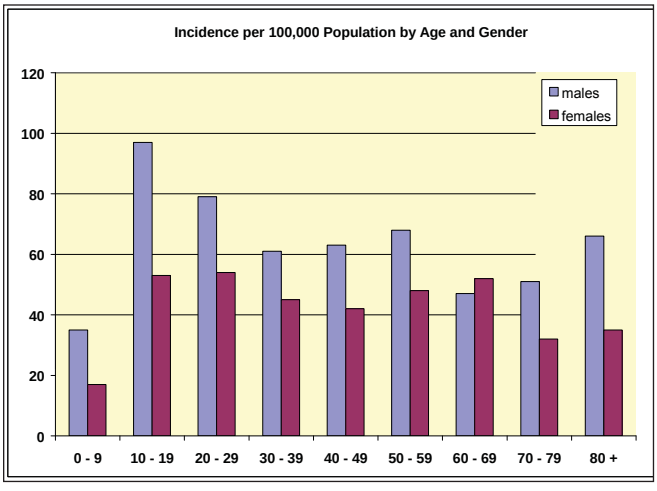
Overview: In 2005, Public Health - Seattle & King County published a profile of pedestrian fatalities for the years 2000 through 2003, reporting an average of 26 deaths annually. The report proposed multiple steps to increase pedestrian safety, including the recommendation to examine non-fatal pedestrian incidents. This highlight presents an overview of the 975 patients involved in pedestrian-vehicle incidents in 2006 that received an EMS response. The 975 patients represent 370 (38%) advanced life support (ALS) responses and 605 (62%) basic life support (BLS) responses. Patient outcomes ranged from fatalities at the scene to non-injuries. Figure 1 shows the distribution of cases by outcome information: 18 (2%) fatalities while under EMS care (declared at the scene or emergency department), 208 (21%) ALS transports to hospital (subsequent outcome not determined), 461 (47%) BLS transports to a hospital or clinic, and 288 (30%) patients not requiring EMS or ambulance transport. The majority of patients (89%) with ALS transport were taken to Harborview Medical Center, the regional Level I Trauma Center.

Figure 1



Age and Gender: Gender-specific incidence rates per 100,000 population are shown for all cases in Figure 2. Similar to the fatalities, incidence is higher in males than females, 65 versus 43 per 100,000 overall, with a peak rate of 97 in 10-19 year old males. Incidence peaks at 54 per 100,000 in 20-29 year old females but plateaus around 50 per 100,000 between ages 10-19 and 60-69. The incidence pattern is similar for the more severe cases (deaths and ALS transports), but with an accentuation of the difference by gender: 18 versus 7 per 100,000 for males compared to females. Incidence in this more severe group peaks for males at 27 per 100,000 for 10-19 year olds. Incidence in females peaks at 12 per 100,000 at ages 50-59 among the more severely injured. These findings compare to the reported fatalities with trends toward a spike in the 10-19 year olds, but do not show the incidence spikes as seen in the fatalities in oldest age groups. There were no deaths or ALS transports attributed to pedestrian-vehicle collisions in persons aged 80 and older in 2006. When comparing the trends in this case series with those of the fatality report, the very elderly may be more vulnerable when considering only fatalities or these slight differences may be the result of normal variation as the years are not the same between the two reports. Not shown in this report, it was noted that in the very young cases aged 0 to 4 years of age, there is no difference in incidence by gender.

Figure 2



Environmental Factors: Seasonal and diurnal patterns of occurrence are shown in Figure 3, where cases are grouped by months of daylight within 4 hour intervals of the day. Similar to the Public Health report, the number of cases is highest in later afternoon to early evening, from 4 to 8 pm. Cases from November

to January peak at 47% during this time interval, the darkest months of the year. Cases from November to January are also highest from 4 to 8 am, although not significantly so. These same patterns are seen in the more severe cases as well, those who expired or were transported by ALS to hospital. Similar to the fatality report, the numbers of cases tend to be highest in the darkest months, November through January, although the pattern shows higher numbers from August through January compared to February through July. The figure below on the right shows the number of cases by day of the week. For both all cases and the more severe cases, more pedestrian-vehicle collisions occurred on weekdays than on weekends. Overall, the highest number of cases occurred on Fridays, whereas the number tended to be fairly uniform during the weekdays for the more severe cases. In the fatality report, the greatest numbers occurred on Monday and Tuesday. Again, these findings may be the result of normal variation with small numbers of cases and different years.

Figure 3

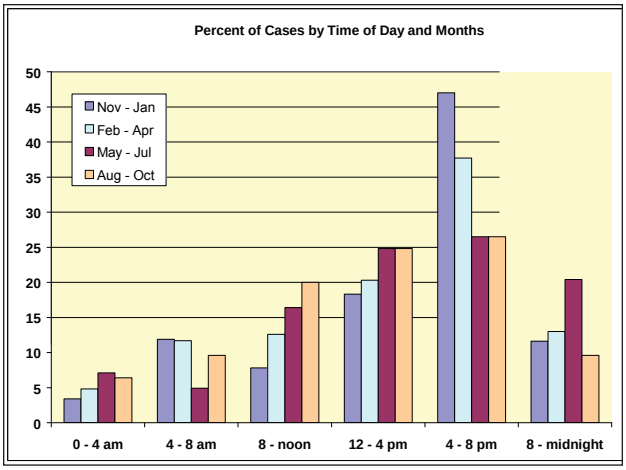
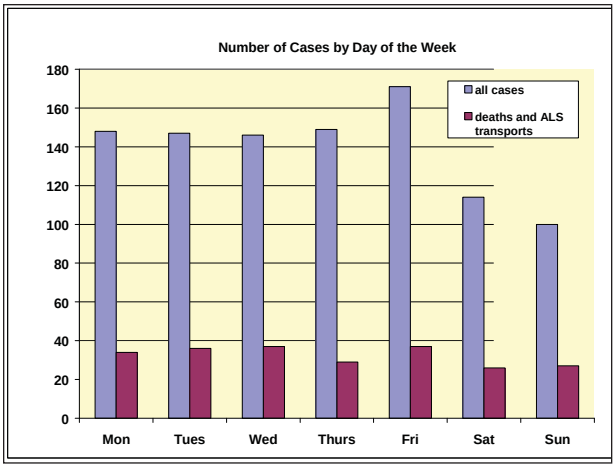
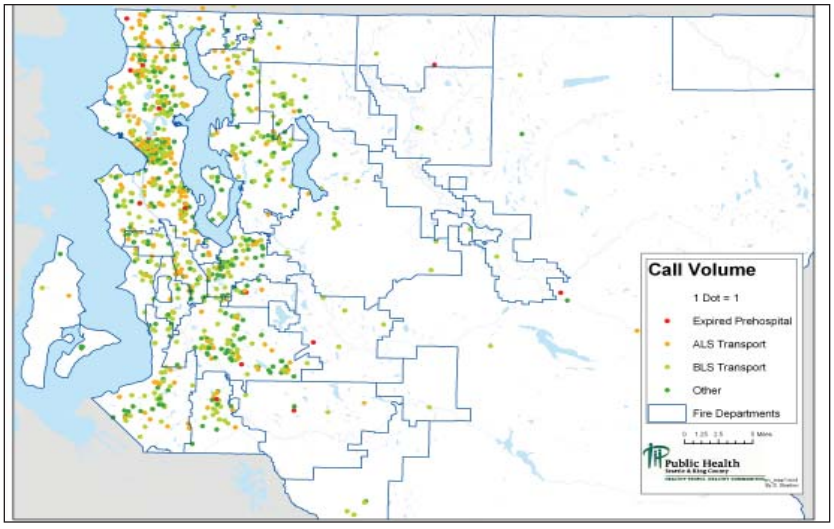


Figure 4



Places of pedestrian-vehicle collisions are shown on the map, color coded by severity of injury. As shown on the map and in the fatality report, cases tend to cluster according to population density.

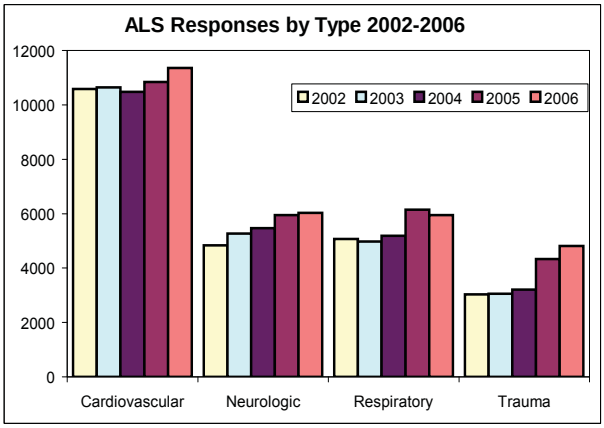


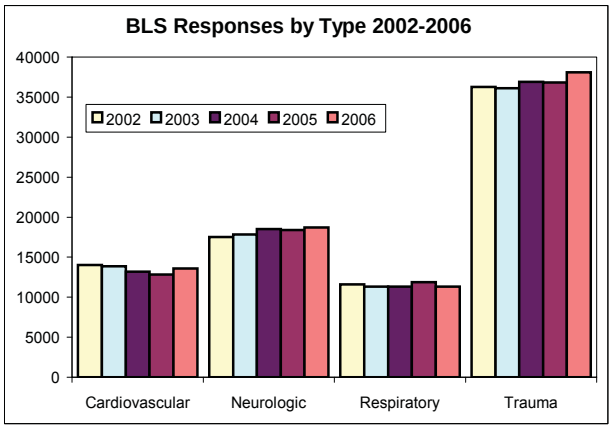
Pedestrian safety remains an ongoing concern in King County. Documentation of person, place, and diurnal and seasonal variation allows the development of targeted interventions to reduce risk when coupled with the implementation of the other recommendations of the Public Health fatality report, which may be viewed online at http://www.metrokc.gov/health/injury.htm.

Responses by Medical Type:

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

	ALS	BLS
Cardiovascular	11,353 (25.8%)	13,590 (10.1%)
Neurologic	6,033 (13.7%)	18,721 (14.0%)
Respiratory	5,944 (13.5%)	11,323 (8.4%)
Trauma	4,809 (10.9%)	38,076 (28.4%)
Abdominal/Genito-Urinary	2,492 (5.7%)	9,982 (7.4%)
Metabolic/Endocrine	2,158 (4.9%)	3,955 (2.9%)
Alcohol/Drug	1,778 (4.0%)	5,927 (4.4%)
Psychiatric	1,494 (3.4%)	6,713 (5.0%)
Anaphylaxis/Allergy	517 (1.2%)	1,947 (1.5%)
Obstetric/Gynecological	483 (1.1%)	1,214 (0.9%)
All Other Illnesses	6,932 (15.8%)	22,647 (16.9%)
Total Medical	**43,993**	**134,095**





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

Incident Locations:

	ALS	**BLS**
Home/Residence	25,199 (57.4%)	74,791 (52.2%)
Nursing Home/Adult Family Home	3,532 (8.1%)	9,181 (6.4%)
Clinic/MD Office	2,128 (4.9%)	3,146 (2.2%)
Other/Unknown Location	13,014 (29.6%)	56,117 (39.2%)
Total	**43,873**	**143,235**

Cardiac Arrest Statistics:

Seattle and King County have evaluated cardiac arrest statistics for over 30 years. The following information depicts data from the combined registries.

All Cardiac Arrests:	Year				
	2002	2003	2004	2005	2006
Total number of cardiac arrests (all causes, resuscitation attempted)	1,147	1,093	1,087	1,124	993*

*the decrease in 2006 is due to a modification in case definition.

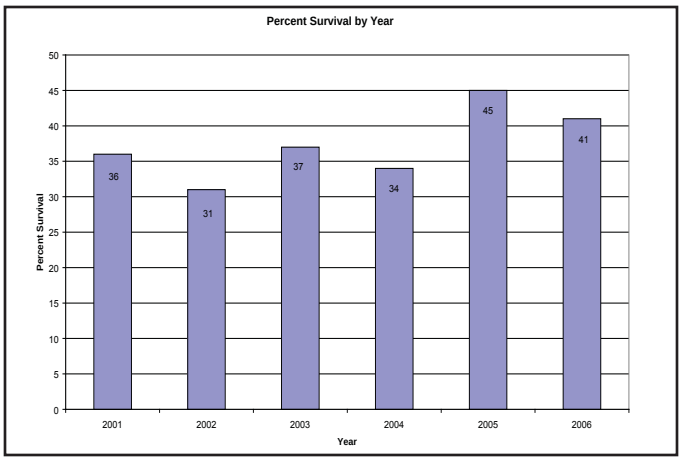
The following table shows cardiac arrests from 2006 broken down by arrest before and after EMS arrival, rhythm on arrival, and survival for each category. Inclusion is limited to patients receiving paramedic treatment ages two and over:

Total cases treated:	**993**

		# survival	**% survival**
arrest before arrival	**875**	**145**	**17%**
ventricular fibrillation/ tachycardia (VF/VT)	279	100	36%
asystole	335	5	1%
PEA	253	38	15%
unknown	8	2	25%
arrest after arrival	**118**	**29**	**25%**
VF/VT	31	15	48%
asystole	14	1	7%
PEA	70	13	19%
unknown	3	0	0%

Ventricular Fibrillation (VF): The survival rate is defined as discharge from hospital alive for witnessed cases of cardiac etiology with VF as collapsing rhythm, arresting before EMS arrival.

Year	Rate
2006	80/196 (41%)
2002-2006	367/949 (38%)



CPR initiated by Bystanders (includes all cases of CPR):

Year	Rate
2004	501/952 (53%)
2005	568/1,007 (56%)
2006	496/875 (57%)

CPR Highlight: CPR Performance and Quality Assurance of Cardiac Arrest

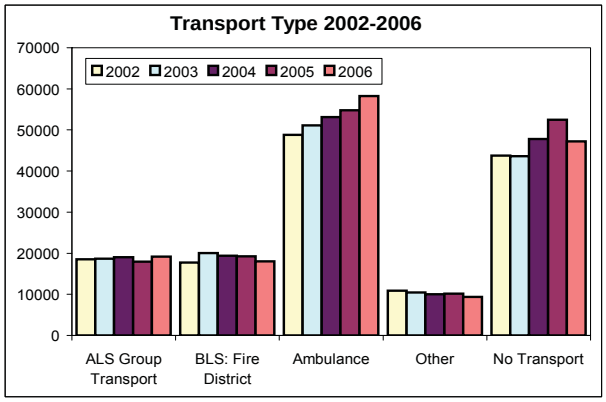
Over the past several years, there has been an increasing appreciation of the dynamic interplay between CPR (chest compressions and ventilations) and defibrillation when attempting resuscitation for cardiac arrest. Growing evidence indicates that efforts to increase CPR provided during a resuscitation can improve cardiac arrest survival. However, EMS rescuers must perform multiple actions during a resuscitation so the amount of CPR a patient receives may sometimes be limited in duration.

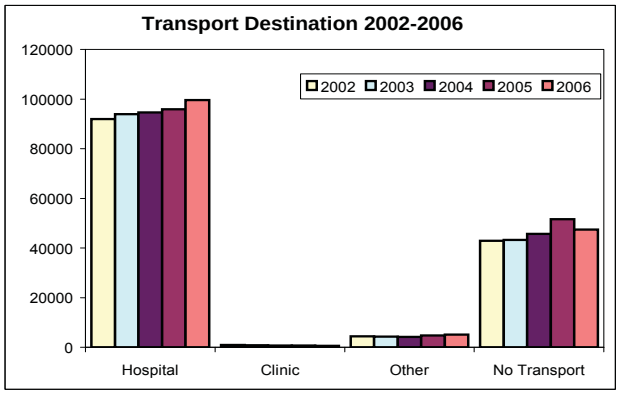
As part of quality assurance, both the Seattle Fire Department and the EMS Division review each cardiac arrest to assess specific circumstances of the case, quality of care, and patient outcome. This activity enables ongoing quality review of a critical condition that is one of the benchmarks used to measure EMS care both locally and nationally. Historically, this process has involved review of both dispatch and EMS reports to gauge care and identify potential areas to improve performance. Over the past decade, the review process has expanded to include review of the defibrillator recording.

The defibrillator is applied early in the course of resuscitation and provides a real-time recording of the cardiac arrest event. Information from the recording offers additional insight about the quantity and timing of CPR efforts. This newer resource has enabled a much closer review of CPR and how it relates to other aspects of care. Information from the defibrillator review is included in feedback to the EMS personnel and is now incorporated into the routine cardiac arrest quality assurance review process. Based in part on information from the defibrillator review process, Seattle and King County have refined their CPR protocol to maximize CPR while other parts of the resuscitation continue. The goal is to improve the interaction between CPR and other aspects of care to further improve survival following out-of-hospital cardiac arrest.

<u>Transport Type and Destination</u>:

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 for BLS over the past five years. As indicated below, almost 34% of all BLS patients are not transported from the scene. This is one area of analysis in the assessment





of whether EMS was used appropriately, and if the Telephone Referral Program or another type of service could help reduce demand for EMS.

Transport Type:

ALS Transport	18,979 (12.5%)
ALS Air	182 (0.1%)
BLS - Fire District	18,051 (11.9%)
BLS - Ambulance	58,263 (38.3%)
Other	9,349 (6.1%)
No Transport	47,253 (31.1%)
Total	**152,077**

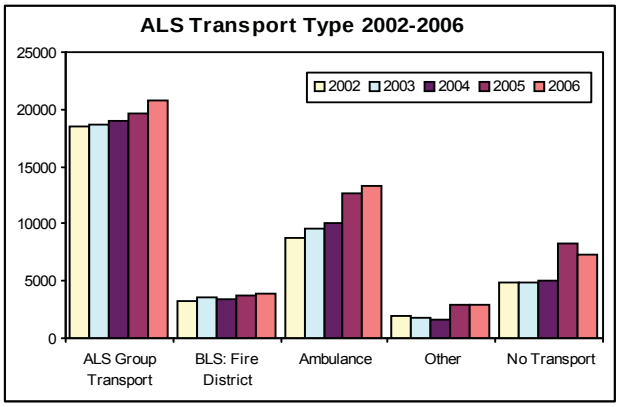
Transport Destination:

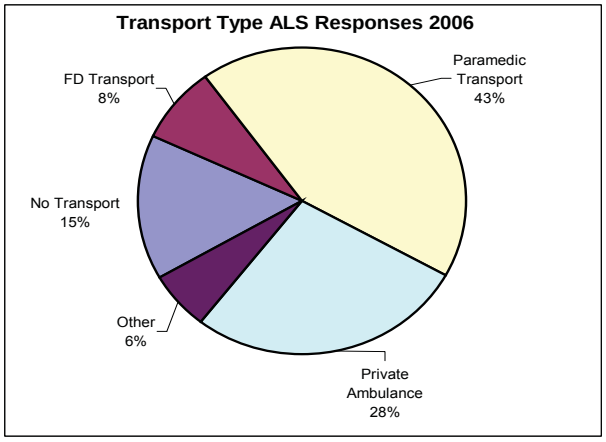
Hospital	99,613 (65.2%)
Clinic	633 (0.4%)
Other	5,139 (3.4%)
No Transport	47,438 (31.0%)
Total	**152,823**

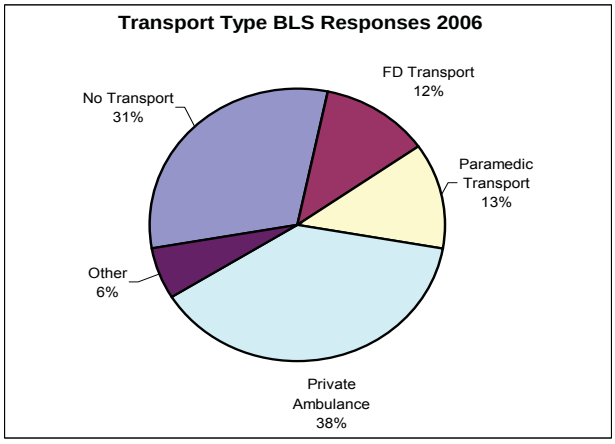
ALS transport trends are also assessed for potential system improvements. As indicated below, almost 42% of all patients are transported from the scene by ALS. However, over 8,000 patients are left at the scene with no transport. Again, this provides an opportunity to analyze whether EMS was used appropriately and if other programs could help reduce demand for services.

ALS Transport Type:

ALS Transport	20,590 (42.6%)
ALS Air	197 (0.4%)
BLS - Fire District	3,863 (8.0%)
BLS - Ambulance	13,367 (27.7%)
Other	2,932 (6.1%)
No Transport	7,358 (15.2%)
Total	**48,307**







Part III: EMS Funding and 2007 Financial Plan

Introduction: This section of the EMS 2007 Annual Report focuses on EMS revenues and expenditures for 2006 and projections for 2007. Some historical and forecast information is incorporated for context, including information on the current EMS funding mechanism and the projected status of the EMS Financial Plan through the current levy period. Since this is the last year of the 2002-2007 levy period, a review and summary information about the current levy period is also included. Components include the following:

- EMS Levy Structure
- Current EMS Revenues
- Current EMS Expenditures
- EMS Expenditure and Revenue Trends
- Review of 2002-2007 Levy Period
- The 2007 Financial Plan
- Recommendations for Fund Balance and Levy Rate

*Please note that under terms of an inter-local agreement between King County and the City of Seattle, EMS levy funds collected within Seattle go directly to the City. These discussions focus on the EMS fund within the remainder of King County (referred to as the KC EMS Fund), excluding the City of Seattle.

A. EMS Levy Structure

The EMS levy is a regular property tax levy subject to the limitations contained in Chapter 84.55.010 RCW. EMS levy funds are restricted by RCW and can only be spent on EMS-related activities. In November 2001, King County voters approved an EMS levy to provide funding for the 2002-2007 period. Also passed in November 2001, Initiative 747 limits total levy funds to a 1% increase for existing properties, plus assessment on new construction.

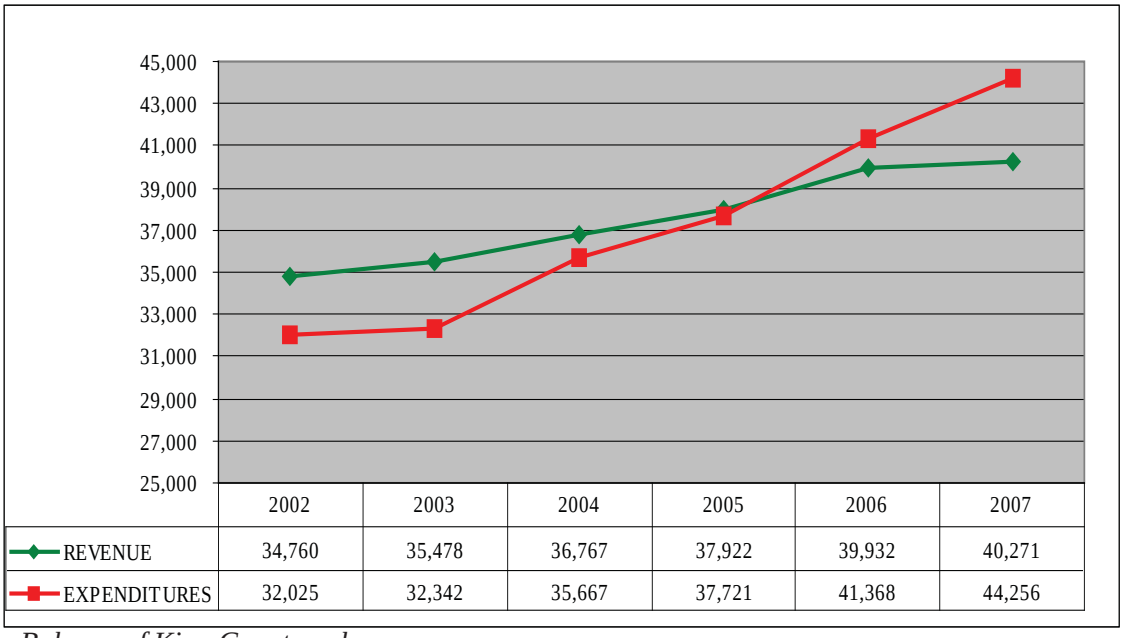
EMS Levy funds are collected throughout King County and managed by the EMS Division for the region based on policy guidelines of the 2002 EMS Strategic Plan Update. As noted above, funds generated within the City of Seattle are managed separately by the city. King County funds are managed and expended in four separate areas: Advanced Life Support (ALS), Basic Life Support (BLS), Regional Support Services (such as training, regional medical direction and community programs), and Strategic Initiatives. ALS services are provided by six primary agencies (not including Snohomish County Fire District #26), BLS services are provided by thirty fire agencies (not include Seattle Fire Department), while Regional Services and Strategic Initiatives are managed by the EMS Division.

The EMS Financial Plan assumes modest growth in property values, continued low inflation, and a one-percent limit on revenues from existing properties. For the 2002-2007 levy period there is a required End Fund Balance (EFB) of 1/12 yearly expenditures. The plan also assumes that

expenditures increase by local area Consumer Price Index (CPI), anticipates that ALS expenditures may increase by more than CPI, and forecasts the addition of new ALS units throughout the levy period. This results in expenses increasing at a rate higher than revenues over the duration of the levy.

With expenditures projected to increase at a rate higher than revenue growth, the levy amount is set so that funds collected in the first years of the levy can be saved and used to cover expenses in the later years of the levy when expenditures are expected to be higher than revenues. As planned, revenues exceeded expenditures through 2004. However, due to delays in projects, revenues also exceeded expenditures by a small amount in 2005. Beginning in 2006, funds raised in the earlier years of the levy were used to supplement revenues to cover expenditures. It is currently projected that revenues placed in the fund balance between 2002 and 2004 are sufficient to fund expenses in 2007. The following chart shows actual and projected revenues and expenses from 2002 to 2007:

EMS FUND – EXPENDITURES VS. REVENUES
All numbers in thousands (000 omitted)



	2002	2003	2004	2005	2006	2007
REVENUE	34,760	35,478	36,767	37,922	39,932	40,271
EXPENDITURES	32,025	32,342	35,667	37,721	41,368	44,256

Balance of King County only

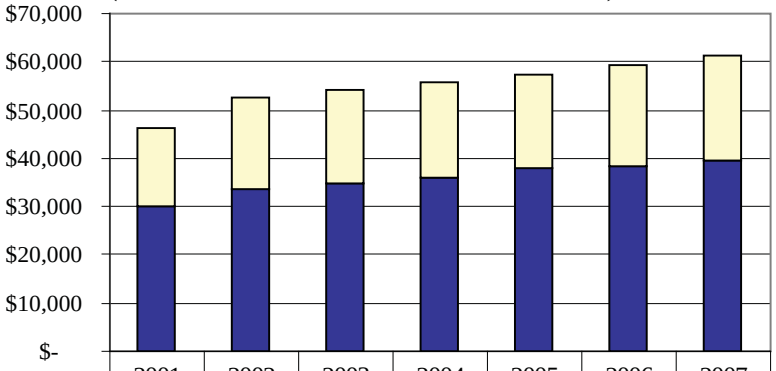
For more details on forecast revenues and expenditures, see ***Section D: EMS Expenditure and Revenue Trends*** on page 73.

B. EMS Revenues

The 2006 effective levy rate was .2198 per $1,000 assessed value (AV) with a total assessment of $59,125,467. The 2007 effective levy rate is .2063 per $1,000 AV with a total assessment of

$61,271,823 and is 3.6% over 2006. The total assessment for the levy is divided proportionately between the City of Seattle and the KC EMS Fund based on assessed property values in each area. In 2006, the City of Seattle's portion of the assessment was 35.3%; the KC EMS Fund's portion of the assessment was 64.7%. In 2007, the City of Seattle's portion of the assessment was 35.2%; the KC EMS Fund's portion of the assessment was 64.8%.

AMOUNT ASSESSED FOR CURRENT LEVY
ACTUAL 2001 - 2007
(All numbers in thousands -- 000 omitted)



	2001	2002	2003	2004	2005	2006	2007
City of Seattle	$16,034	$18,763	$19,273	$19,837	$19,512	$20,895	$21,598
Balance of King County	$30,089	$33,734	$34,813	$35,866	$37,936	$38,230	$39,674

In addition to real and personal property taxes, other revenues include miscellaneous taxes, interest earnings, and fees for reimbursable services. King County contributes $375,000 annually in Current Expense Fund monies to King County Medic One. Total revenues in 2006 for the balance of King County were $39.9 million. The regional levy and associated taxes (including interest income on the fund balance) generated 97.1% of the total revenues with current expense and other income combining to generate the remaining 2.9%.

2006 EMS Revenue (balance of King County)

Revenue Source	2006	%
Property Taxes Current	$37,317,200	93.5%
Delinquent Taxes	$660,462	1.7%
Other Taxes	$135,232	0.3%
Other Revenues	$808,898	2.0%
Interest Income	$635,272	1.6%
CX Contribution	$375,000	0.9%
Total	**$39,932,064**	**100.0%**

Revenues for 2007 are estimated at $40.3 million. The regional levy and associated taxes and interest income represent 98.9% of total estimated revenue. Projected end fund balance for 2007 is $5.4 million. When adjusted for dedicated reserves for provider balances the projected undesignated fund balance is $4.3 million. Funds in excess of the required fund balance are needed to cover expenditures above revenue in 2007.

2007 Estimated EMS Revenue (balance of King County)

Revenue Source	2007	%
Property Taxes Current	$38,397,717	95.4%
Delinquent Taxes	$791,706	2.0%
Other Taxes	$135,232	0.3%
Other Revenues	$88,824	0.2%
Interest Income	$482,629	1.2%
CX Contribution	$375,000	0.9%
Total	**$40,271,107**	**100.0%**

Total revenues increased from 2005 to 2006 and are projected to increase less than 1% in 2007. However, these values are skewed slightly by the one-time larger than normal expenditure accruals that were not invoiced and returned to the fund as revenue. This resulted in over $630,000 of prior year corrections posted as revenues in 2006. When other reimbursements for regular expenditures (cancelled checks and refunds to Regional Services) are included, the total revenues related to expenditure corrections comes to $712,000. The following two tables show revenues comparisons between 2006 and 2007 with and without these expenditure corrections.

ACTUAL REVENUES (with expense corrections)

Revenue Source	2006	2007	Increase	% Increase
Property Taxes	$38,112,894	$39,324,655	$1,211,761	3.2%
Other	$808,898	$88,824	$(720,074)	-89.0%
Interest Income	$635,272	$482,629	$(152,643)	-24.0%
Current Expense (CX)	$375,000	$375,000	-	0.0%
TOTAL	**$39,932,064**	**$40,271,107**	**$339,043**	**0.8%**

REVENUES (with expense corrections removed)

Revenue Source	2006	2007	Increase	% Increase
Property Taxes	$38,112,894	$39,324,655	$1,211,761	3.2%
Other	$96,834	$88,824	$(8,010)	-8.3%
Interest Income	$635,272	$482,629	$(152,643)	-24.0%
Current Expense (CX)	$375,000	$375,000	-	0.0%
TOTAL	**$39,220,000**	**$40,271,107**	**$1,051,107**	**2.7%**

The revenues (with the expense corrections removed) show an increase of 2.7% which was fairly typical of revenue increases in the 2002-2007 levy period. While assessed valuation increased 10.4% from 2006 to 2007, property taxes revenues increased 3.6% resulting in a levy rate of 20.6 cents/$1,000 Assessed Value in 2007. Additional information on projected revenues through the end of the current 2002-2007 levy period is included in ***Section D. EMS Revenue and Expenditure Trends*** on page 73.

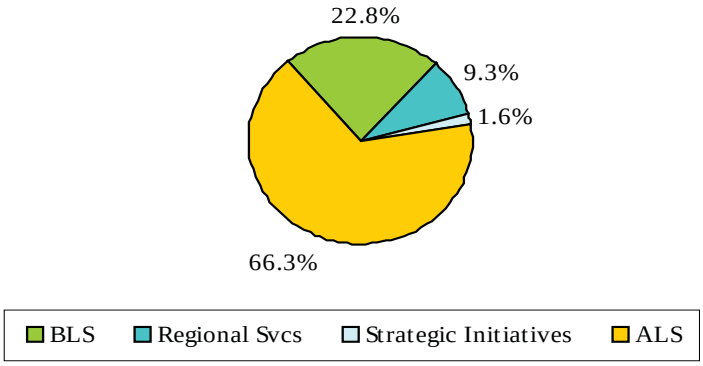
C. EMS Expenditures

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

- Advanced Life Support (ALS) Services
- Basic Life Support (BLS) Services
- Regional ServicesPrograms
- Strategic Initiatives

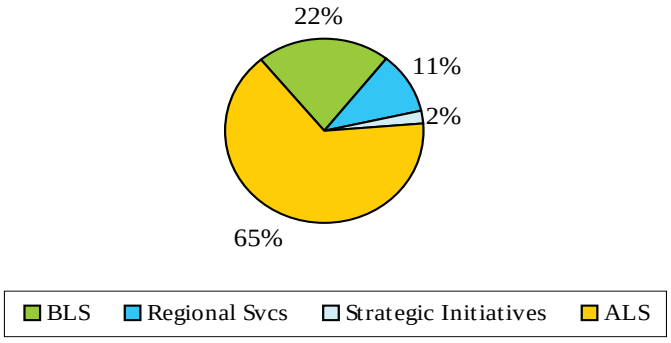
The ***EMS 2002-2007 Strategic Plan Update*** limits expenditure increases for ALS, BLS and Regional Service to the local area Consumer Price Index (CPI). If there is sufficient funding available, increases for ALS services can be raised above CPI to avoid cost-shifting to ALS agencies. Advanced Life Support (ALS) Services funding is based on a standard allocation per unit, BLS funding is based on an agency allocation formula, Regional Services Programs are based on cost of services limited to increases based on forecast CPI, and Strategic Initiatives are based on approved budgets and estimated cash flow. Budgeted expenditures for 2006 were based on a CPI forecasted increase of 2.6%. Expenditures forecasted for 2007 are based on a CPI increase of 2.7%. Cash flows for Strategic Initiatives are adjusted based on individual project plans.

2006 Actual Expenditures



Sub-Area	2006 Actual Expenditures
ALS	$27,445,965
BLS	$9,420,513
Regional Services	$3,827,403
Strategic Initiatives	$674,484
Total	**$41,368,365**

2007 Forecasted Expenditures



Sub-Area	2007 Forecast
ALS	$28,806,943
BLS	$9,674,867
Regional Services	$4,810,705
Strategic Initiatives	$963,656
Total	$44,256,171

Advanced Life Support (ALS) Services: Since the first EMS levy in 1979, regional paramedic services have been largely supported by the EMS levy. The EMS Division manages contracts that provide funds directly to five paramedic provider agencies in King County: Bellevue Fire Department (Bellevue Medic One), Public Health - Seattle & King County (King County Medic One), Redmond Fire Department (Redmond Medic One), Shoreline Fire Department (Shoreline Medic One), and Vashon Island Fire & Rescue. In addition, funds are provided to Snohomish County FD 26 (SCFD 26) for ALS response in the Skykomish/King County Fire District (KCFD) #50 area including Stevens Pass.

The EMS levy funds ALS services using a standard unit cost methodology determined by staffing paramedic units with two Harborview-trained paramedics 24-hours a day, 365 days a year. These expenditures include personnel, medical equipment and supplies, support costs for dispatch, paramedic supervision, medical direction, continuing medical education, and other EMS-related

expenses. Services for the Skykomish/KCFD #50 area are provided outside of the unit cost allocation. The ***EMS 2002-2007 Strategic Plan Update*** calls for an annual review of ALS costs to minimize cost shifting of ALS expenses to provider agencies. An ALS task force comprised of representatives from the different ALS providers meets each year to review costs and provide recommendations to the EMS Advisory Committee. Full time units that operate 24-hours a day are funded at the ALS unit allocation. Half time units, operating 12-hours per day, are funded as a .5 ALS unit allocation.

The total 2006 annual EMS levy allocation for each paramedic provider is determined by the number of units staffed with two paramedics, the number of 12-hour 2-paramedic units, and the number of vehicles due for replacement that year. Start-up costs for any new paramedic units are added separately. Paramedic vehicle replacement is funded separately from the standard unit cost allocation and follows a standardized paramedic vehicle replacement plan. Medic units are currently replaced every three years and then placed in a backup vehicle status for three additional years. Based on rising costs, an increase of 4.7% was recommended for 2006 (2.1% over CPI increase of 2.6%) resulting in a standard unit cost allocation of $1.46 million per paramedic unit. Since there did not appear to be sufficient funds to increase the allocation over CPI in 2007, a CPI-based increase of 2.7% was recommended for 2007, resulting in an allocation of $1.5 million in 2007. The allocation for vehicle replacement costs in 2006 was $135,181 per vehicle. Seven replacement vehicles were funded in 2006. No vehicles were replaced in 2007.

The ***EMS 2002-2007 Strategic Plan Update*** included a placeholder for the addition of a 0.5 medic unit in September 2006. Following an extensive regional review process, it was determined that the 0.5 medic unit be added to the south King County region in the City of Des Moines. The total number of ALS units as of December 2006 is shown in the following chart:

	Full Units (2 paramedic / 24-hour) (1)	**Half Units(EMT-P or12-hour)(2)**	**Total Funding Units**
Redmond	3		3.0
King Co	7	1	7.5
Bellevue	4		4.0
Shoreline	2	1	2.5
Vashon	1		0.9
Total			**16.5**

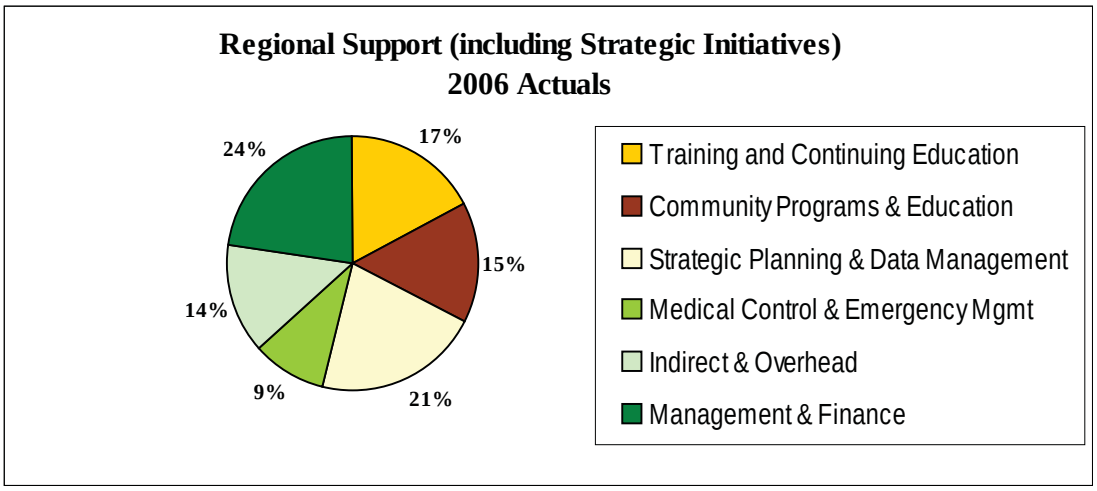
**Chart does not show $60k funding for the Skykomish area*

Basic Life Support (BLS) Services: The levy provides partial funding to BLS providers to help ensure uniform and standardized patient care and enhance BLS services. Basic Life Support services are provided, outside the City of Seattle, by thirty local fire departments and fire districts.

Beginning in 2002, the total amount of BLS funding was increased by the local area CPI each year as noted in the ***EMS 2002-2007 Strategic Plan Update***. The total annual BLS dollar allocation for 2006 was $9.4 million; the total for 2007 is $9.7 million.

The task force that completed the ***EMS 2002-2007 Strategic Plan Update*** also recommended a thorough review of the BLS funding formula, and in early 2002, a BLS Funding Formula Review Committee convened to discuss critical issues. The group was able to attain consensus on the new criteria for allocating BLS funds and the revised formula was used to calculate the 2003 BLS allocations. The new formula was again reviewed in May 2003, May 2004, and July 2005 to monitor the impacts and validate the assumptions. The intended effects were evident, particularly in reducing hold harmless amount. In 2006 and 2007, the new allocation formula was used with no additional changes since the revisions had continued to have the desired effects.

Regional Services: The primary purpose for regional EMS programs and services is to provide support to critical functions essential to providing the highest quality out-of-hospital emergency care available. This includes uniform training of EMTs and dispatchers, regional medical control, regional data collection and analysis, quality improvement activities, and financial and administrative management (including management of ALS and BLS contracts). Regional coordination of these various activities is important in supporting a standard delivery of pre-hospital patient care, developing regional policies and practices that reflect the diversity of needs, and maintaining the balance of local area service delivery with centralized interests.



The ***EMS 2002-2007 Strategic Plan Update*** limits increases in funding for Regional Services to local CPI. Expenditures, particularly labor expenses, have increased at a rate higher than CPI. The 2006 budget for Regional Support was $4.2 million. Approximately $3.8 million, or 15.0% of the budget, was expended in 2006, while $400,000 was saved to cover future costs, particularly labor and indirect and overhead costs that are projected to increase higher than CPI. As planned, approximately $50,000 was included in the 2006 budget for maintenance related to the Regional

Data Collection Project (RDC) and was transferred from the Strategic Initiative budget to Regional Services in 2005. The 2007 budget for Regional Services was increased by the forecast CPI of 2.7% and included use of funds saved in previous years for a total of $5.1 million.

Strategic Initiatives: The term 'strategic initiative' is used to describe a handful of new and innovative programs that are developed to have significant impact on the success of the strategic plan. Strategic Initiatives are funded with lifetime budgets and do not increase each year by CPI. However, the budgeted amount by year is adjusted to reflect changing cash flows based on project needs. For program details, please see ***Section B. 2002-2007 Strategic Initiatives*** - page 20. Current strategic initiative budgets are shown in the following chart:

Strategic Initiative Financial Summary (2002-2006)

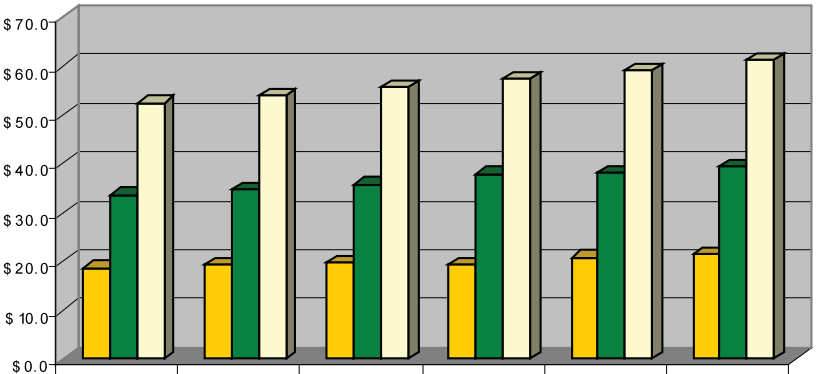
	2003	2004	2005	2006
Dispatch Initiatives				
CBD Guideline Revisions/ Software Development	$1,152	$3,750	$18,456	$177,796
EMD QI	$23,863	$24,171	$20,069	$9,453
Enhanced CBD Training	$51,064	$67,988	$52,212	$55,931
Technology Initiatives				
Web-based Training for Dispatch	$1,383	$12,000	$11,461	$7,693
Web-based Training for EMS (Enhanced)	$25,000	$50,000	$100,657	$141,662
Regional Electronic Data Collection Project	-	$149,234	-	-
RETRO	-	-	$60,983	$78,389
EMS System Efficiencies				
EMS Procedure & Patient Treatment/ Enhanced Care	-	-	$52,877	$66,229
Injury Prevention Programs	$21,089	$19,004	$26,744	$30,275
Levy Planning	-	-	$27,508	$107,056
TOTAL	**$123,551**	**$326,147**	**$370,967**	**$674,484**

D. EMS Revenue and Expenditure Trends

Revenue Trends: The primary revenue source for the EMS system in King County is the 2002-2007 EMS property tax levy. Levy revenue growth is limited by a voter-approved tax initiative (Initiative 747). This initiative limits revenue growth from existing properties to 1% per year, plus new construction. The following chart shows forecast levy assessments for both Seattle and the KC EMS Fund:

Forecast Levy Assessment

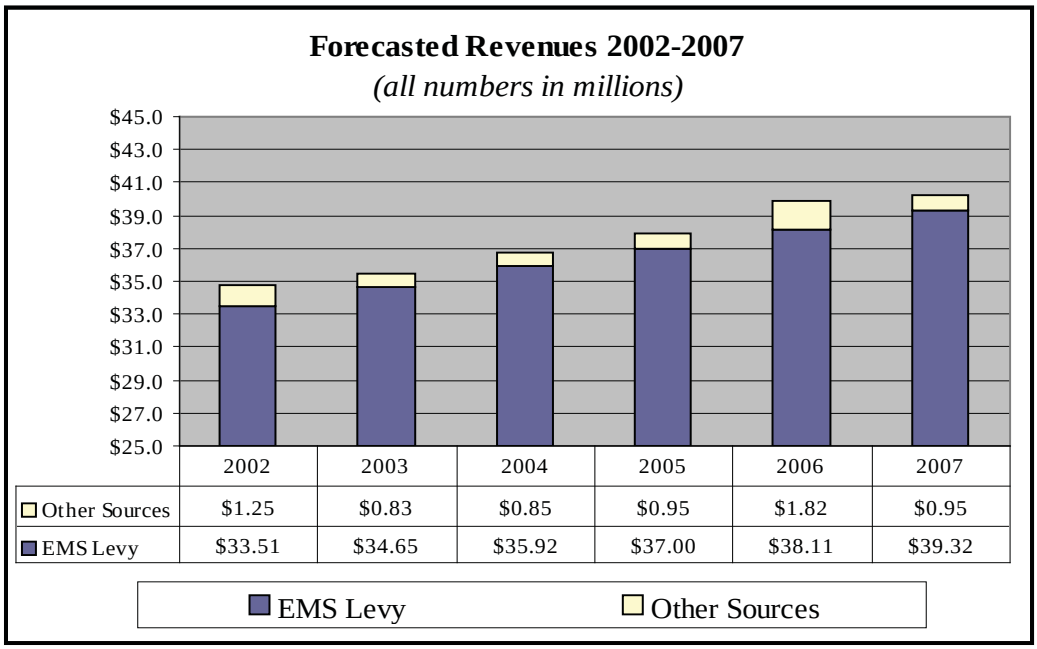
(amount billed in millions)



	2002	2003	2004	2005	2006	2007
Seattle	$18.76	$19.27	$19.84	$19.51	$20.90	$21.60
King County	$33.73	$34.81	$35.87	$37.94	$38.23	$39.61
Total Levy	$52.50	$54.09	$55.70	$57.45	$59.13	$61.21

The EMS Financial Plan assumes modest growth in property values, continued low inflation, a one-percent limit on fund growth from existing properties, growth in expenditures related to anticipated regional demand for Advanced Life Support Services (ALS), and stable growth in other services at the level of local Consumer Price Index (CPI). Forecasted total levy assessment, including both the City of Seattle and the KC EMS Fund, is projected to increase from $52.5 million in 2002 to $61.2 million in 2007. This is a total increase of 16.6% or an average of 3% per year. Growth over 1% is primarily due to property taxes on new construction.

While assessed values in the City of Seattle increased 41% between 2002 and 2007 (an average of 8% a year), the total assessment (amount billed) for the City increased 16% (an average of 3% a year). The proportion of the levy is the same as 2002 (from 35.72% in 2002 to 35.72% in 2006). The assessed values in the balance of King County have also increased 41% between 2002 and 2006 (an average of 8% a year), while the total assessment for the balance of King County has increased 16% (an average of 3.1% per year). The portion of the levy attributable to the City of Seattle and the balance of King County has remained relatively stable. Total KC EMS Fund tax revenues are projected to increase 17% from 2002 to 2007, an average of 3% per year. Total revenues are projected to increase from $35 million in 2002 to $40 million in 2007. The following chart shows actual and projected revenues for the KC EMS Fund through 2007:

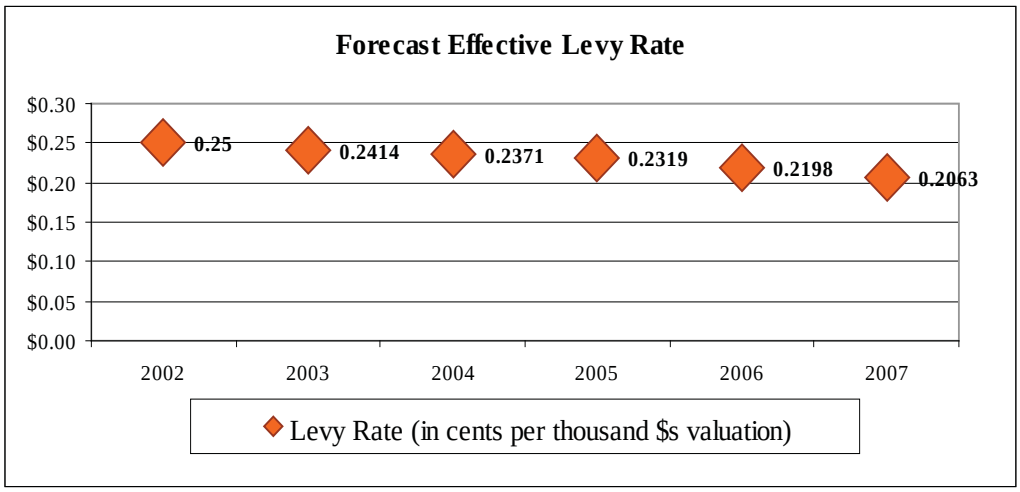


Balance of King County only

* In 2002, King County contributed additional CX funds related to the paramedic contract for KCM1.

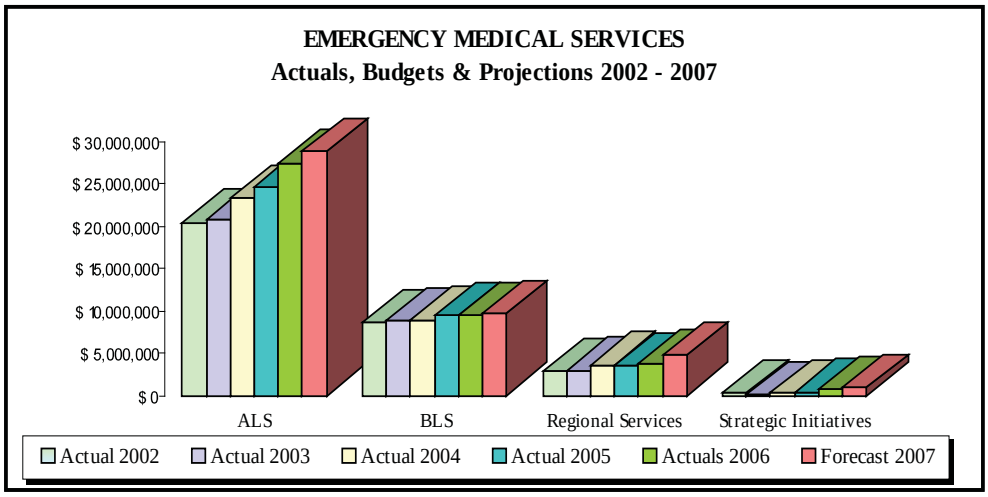
While EMS revenues are projected to increase, the effective levy rate will decrease. As described in ***Section A: Levy Structure***, Initiative 747 limits the total increase in EMS levy assessment to 1% plus new construction. Even though the total assessed values of properties in King County, not including new construction, increased 10.4% from 2006 to 2007, the total EMS levy assessment from these properties was limited to a 1% increase plus new construction for an increase of 3.6%. Thus, the effective levy rate decreased from $0.25 per thousand dollars of valuation in 2002 to $0.2063 in 2007. Forecasted new construction growth and forecasted CPI are adjusted each year based on the recommendations of the King County Economist. Forecast revenues are sufficient to cover forecast expenditures through the end of the levy period.

The following chart shows the forecast effective levy rate 2002-2007:



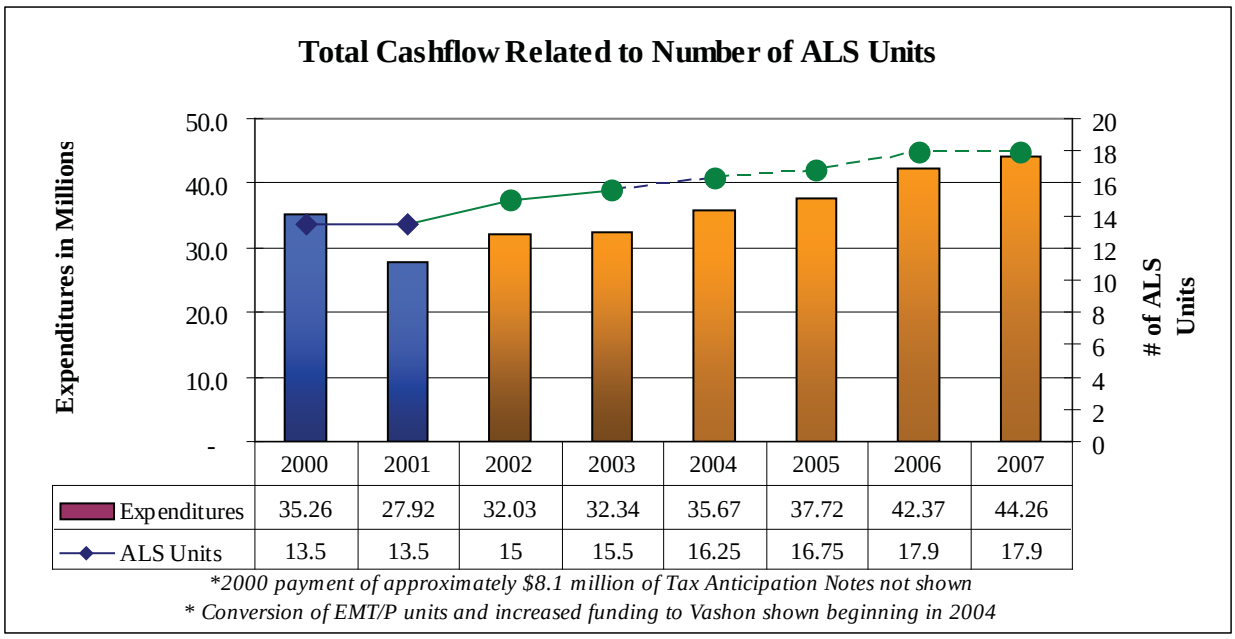
Expenditure Trends: There are two main factors affecting expenditure trends: increased costs and the addition of new ALS service. Expenditures are projected to increase from $32 million in 2002 to $44 million in 2007 for the balance of King County. This is a 38% increase or an average increase of 7.6% per year. Since ALS is the largest recipient of EMS levy funds, increases in ALS due to new units and allocation increases above forecast CPI have a significant effect on expenditures. Since expenditure increases in each sub-fund area are tied to the forecast local CPI, long term changes in the CPI rate can have an impact on the projected end fund balance.

Forecast CPI was increased to 2.9% in 2005, 2.6% in 2006, and to 2.7% in 2007. Lengthened start-up periods for Strategic Initiatives has resulted in higher cash flows for projects in the last two years of the levy period. There was sufficient fund balance to accommodate an increase in the ALS allocation over CPI in 2006 to minimize cost shifting to ALS providers. However, it was determined that there was not sufficient undesignated fund balance above the required fund balance available to cover an increase above CPI for 2007. The following chart shows projected expenditures by sub-fund for the current levy period:



Medic Unit Additions: Since the beginning of the current levy period, a 0.5 unit expansion was added to the system in 2003 when Medic 14 in Issaquah was expanded from a 12-hour half-time 2-paramedic unit to a full 24-hour unit. Medic 12 in Enumclaw was also expanded from a 12-hour half-time 2-paramedic unit to a full 24-hour unit in 2004. A new 12-hour peak unit, Medic 13, started in September 2006. These increases were anticipated in the ***EMS 2002-2007 Strategic Plan Update*** and implemented after analyzing workloads, response times, and percent back-up provided by other medic units. Increases in ALS expenditures are strongly correlated to the total number of existing and added ALS units.

The following chart shows how expenditure growth related to the number of ALS units in service:



	2000	2001	2002	2003	2004	2005	2006	2007
Expenditures	35.26	27.92	32.03	32.34	35.67	37.72	42.37	44.26
ALS Units	13.5	13.5	15	15.5	16.25	16.75	17.9	17.9

**2000 payment of approximately $8.1 million of Tax Anticipation Notes not shown*

** Conversion of EMT/P units and increased funding to Vashon shown beginning in 2004*

A significant increase in ALS expenditures outside the strategic plan was the transition of EMT-P units to 2-paramedic units at the request of the Medical Program Directors. Medic 3, located in North Bend, was transitioned to a 2-paramedic unit in July 2003 with funding for the increase split between the EMS levy and other EMS partners. Full levy funding began in January 2006. Medic 35 was converted to a 2-paramedic unit in May 2005. In addition, funding for Vashon was increased to 90% in January 2006. The conversion of Medic 3 and Medic 35 from EMT/P units to fully funded 2-paramedic units and the increase in funding for Vashon used most of the remaining available fund balance. Funds for addressing needs not included in the ***EMS 2002-2007 Strategic Plan Update***, such as desired service increases to outlying areas, are limited.

Other Expenditures: BLS funding is projected to remain steady at CPI. BLS funding is projected to increase from $8.5 million in 2002 to $9.7 million in 2007. Regional Services funding is projected to increase from actuals of $2.8 million in 2002 to a projection of $4.8 million in 2007. Total funding for the current levy period increased each year at CPI. Expenses, particularly personnel, indirect and overhead charges, are increasing higher than CPI. To accommodate these increases, Regional Services will use under-expenditures from 2003 through 2005 that were placed in a designated reserve to cover increased expenses, including overhead in 2006 and 2007. There are sufficient savings to cover Regional Services expenditures through 2007.

As planned, revenues exceeded expenditures for the first three years of the levy. Beginning in 2005, expenditures were projected to exceed revenues. Delays in expenditures resulted in revenues slightly exceeding expenditures in 2005. Sufficient revenues have been saved and placed in the EMS fund to cover the difference between planned expenditure and revenue levels in 2006 and 2007. The EMS Levy undesignated end fund balance (EFB) is projected to be $4.26 million.

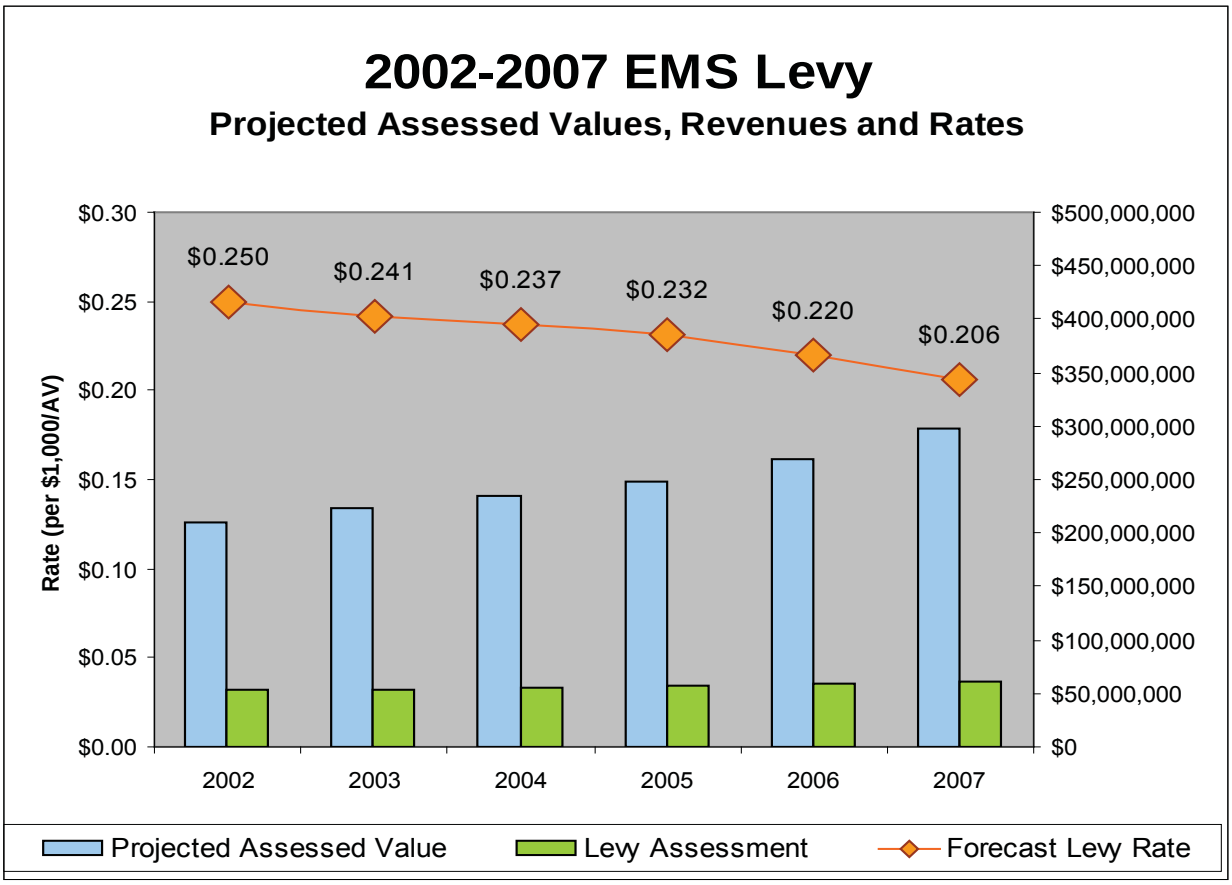
E. Review of 2002-2007 Levy Period

The 2002-2007 levy period presented a number of fiscal challenges. The first challenge was preparing a financial plan based on then current RCWs and then adapting that plan to the limits of I-747 (property tax increases limited to 1% plus new construction). Other challenges included increased costs associated with service needs, and the cost of providing existing ALS services increasing at a rate higher than CPI.

Assessed Valuations increased at a rate higher than forecast. In accordance with the 1% limit, this resulted in levy rates lower than forecast. The following table shows the difference in forecast and actual levy rates.

	2002	2003	2004	2005	2006	2007
Forecast Levy Rate	0.250	0.245	0.241	0.236	0.232	0.227
Actual Levy Rates	0.250	0.241	0.237	0.232	0.220	0.206

The following chart shows the interactions of levy rate, assessed values, and actual amount levied. The assessed valuation grew at a rate higher than the actual levy amounts assessed property owners. This resulted in lower levy rates.



	2002	2003	2004	2005	2006	2007
Projected Assessed Value (AV)*	$209,815,163	$224,074,252	$234,880,126	$247,766,413	$268,995,995	$297,017,722
Levy Assessment	$52,497,313	$54,087,223	$55,703,623	$57,448,128	$59,125,467	$61,271,822
Forecast Levy Rate	0.2500	0.2414	0.2371	0.2319	0.2198	0.2063
Growth in AV		6.80%	4.82%	5.49%	8.57%	10.42%
Growth in Assessment		3.03%	2.99%	3.13%	2.92%	3.63%

**AV (000 omitted)*

Added Service: Additional service needs included the request by Medical Directors to convert two units staffed by one EMT and one paramedic (EMT/P unit) to two-paramedic units, additional resources to cover costs associated with providing services on Vashon Island, and providing service to the Skykomish/KCFD #50 area in north east King County, accessible only by road through Snohomish and Chelan Counties. ALS providers convened to review the issues, develop options and make recommendations to the EMS Advisory Committee. The ability to transition the two EMT/P units to full 2-paramedic units was a result of true regional collaboration in finding a solution. Medic 3 in North Bend began operating as a full 2-paramedic unit in 2003. Financially this was accomplished by Eastside Fire & Rescue (ESFR) contributing funding equivalent to their BLS allocation, increased allocation by the EMS Fund and cost savings by Bellevue Fire Department. The conversion of Medic 35 in Woodinville was accomplished in May 2005 when funding was identified in the EMS fund to cover the additional cost. Full funding of Medic 3 from the EMS fund began in 2006 and funding for Vashon was increased from a 0.5 unit allocation to a 0.9 unit allocation.

After reviewing several proposals, a solution to provide ALS service for the Skykomish/KCFD #50 area was developed and approved by the EMS Advisory Committee. Funding for Snohomish County FD #26 in Gold Bar to provide ALS services to the Skykomish area (including Stevens Pass) began in 2006. The total costs for adding unplanned units during the 2002-2007 levy period was $5.7 million. The following chart shows the location of added units – both planned and unplanned – during the 2002 to 2007 levy period.

ALS Unit Adds During 2002-2007 Levy

Units	2002	2003	2004	2005	2006	2007
Existing Units	13.50	15.00	15.75	16.25	17.15	17.90
Expanded Units*	1.00	0.50	0.50			
Added Units*	0.50				0.50	
Unit equivalent of outside plan adds		0.25		0.90	0.25	
Total Units (planned & unplanned)	15.00	15.75	16.25	17.15	17.90	17.90

Descriptions of Service Increases:

	2002	2003	2004	2005	2006	2007
Description of Expanded paramedic units per plan	M47-Bothell to 24-hrs; Vashon funding increased to .5	M14-Issaquah to 24-hrs	M12 Enumclaw to 24-hrs			
Description of Adds -- New paramedic units per plan	Add M65 in Shoreline at 12-hrs				Add M13 in So KC at 12-hrs	
Description of Adds -- Modifications/changes to paramedic units outside of plan		Increase M3 (North Bend) funding to convert EMT/P to full 2-PM unit	Annualize M3 (North Bend) funding from previous year	Continue adds from previous years + convert M35 EMT/P to full 2-PM + increase Vashon to avoid EMT/P conversion	Continue adds from previous years + add $60k SCFD 26 + M3 to FT funding	Continue all adds from previous years

**planned adds (12-hour units = .5)*

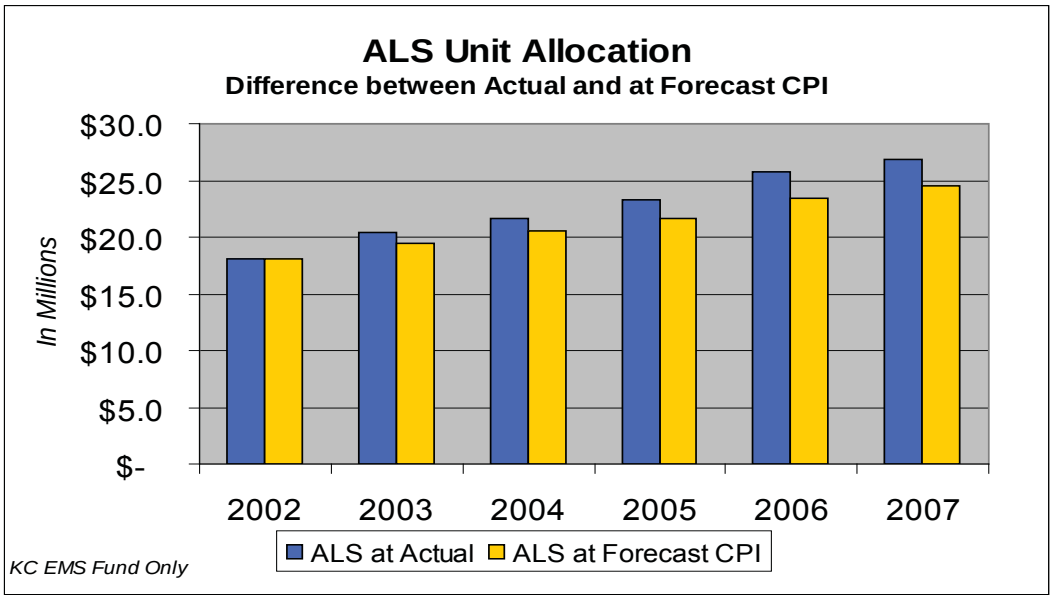
ALS Allocation Increases: The ***EMS 2002-2007 Strategic Plan Update*** tied inflation increases in all programs to CPI. Since many of the costs associated with ALS services exceeded CPI (particularly labor costs, medical supply and service costs, and fuel costs), it was observed early in the levy period that provider costs were increasing at a rate higher than the allocation. One of the primary tenets of the ***EMS 2002-2007 Strategic Plan Update*** was to minimize cost shifting to ALS providers. The EMS 2002 Task Force recommendations included re-evaluating the ALS funding level periodically to determine if existing levels would result in cost shifting to ALS providers, and if funding was available 'to alleviate any dramatic increase in provider contributions'. Including the first year of the levy when the allocation was reset, increases above CPI were made four out of the six years of the 2002-2007 levy period.

ALS Allocations (2001-2007)

Year	ALS Allocation	% Total Increase	Levy Inflator*	Difference
2001	$1,080,314	9.6%	3.5%	6.1%
2002	$1,207,354	11.8%	2.4%	9.4%
2003	$1,303,942	8.0%	2.5%	5.5%
2004	$1,331,325	2.1%	2.1%	--
2005	$1,398,702	5.1%	2.9%	2.2%
2006	$1,463,770	4.7%	2.6%	2.1%
2007	$1,503,292	2.7%	2.7%	--

**CPI as forecast by King County Economist*

The following chart shows the yearly difference between the actual ALS allocations during the 2002-2007 levy period and the ALS allocations based on the forecast CPI for the year.



Without these increases, a total of approximately $8.5 million in costs would have been shifted to provider agencies. Funding for these increases was provided by the decreased baseline expenditure level due to lowered CPI forecasts and increased revenues. The impact of using an inflator that could not meet the needs of the ALS programs was a lesson learned and was subsequently addressed in the ***Medic One/EMS 2008-2013 Strategic Plan***.

Other Increases: The only other notable increase from the original plan was the addition of Strategic Initiatives for enhancing Web-based Training for EMS Personnel, Tracking EMS Training (RETRO), EMT and Paramedic Procedure, and Patient Treatment Evaluations and Enhanced Care for special populations. The total increase was $492,167 above the original financial plan.

ALS Adds above Original Plan (in millions)	
Unplanned ALS unit adds	$5.7
Increases above ALS allocation	$8.5
Subtotal ALS	**$14.2**
Added Strategic Initiatives	$0.5
TOTAL ADDS	**$14.7**

Financial Review: The EMS fund was able to cover these increased expenditures due to the fact that revenues were higher than predicted in the 2002-2007 Financial Plan and projected CPI was lower than projected. The higher than forecast property tax revenues were primarily due to new construction being higher than forecast. The inflationary assumptions for the original plan were

provided by the King County Economist. These assumptions showed inflation decreasing slightly below the 2001 forecast. Actual forecast CPI for the period was lower than projected.

The following table compares CPI forecasts between the original plan and the current plan. The total decrease in expenditures based on revised CPI forecasts was approximately $4.3 million.

Forecast CPI	2000	2001	2002	2003	2004	2005	2006	2007
Original Financial Plan	2.5%	3.5%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
Final Financial Plan	2.5%	3.5%	2.4%	2.5%	2.1%	2.9%	2.6%	2.7%
Difference	--	--	(.8%)	(0.7%)	(1.1%)	(0.3%)	(0.6%)	(0.5%)

The original 2002-2007 Financial Plan forecasted revenues at $215 million and expenditures at $214 million. The current financial plan estimates total revenues at $225 million and expenditures at $224 million. Both revenues and expenditures increased by approximately 5% over the original plan.

Plan	Revenues	Expenditures	Difference
Actual & Forecast Expenditures*	$225,129,418	$223,379,593	$1,749,825
Original Financial Plan	$215,427,239	$214,101,646	$1,325,594
Increase	$9,702,179	$9,277,947	$424,231

**Actuals through 2006; forecast 2007*

Expenditure increases over the original plan were almost entirely in the paramedic sub-fund. The total increase above the original plan is forecasted at $11.75 million. The addition of new Strategic Initiatives within the levy period also resulted in a small increase in expenditures over the original plan. Expenditures for both Basic Life Services and Regional Services decreased due to the lower than planned CPI forecasts. The following chart compares original and current expenditure forecasts.

Program	Original Forecast	Current Forecast	Difference	% Change
Paramedic Services (ALS)	$133,747,239	$144,851,766	$11,104,527	8.3%
Basic Life Support (FF/EMTs)	$55,537,131	$54,335,846	$(1,201,285)	-2.2%
Regional Services	$22,633,276	$21,516,178	$(1,117,098)	-4.9%
Strategic Initiatives	$2,184,000	$2,675,803	$491,803	22.5%
TOTAL	$214,101,646	$223,379,593	$10,131,588	4.3%

**Actuals through 2006; forecast 2007*

Revenue increases were primarily due to increases in property taxes. Other revenues include primarily one-time reimburseables for services provided and includes over $700,000 in reimbursements from amounts accrued or charged to expenditures. King County Current Expense

Funds (CX) were larger than forecast due to the carryover from 2001 to 2002 of funds set aside by King County to cover a labor agreement settled in 2002.

Revenues	Original Forecast	Current Forecast	Difference	% Change
Property Taxes	$211,421,239	$218,486,079	$7,064,840	3.3%
Other Revenues	$450,000	$1,520,870	$1,070,870	238.0%
Interest Income	$1,500,000	$2,416,402	$916,402	61.1%
CX (Current Expense Fund)	$2,056,000	$2,706,067	$650,067	31.6%
TOTAL	$215,427,239	$225,129,418	$9,702,179	4.5%

The net result of the changes during the 2002-2007 levy period resulted in a lowered expenditure baseline due to a decrease in forecast CPI projections. In addition there was an increase in revenue that allowed the addition of unplanned ALS units, increases in the ALS allocation above CPI, and the addition of some Strategic Initiatives.

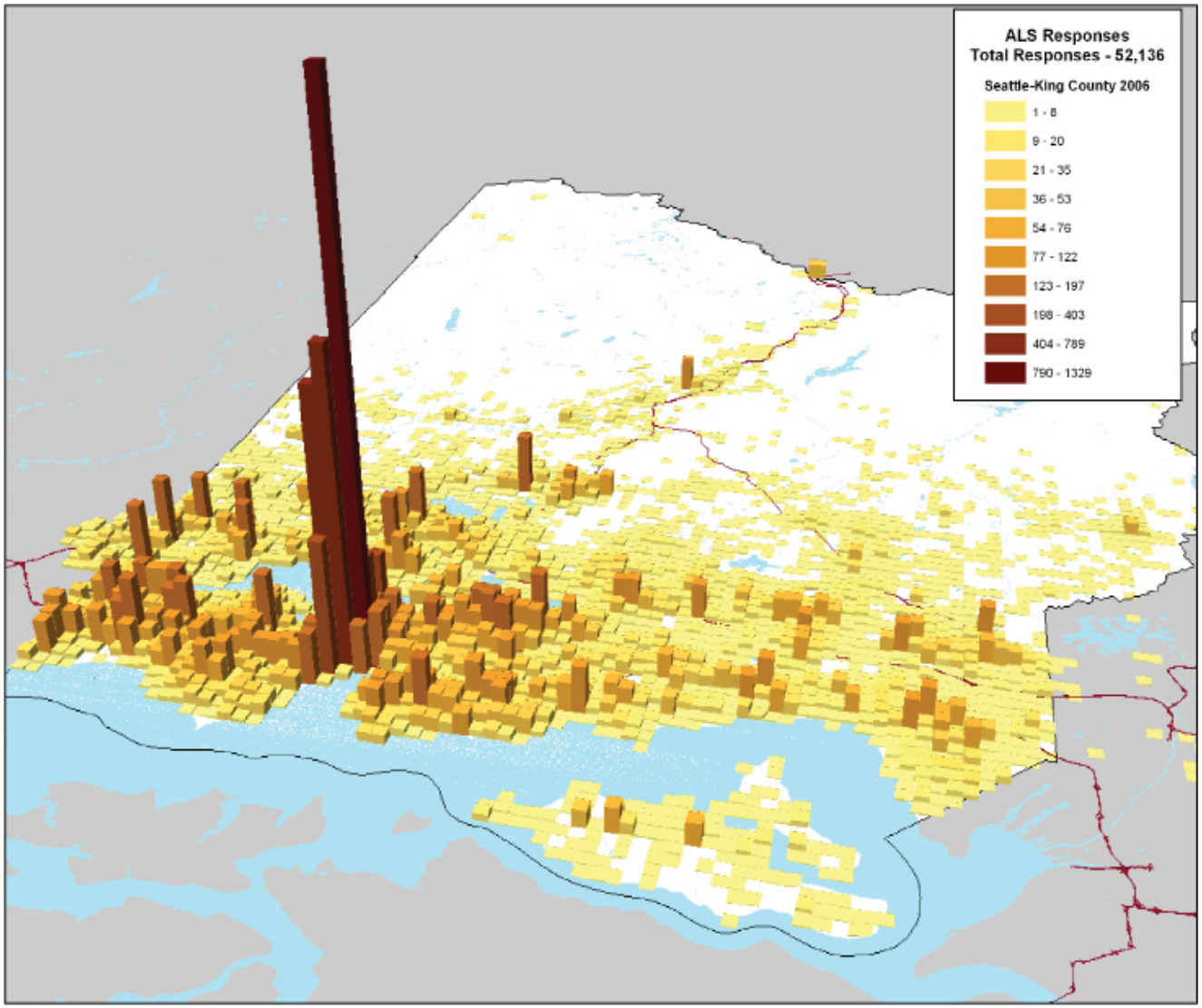
F. 2007 EMS Financial Plan

The 2005-2007 EMS Financial Plan summarizes actual and projected revenues and expenditures for core EMS Division programs and services, major strategic initiative directions, and other additions. The EMS Financial Plan shows the current status of the undesignated fund balance in relationship to a target fund balance. The target fund balance is the equivalent of one month's operating costs for EMS activities. Please refer to ***Appendix G: EMS Division Revenue/ Expenditure Summary*** on page 95 for details.

G. Recommendations for 2008 Rate

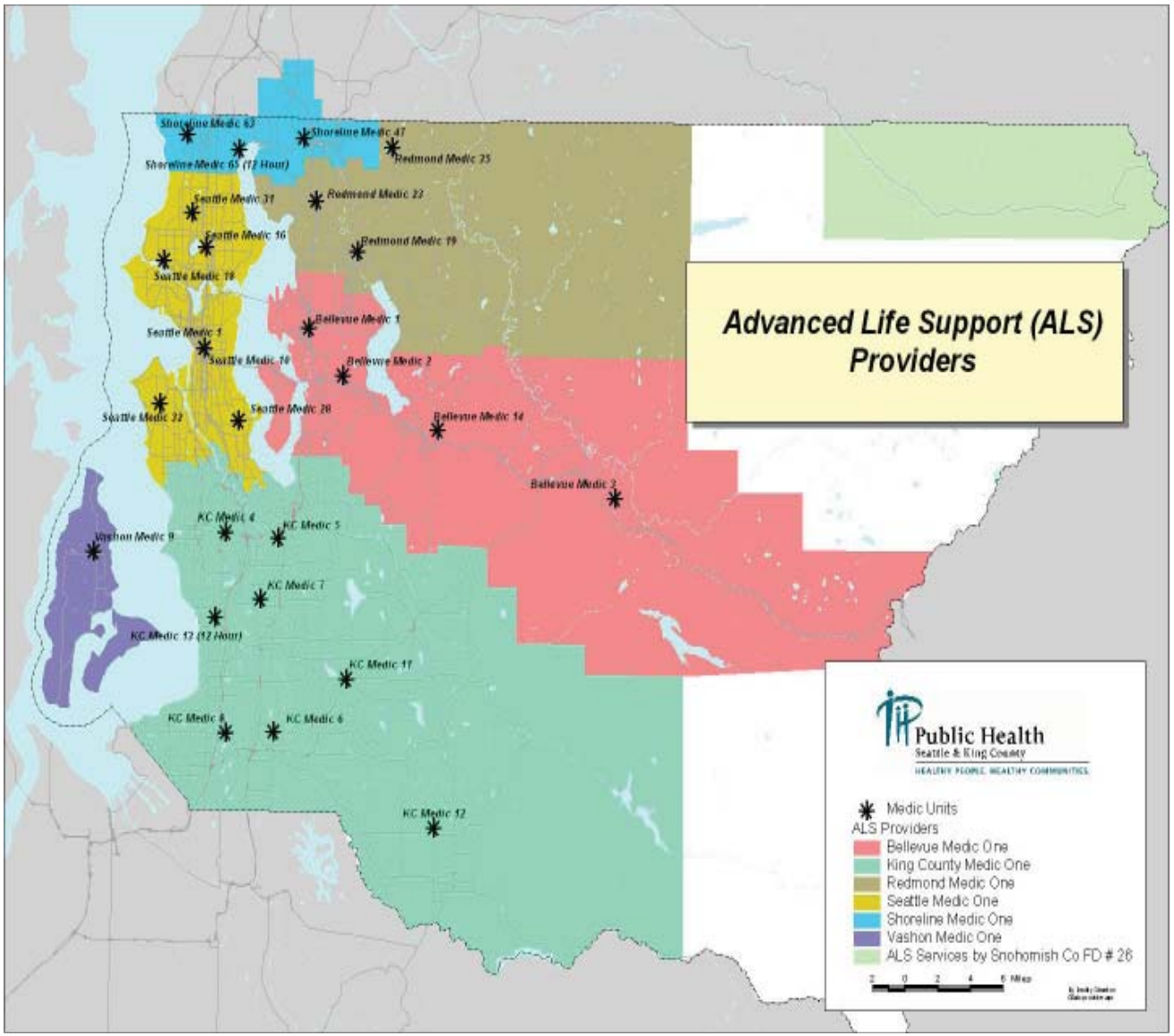
The ***Medic One/EMS 2008-2013 Strategic Plan*** and levy proposal supports a six-year, $.30 cent levy that will be brought to the voters of King County in November 2007. It is recommended that the 2008 rate be based on the approved $.30 rate.

Appendix A: Regional Map 200 Total ALS Call Volumes

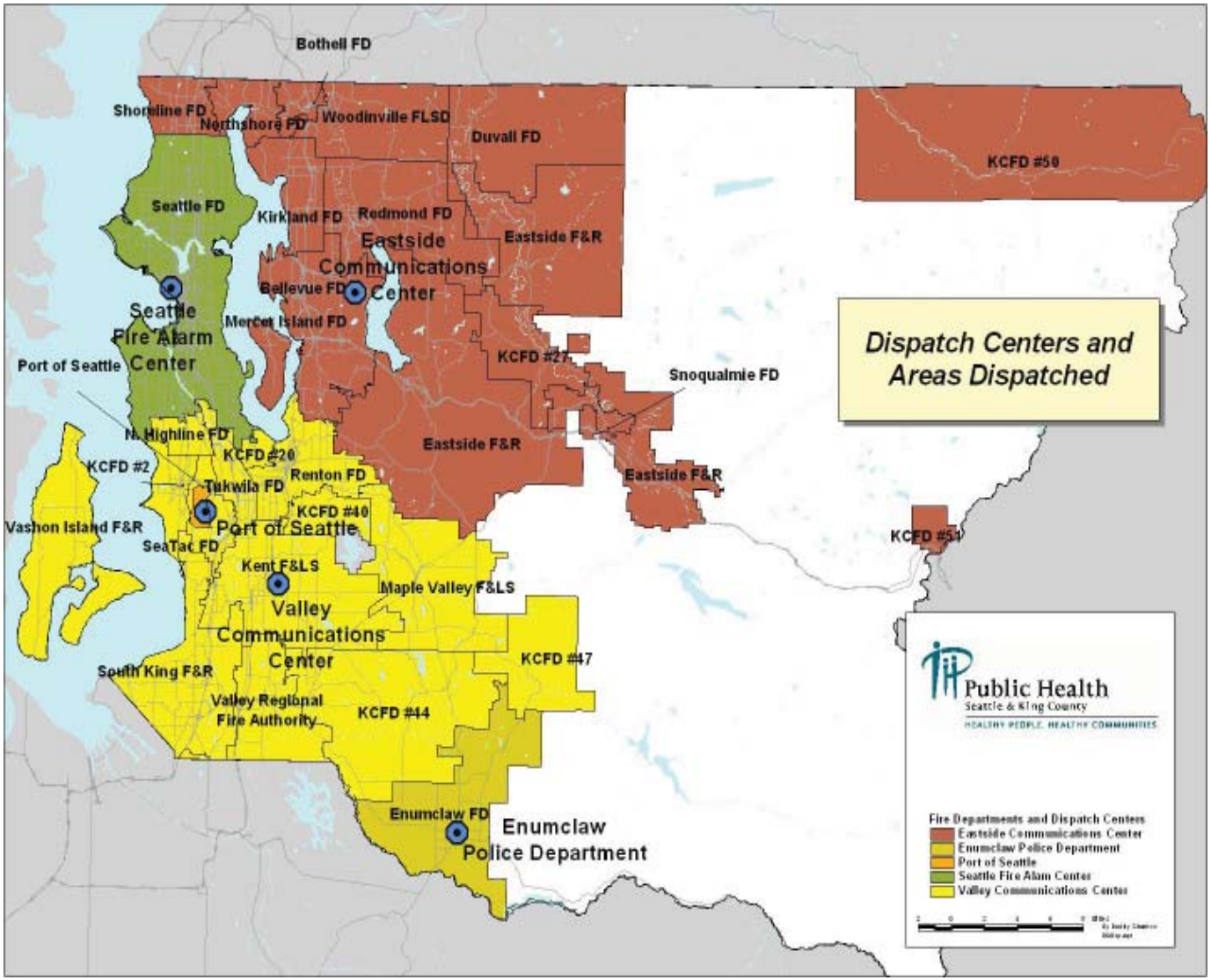


Appendix B: Regional Map of the Basic Life Support (BLS) Provider Areas

Appendix C: Regional Map of the Advanced Life Support (ALS) Provider Areas



Appendix D: Regional Map of the EMS Dispatch Center Service Areas



Appendix E: Regional Map of EMS Hospitals

Appendix F: 2007 EMS Advisory Committee Listing

Name	Representation	Title/ Organization
Tom Hearne, Chair	KC Emergency Medical Services	Manager, KC EMS Division
Bob Berschauer	Ambulance Service	Director of Operations, American Medical Response
Al Church	BLS in Cities > 50,000	Chief, South King Fire & Rescue
Michael Copass, M.D.	Seattle Medical Program Director	Medical Program Director, Seattle Medic One
Wayne Corey	Citizen Representative	
David Daniels	BLS in Cities > 50,000	Chief, Renton Fire Department
Gregory Dean	ALS Providers – Seattle	Chief, Seattle Fire Department
Mickey Eisenberg M.D.	EMS Medical Program Director	Medical Program Director, KCEMS
Chris Fischer	Dispatch	Manager, Valley Communications Center
Jim Fogarty	ALS Providers - KC Medic One	Chief, King County Medic One
Tim Fuller	ALS Providers - Redmond	Chief, Redmond Fire Department
Roger Hershey	KC Fire Commissioner's Assn. - Urban	Fire Commissioner, South King Fire & Rescue
Jon Kennison	KC Fire Commissioner's Assn. - Rural	Fire Commissioner, Shoreline
Marcus Kragness	ALS Providers - Shoreline	Chief, Shoreline Fire Department
Michael Loehr	Public Health - Emergency Management	Manager
Chris Merritt	Labor - ALS	Paramedic, KC Medic One
Alan Reed	Health Care System	Manager, Medical Support Services, Group Health
Jim Schneider	BLS in Cities >50,000	Chief, Kent Fire & Life Safety
David Fleming	Public Health - Seattle & King Co.	Director and Health Officer
Mario Trevino	ALS Providers - Bellevue	Chief, Bellevue Fire Department
Ken Weisenbach	Labor - BLS	EMT, Redmond Fire Department
Adrian Whorton, M.D.	Chair, Medical Directors' Committee	Medical Director, Redmond Medic One
Keith Yamane	ALS Providers - Vashon Medic One	Chief, Vashon Island Fire & Rescue

Appendix G: EMS Division Revenue/Expenditure Summary
Financial Plan 2006 through 2008

	2006 Actual	2007 Forecast	2008 Requested
BEGINNING FUND BALANCE:	$10,840,020	$9,403,719	$5,418,182
REVENUES:			
Property Taxes	$38,112,894	$39,324,543	$62,349,590
Other Revenue (includes Interest Income)	$1,444,170	$571,564	$363,388
General Fund (CX)	$375,000	$375,000	$375,000
TOTAL REVENUES	**$39,932,064**	**$40,217,107**	**$63,087,633**
EXPENDITURES:			
Paramedic Services	($27,445,965)	($28,806,942)	($34,558,361)
Basic Life Support	($9,420,513)	($9,674,868)	($14,390,254)
Regional Services	($3,827,403)	($4,810,705)	($6,102,144)
Strategic Initiatives	($674,484)	($963,656)	($1,246,580)
King County Auditor's Office			($61,000)
SUBTOTAL Operating Expenditures	**($41,368,365)**	**($44,256,171)**	**($56,358,339)**
Contingencies (ALS Wage & Disaster)			($5,320,831)
TOTAL EXPENDITURES	**($41,368,365)**	**($44,256,171)**	**($61,679,170)**
ENDING FUND BALANCE:	**$9,403,719**	**$5,418,182**	**$6,826,645**
Provider and Program Balances		($1,152,056)	($1,152,056)
Reserves for Unanticipated Inflation			($1,230,000)
Reserve for Chassis Obsolescence			($375,000)
ENDING UNDESIGNATED FUND BALANCE:		**$4,266,126**	**$4,069,589**

KING COUNTY MEDIC ONE DONATIONS

Fund 6980; Sub-Account 06204	*2006 Account Balance*
Beginning Balance	$491,256.87
Donations	$12,071.60
Expenditures	$(309,944.68)
Ending Balance	$193,383.19

Grants & Donations ORG Expenses	
Research Grants	$254,942
Entrepreneurial Projects	156,114
Other Miscellaneous Grants	$3,490
King County Medic One Donations	$309,915
TOTAL	**$724,461**

Appendix H: 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.metrokc.gov/health/ems

Specific Program Contacts:

King County Medic One http://www.metrokc.gov/health/medicone/	(206) 296-8550
BLS/EMT Training and Education Program http://www.metrokc.gov/health/ems/training.htm	(206) 263-8585
CPR/AED Training Programs http://www.metrokc.gov/health/ems/aed.htm	(206) 263-8669
Emergency Medical Dispatch Programs http://www.metrokc.gov/health/ems/emdprogram.htm	(206) 263-8636
Injury Prevention and Public Education Programs http://www.metrokc.gov/health/ems/community.htm	(206) 263-8554
Medical Control http://www.metrokc.gov/health/ems/quality.htm	(206) 263-8569
Regional Data Collection Project http://www.metrokc.gov/health/ems/planning.htm	(206) 263-8603
Center for the Evaluation of EMS (CEEMS) http://www.metrokc.gov/health/ems/CEEMS.HTM	(206) 263-8569

Appendix I: Complete Bibliography for 2007

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4. Gold L, Eisenberg MS: Cost-Effectiveness of Automated External Defibrillators In Public Places: Pro. Current Opinion in Cardiology 2007; 22: 1-4.

5. Nichol G, Powell J, Van Ottingham L, Maier R, Rea T, Christenson J, Hallstrom A: Consent in resuscitation trials: Benefit or harm for patients and society? Resuscitation 2006; 70: 360-368.

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7. Shah S, Garcia M, Rea T: Increasing first responder CPR during resuscitation of out-of-hospital cardiac arrest using automated external defibrillators. Resuscitation 2006; 71: 29-33.

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