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DEFIBRILLATORS



**KITSAP, WASHINGTON**  
**COMMUNITY PROFILE**



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# EARLY DEFIBRILLATION PROGRAM: HEART SAVE PROJECT



In some places in Kitsap County, Washington, a picturesque bedroom community west of Seattle that consists of a peninsula and an island, the nearest hospital is almost an hour away - and that's under the best of conditions. When bad weather docks the ferry, grounds the medical airlift and closes the bridge, people in need of advanced emergency trauma care have to take the longer land route to Seattle, a drive that can take an hour-and-a-half.

The geographical constraints of the 400-square-mile County, plus the desire to provide the utmost in emergency healthcare to the 230,000 residents living there, spurred Kitsap's emergency medical officials to initiate a comprehensive county-wide automated external defibrillator (AED) program in 1997. They specifically set out to impact the survival rate from sudden cardiac arrest (SCA), a condition that strikes people without warning and is fatal unless an electric shock is delivered to the heart via a defibrillator within minutes of onset.

"When we are weathered in, we have to become pretty self-sufficient," said Gary Eddings, Chairman of the Kitsap County Emergency Medical Services (EMS) Council. "We've come up with some good options for people who live around here to at least get them stabilized. We can hopefully do a good job with them before they are transported out of the area for more advanced care, if that's the need."

To come to the rescue of the cardiac arrest patient and have the greatest impact on survival, the County has equipped all its first-out emergency vehicles and some fire chiefs' cars with ForeRunner AEDs. There are 38 AEDs "carefully dispersed throughout the County," according to Sherrie Shafer, Kitsap County EMS Coordinator. In addition, approximately ten more AEDs, considered 'public access defibrillators,' are in high traffic or remote public areas such as shopping malls, golf courses, fitness centers, a racetrack, public and private buildings, and similar venues.

## STATISTICS

<b>Population:</b>	<b>230,000 Residents</b>
<b>Program Implementation:</b>	<b>1997</b>
<b>Trained Responders:</b>	<b>EMS, Fire and Rescue, and Citizen Responders</b>
<b>Number of AEDs:</b>	<b>38</b>
<b>AED Locations:</b>	<b>Industry, Fire and Police Vehicles, Silverdale Mall, Public Pool, Public Jail, Fitness Clubs, Golf Courses, and Bremerton Racetrack</b>
<b>Number of Saves:</b>	<b>7</b>

**By all measures the program is a tremendous success. As a result of the combined emergency and public access efforts, seven people in Kitsap County have been successfully resuscitated with an AED since 1997, brought back from the brink of death after they collapsed when their hearts went into an erratic rhythm. One of those rescues was made by a private citizen at a public location equipped with a public access defibrillator.**

#### **COMMITTEE OF STRONG ADVOCATES RALLIES THE PROGRAM**

Establishing an AED program in any jurisdiction begins with enthusiastic champions for the cause – people who envision the program, rally others, secure funding, and make it happen. In Kitsap County, that caliber of advocacy began with Dr. Luke Magnotto, who served as the County's Medical Program Director for the decade spanning 1991 to 2001. "He was very active in the desire to get AEDs in the community," Shafer said.

Dr. Magnotto, now the director of Urgent Care Services at Harrison Memorial Hospital, a Level Three trauma center and the only public hospital in the County (the second hospital in the County is a Naval facility), was instrumental in establishing the County's AED program. He began by forming a committee in 1996 to look at how best to facilitate increased survival rates in the County.

"It wasn't so much that we were having a disastrous problem with cardiac arrest, it was more looking toward what can we do with what we've got to make survival chances even better," said Eddings, who is also the Battalion Chief and Medical Officer for Central Kitsap Fire and Rescue, one of the largest fire districts in the County.

"For years, everyone was talking about CPR as the one thing that could be done to help survival. Then, we started looking at what some other areas in the country were doing, as well as the cardiology studies coming out of Seattle, and they were finding more and more that early defibrillation was beneficial," he said.

"If you're just providing CPR or just waiting for a paramedic or basic life support unit, you bump up against a wall," Chief Eddings added. "You're sitting there with time, and we thought we could impact time by making the units available to our own crews to start with and then also to the public."

Shafer, an RN with a Bachelor of Science in Nursing who also sits on the state-wide Cardiac Technical Advisory Committee, agrees: **"We had totally bought-off on the idea that what changes the heart is not the meds and the IVs, but defibrillation. If we could get defibrillators to people faster, we could increase their chances of survival."**

After a careful review of the issue, the committee set an ambitious goal of "outfitting every first response fire and medical apparatus in the County with an AED and reducing the time between the onset of ventricular fibrillation and emergency electricity," according to Chief Eddings.

#### **PRIVATE CONTRIBUTIONS FUND THE EQUIPMENT PURCHASE**

Around the time Dr. Magnotto formed the Committee to look at ways to increase survival in the County, the Harrison Hospital Foundation approached offering to help. Initially the Foundation was interested in providing paramedics with equipment that could transmit EKG and other vital information from emergency vehicles to the hospital while a patient was in transit. Dr. Magnotto "looked into it and said AEDs could do more to save lives on a county-wide basis," according to Foundation Executive Director, Charles Gilfillan.

Up until that point, the Foundation had undertaken fundraising projects for Harrison Hospital only. But after hearing from a number of advocates for AEDs, including the hospital's head of cardiology, the Foundation's Board of Directors voted to diverge from its traditional practices and handle fundraising for the AED program.



Sherrie Shafer, Kitsap County EMS Coordinator

The Foundation dubbed its new efforts the "Heart Save Project" and fundraising began in earnest in late 1996. Gilfillan and the board members ultimately became partners on the project and as enthusiastic about AEDs as Dr. Magnotto and the Committee. Joining them in support of the project were the CEO of Harrison Hospital, independent cardiologists, and the entire emergency medical community of Kitsap County.

The Foundation raises most of its money annually at a formal dinner event for 400 people, a gala party called 'The Festival of Trees.' Held in late November, the highlight of the event is the auction of 40 decorated, live Christmas trees. In 1996, the average bid for a tree was \$1,000. Gilfillan said knowing that the money was going to the AED program made people especially generous that year.

A total of \$86,000 was raised, all of it from private individual and organizational donors. "A lot of medical organizations and physicians helped," Gilfillan said. "It was truly a collaborative effort and it was really exciting. It was just one of those inspirational things to be a part of. Everyone was working for the same objective. No one was trying to control it. It was just a very positive experience for our entire community."

## GOLFERS NEED, AND SOME HAVE, AED PROTECTION



With expansive, sometimes remote topography and users who include retirees, golf courses are one of the smartest places to locate an AED. "Golf courses and fitness clubs need them because people can go into cardiac arrest when exercising," Kitsap County EMS Coordinator Sherrie Shafer said. "And in the case of a golf course, even if the engine is nearby, the rescuers still have to get to the hole."

**Pat Westhoff, Golf Operations Manager for the city of Bremerton, the largest city in Kitsap County, Washington, did not need much convincing. He oversees the city-run, 36-hole Gold Mountain Golf Course facility, which includes two courses, a restaurant and a banquet hall. A golfer died from cardiac problems at his course each year from 1994 to 1996. Westhoff has suffered three heart attacks himself, but jokingly points out that this is not the reason he advocated an AED for the course.**

**Gold Mountain, where 110,000 people play each year and another 40,000 use the banquet facilities, was one of the first public access sites and the first golf course in the County to equip itself with a ForeRunner AED in 1997. Ten employees are trained to use it and there is always someone on-site who can operate the AED if it is needed.**

Even with 36-holes to cover, response time is four minutes or less. Westhoff says this is at least three times faster than the local fire department could get to the scene. "The response time out here from the city is somewhere around 12 to 14 minutes, and that is just way too long," he said.

Westhoff wishes he had had the AED earlier. He believes it could have changed the outcome in at least two of the fatalities that occurred before 1996. "I know that there is one for sure that if we had had the AED that we might have been able to make a difference because he was right at the first hole and less than a minute out." Another gentleman was on the third hole, and also well within the response-time window for successful defibrillation. CPR was performed in both cases, but it alone was not enough to revive their hearts. Since 1997, no one at the facility luckily has needed an AED. Nonetheless, Westhoff says, "we're very happy to have it." His staff has responded with the AED to two medical calls on the course. They turned out to be "false alarms," incidents other than sudden cardiac arrest. Westhoff noted that "those people were happy to see us, whether they were having a heart attack or not."

The course is adding a new clubhouse and expects even more golfers and visitors in the near future. Westhoff and his staff, outfitted with their AED and combined AED/CPR training, will be ready to respond in the event of a sudden cardiac arrest incident.

With the money raised at the Festival of Trees, EMS officials were able to purchase 28 AEDs between 1996 and 1997. Kitsap County's community defibrillation program was officially underway.

Since its initial involvement, the Foundation donated additional funds in 2001 to the Poulsbo Fire Department, which built two new stations and has equipped each station's first-response vehicle with an AED. In addition, other fire districts throughout the County have purchased eight more AEDs with their own money— bringing the total emergency response AEDs in Kitsap to 38.

### THE COMMITTEE SELECTS THE APPROPRIATE TECHNOLOGY

With funds secured, the Committee turned next to the technology available to accomplish the job. "When we started looking at what we could really do to give an immediate chance to someone who had suffered a cardiac arrest, we started looking at the automated defibrillator as an option because just about anybody could be trained with them," Eddings said.

They looked at all the AEDs on the market and decided on the ForeRunner. It was the only AED at the time with a biphasic waveform, which delivers a low-energy, yet highly effective, jolt to cardiac arrest patients.

Going with a biphasic waveform, which was new at the time, was not the committee's original intent and there were some initial concerns about the relative newness of the technology. However, Shafer said Dr. Magnotto strongly advocated biphasic, and the Committee came to agreement quickly.

**Another factor in the decision to purchase the ForeRunner AED was its ease-of-use. "This AED was made for people to use without any kind of specific medical education or advanced training," Shafer said. To illustrate her point, she noted that during the fundraising period for the program five- and six-year-old children were able to run an AED trainer unit at events with little or no instruction.**



With the hardware selected, the Committee moved forward, gathering support from everyone vital to the cause. "It was a team effort from the get-go," said Chief Eddings. "We didn't meet one bit of resistance in trying to get those machines out there, either from the fundraising perspective or from the training perspective. We just met with phenomenal support for the project."

### THE PROGRAM ROLLS OUT IN PHASES

It took County officials two years to implement the Foundation-funded AED program starting in 1997 when the first installment of 15 AEDs arrived and training began. The biggest challenge during the initial year was deciding who would be outfitted and trained first. All of the County's six fire districts, with a combined 22 staffed and volunteer stations among them - as well as private ambulance services and three Navy bases - wanted to be at the head of the line.

**"We had people arm-wrestling over who got a unit," said Chief Eddings. "The hardest part of this whole thing was trying to choose one department above the other, at least for the initial phase. So, we had every department supply their request based on what they thought their need was and how many units they already had in place. We went for the most needy first, then fulfilled other requests as we got more units."**

To accomplish training in the County, several members of the fire department were trained as instructors by the American Heart Association. Shafer said the County selected the AHA program because "we teach all other classes to AHA guidelines and we felt this would be the best education."

The AHA instructor training program was thorough: "In order to be AHA-certified instructors, they had to take the three-hour AED class, take the instructor's class, then teach one class monitored by AHA faculty," Shafer said. "AHA wants lay people to be taught correctly and completely."

Upon completion of the AHA program, the instructors received certification to teach their colleagues - the County's 453 EMT/firefighters and paramedics - the three-hour AED course. This portion of the training was funded individually by each of the County's fire districts.

### COMMITTEE TURNS TO PUBLIC ACCESS AS A WAY TO SAVE MORE LIVES

**Some parts of Kitsap County are rural and hard to reach, so emergency response time can range from 3 to 30 minutes. Even after all emergency vehicles were outfitted with AEDs in 1998, and the average cardiac arrest survival rate for that year was 23 percent, EMS officials wanted to do better.**



The Committee turned its attention to public access defibrillation - getting AEDs into public places where trained civilians can come to someone's aid, in some cases, a lot faster than emergency personnel.

"Think of the time you can save by having the AED at the place where the incident occurs," emphasized Shafer. "The goal should not be to man our people and our cars, but to man our public access venues. It's a matter of getting there as fast as possible."

"You start doing the math and you can cut off minutes," she pointed out. "Each minute you cut off is a ten percent gain in the chances of the patient being successfully resuscitated. At nine minutes from SCA onset, there's only a ten percent chance of being resuscitated out of their rhythm."

The need is emphasized, she said, when volunteer stations have to respond to emergency calls. It can take up to 15 minutes for volunteer personnel to go to the station, pick up the equipment and respond to the call. This "wastes too much time," she said. "We can't man every volunteer with an AED. That's why public access is so important."

Chief Eddings advocates public access as well, in places like fitness centers, golf courses, and "anyplace where there's a large gathering of people." He says having an AED is "just like having a first aid kit right at hand with you."

He notes that the terrain and climate of Kitsap County often impede rescue efforts, making public access defibrillation all the more essential. "At sea level, it's a banana belt, but go up 500 feet and you get ice and slush during the winter, and that makes for bad navigation. This makes it more critical to have the AEDs out there rather than try to get the units to people."

## STEPS TO MAKE PUBLIC ACCESS HAPPEN

One of the first steps for any public access defibrillation program is to clear the way for trained citizens to respond to a sudden cardiac arrest incident without the fear of liability. To that end, legislation was introduced at the state level to update Washington's so-called 'Good Samaritan' law. Dr. Magnotto, along with other medical experts, testified on behalf of the bill and was instrumental in getting it passed in 1998. The law limits liability against trained individuals using a public access AED for the rescue of a person who needs an electric shock.

With legal issues satisfied, the Committee began a letter-writing and media campaign to focus attention on the need for and benefits of AEDs in such locations as golf courses, fitness clubs and shopping malls. Shafer says there has been a lot of interest and several public access sites are now established, but she'd like to see an escalation in the number of those sites. "They're not getting out there fast enough for me," she emphasized.

Each of the six battalion chiefs from across the County is actively seeking out public access sites to bring into the program. They report that businesses and organizations are very interested but often deterred by the cost. So, to get more public sites outfitted with AEDs, the County offers free training and free re-certification training to entities that sign on to the program and purchase their own units.

These recruitment efforts can be challenging, notes Shafer. "People want to do it, but they don't have the money." Sometimes the situation calls for a bit of creative financing. "At the jail, they didn't have the money to purchase an AED, but they did have an education budget. So, we charged them to teach them to use an AED, and then we took that money, bought an AED, and donated it to them."

Shafer says the public access incentives are an appropriate use of County services and dollars: "The fire department works for the community. It is tax-based by the community, and so this is a community service that they can offer. It's good for the community."

#### **A PUBLIC ACCESS CHAMPION**

Someone who has been very active in pursuing public access sites is Cliff Wilson, Battalion Chief and Medical Officer for Kitsap Fire District 7, another of the County's largest departments. He oversees the AEDs in health clubs, at the jail, racetrack and golf course in his district, and is "continuing to target high-risk locations."

Chief Wilson, a practicing paramedic for 28 years, is a fervent believer in the benefits of public access defibrillation. In addition to managing a busy fire district, he devotes considerable professional time seeking out organizations and businesses to establish as public access sites. As it is across the County, Chief Wilson offers free AED/CPR training "as a way to defer the expense of these programs."

Once a group accepts his recommendations to become a public access site, he activates a carefully tiered process, which begins with a site visit.

"Once I've done the site visit and determined who is going to be trained, I set up the training and register the AED with the EMS office," Chief Wilson said.

"All people associated with locations with AEDs are trained to use them, and this is accomplished through the fire department and CPR instructors who are AHA-certified."

Wilson also registers public access AEDs with 911 officials. "This cues them when these organizations call that they have an AED, and the 911 system will ask 'have you used the AED or do you need some help?'"

Getting the word out via the media is another important component to his lobbying efforts. "We need help being proactive in the community to let people know how important this issue is," Chief Wilson said. "We've been very proactive with the newspapers, getting them involved in a media campaign to help us."

#### **PUBLIC ACCESS SITES PROLIFERATE**

Efforts to saturate the County with public access sites are beginning to bear fruit. Several sites have been established and in about ten distinct places, citizens going about their normal routines - working, shopping, exercising, playing golf, etc. - are quietly protected from a sudden cardiac death by ForeRunner AEDs and people trained to use them.

**Chief Eddings says the public access program is still "relatively new," but beginning to take off. "We already have a few units out in the public now and it's nice to know that they're becoming less of a fad and more of a fact of life," he said.**

"We have two at our mall in Silverdale and that makes more sense than having the fire engine down the street manned with them," said Shafer. "Security from the mall can respond up to five minutes faster than the fire personnel, which is quite a bit of difference when someone's heart is not beating."

In addition, there are AEDs at a public pool, public jail, in fitness clubs and at golf courses. Most recently, the Bremerton Racetrack signed on and personnel there are being trained and readied to receive their AED. A 12-year-old girl awaiting a heart transplant carries one in her backpack; her family and teachers are trained to use it. The American Red Cross has one at its offices and there is also one in the County EMS headquarters where Shafer works. The Elks Club is fundraising to get enough money to outfit its facility. Another golf course has expressed interest.

The Sheriff's department also has plans to put one in the County courthouse and on one of its patrol boats in the Puget Sound. Shafer says that with a stream of people regularly moving through the facility, the courthouse is an excellent location for an AED.

For Kitsap County, this is just the beginning of the public access story. Shafer says EMS officials will continue "to find ways to get more out there." And in fact help may be on the way. The Harrison Hospital Foundation is considering new ways to continue its involvement in the AED program.

#### **SEVEN PEOPLE OWE THEIR LIVES TO THE AED PROGRAM**

Kitsap County boasts seven lucky residents whose lives were saved by a ForeRunner AED. Emergency personnel responding to 911 calls made most of these rescues. One was performed by a trained civilian with a public access AED. The public access rescue was made by an employee of the Washington State Ferry Service. A 42-year-old woman travelling on the ferry between the peninsula and mainland Seattle collapsed from sudden cardiac arrest just as the ferry was docking. The employee of the ferry service rushed to her aid with the AED on-board and quickly restored her normal heartbeat and saved her life.

Emergency personnel are stationed too far from the ferry to respond in time, according to Shafer. "Without the AED, the lady on the ferry would have died without question when you look at the fact that the paramedics arrived 11 minutes later."

Another rescue was made at a fitness club. There, a 45-year-old attorney collapsed while riding an exercise bicycle. He was revived by the emergency fire personnel who arrived on the scene with an AED from a nearby station. The gentleman was "so happy to be alive" that he donated money to the fitness club for the purchase of an AED so that others like him might be saved in the future.

**When you count seven lives saved, the Kitsap County AED program is an irrefutable success. Other statistics bear this out as well. In the first year of the program (1997), the survival rate skyrocketed to 35 percent. It has fluctuated somewhat over the past few years, averaging 25 percent between 1997 and 2000. In 2000, EMS responded to almost 26,000 calls county-wide. Eighty-four were cardiac arrest incidents and the survival rate was 19 percent.**

EMS officials are pleased with the AED program, but want to do even more. They plan to stay focused on adding more public access sites so that all citizens can be reached with an AED well within the successful survival response time of under ten minutes.

As Chief Eddings so aptly stated: **"The more units I can get out there, the better I feel about it."**

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