I chose to write a paper about EMS systems on college campuses for several reasons. First, as a freshman at Occidental college, I was disappointed that our school did not have an EMS squad like other colleges I had visited as a high school student. I was interested in medicine and wanted the opportunity to become an EMT and gain experience while still in college. Later, once I became an EMT off campus, I realized the value of EMS programs on college campuses because they can provide rapid response and treatment and relieve some of the burden off local EMS providers. Although I value my off campus EMS experience and have learned a lot about EMS and myself throughout the process, it has been extremely difficult to pursue. I have worked off campus full time (a minimum of 48 hours a week) since my sophomore year in college. This is not something that appeals to most college students, even those extremely interested in pursuing a career in medicine. Pursuing a career in EMS can be prohibitively time consuming for most college students as many private ambulance companies do not hire part time employees and are usually not flexible with employees' schedules. Through the experience I gained off campus, I realized that integrating an EMS program into a college campus would have a beneficial effect for both participant EMTs as well as the community they serve. Student EMTs would have the opportunity to explore EMS while in college and campus community members would benefit from a rapid EMS response provided free of charge.

The purpose of this paper is to analyze Emergency Medical Systems in general and determine if they are necessary on college campuses, specifically Occidental's. The goal is to determine what is successful elsewhere and apply those strategies to Occidental. In order to understand the analysis however, a little background is necessary. Therefore, a history and Roles/Responsibilities of EMTs section is included.

History:

Despite the fact that Ambulance transportation and care has existed for over a hundred years in the U.S., the EMS profession is relatively new. Ambulance transportation in the United States has a long and interesting history, which pre-dates the existence of cars. Hospital interns attended horse drawn carriages specifically designed for sick or injured patients in the 1800s. Eventually, the use of motor vehicles became popular. Police department patty wagons were often used to transport patients as well as funeral home hearses, as these vehicles could accommodate a passenger in the supine position. Finally, vehicles specifically designed for patient transportation were designed, and many urban Hospitals and city governments provided ambulance services to their communities[1].

Modern American Emergency Medical Services (EMS) developed in the mid 1960s after the publication of a paper titled "Accidental Death and Disability: The Neglected Disease of Modern Society[2]" which concluded that a substantial number of Americans were killed or temporarily disabled each year which cost the U.S. $18 billion in 1965, the year the study was published. The paper concluded that "Accidental injury [was]…the nation's most important environmental health problem[3]."

Before the publication of "Accidental Death and Disability," emergency care was widely seen as the Hospital's responsibility; therefore, rapid transportation was stressed over on-scene stabilization and treatment[4]. A report released in September of 1966 recommended that " 'calls for ambulance services should be screened by a responsible agent under medical supervision so

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[1] Charles Flack. Rio Hondo Fire Academy EMT Course Lecture. Summer 2004.
[2] National Highway Traffic Safety Administration, et al., *History of EMS Research*, 31 December 2001, http://www.nhtsa.dot.gov/PEOPLE/INJURY/ems/ems-agenda/history.htm (4 January 2007).
[3] National Association of EMTs, EMS: *Where W,e've Been and Where We're Going*, August 1996,< http://www.naemt.org/aboutEMSAndCareers/history_of_ems.htm> (4 January 2007).
[4] James O. Page, The Paramedics <http://www.jems.com/paramedics/ch1/> (3 January 2007).

that when medical attendance is required, a physician can be dispatched…[5].'" and treat the patient in the ambulance on the way to the hospital. The authors of the report also recommended that pilot programs be launched to study the effectiveness of physician-attended ambulances[6].

Just one year following the publication of the report, the AMA held a conference on Emergency Medical Services and recommended " 'All ambulance attendants should be given a minimum of advanced first aid training and additional training in specific emergency medical care, '" as well as annual refresher courses[7]. A consensus was forming within the medical community that pre hospital care was a major priority and national training and competence standards were necessary in order to protect the public.

In 1967, an Irish doctor published the results of his study of pre-hospital care. He converted an ambulance into a Mobil Coronary Care Unit, or MCCU and although the unit had rather long response times, the success rate was extraordinary. The director of Medicine at St. Vincent's Hospital and Medical Center in New York, Dr. William Grace started the earliest form of pre-hospital care in the United States. Dr. Grace had read the article about MCCU's and believed that they could work in New York as well. The St. Vincent's MCCU served part of Manhattan and consisted of a crew that included at least one doctor. Studies showed that patients who were treated by the pre-hospital team within an hour of symptom onset had a lower mortality rate than patients whose treatment was delayed more than an hour, which lead Dr. Grace to conclude that an "out-of-hospital CCU system [was] necessary[8]."

Despite the fact that a physician staffed the MCCU, Dr. Grace wrote about the value of training non-physicians to provide pre-hospital care. He stated " 'carefully trained nurses,

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firemen, and other non-physician personnel who respond quickly to calls and defibrillate on the spot have had good success in this country[9].'"

The federal government soon realized the need to establish national standards for the care and transportation of the sick and injured as well. The Department of Transportation and the national Highway Traffic Safety Administration created national standards for the curricula for Emergency Medical Technicians (EMTs) and defined the necessary components of an EMS system[10]. Veterans who had been medics in Vietnam were influential in the development of EMS for American civilians. They realized that the treatments and techniques used on the battlefields of Vietnam could be applied during peacetime and on civilians as well. This helped legitimize EMS as "…an extension of in-hospital emergency medical care[11]" And made EMS more acceptable to the general public.

Dr. Eugene L. Nagel of the University of Miami School of Medicine was another doctor who had tremendous influence over pre-hospital care. Dr. Nagel had befriended several rescue men from the Miami Fire Department who were trained to use diving equipment and extrication tools, but had little training in emergency medical care. Dr. Nagel believed that training firefighters to be "physician extenders" who followed radio-transmitted doctor's orders would have positive results[12].

The city of Los Angeles also started a paramedic pilot program in the mid 1960s, which eventually led to legislation outlining the roles and responsibilities of paramedics. Two separate programs started at about the same time. Dr. Walter Graf, a cardiologist at Daniel Freeman Hospital in Inglewood proposed a three year pilot project which covered a population of 700,000

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[10] National Association of EMTs
[11] National Association of EMTs
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and an area 10 miles in diameter, and involved two other hospitals besides Daniel Freeman. In the beginning of the study, cases that required emergency coronary care would be staffed by a Coronary Care Unit (CCU) nurse from the nearest participating hospital. Later, there was a combination nurse/paramedic crew, then eventually, nurses were phased out, and only paramedics were used[13].

Dr. Criley and Dr. Lewis headed the other pre-hospital program in Los Angeles out of Harbor General in the city of Torrance. The program "…was intended to provide mobile life support utilizing existing rescue personnel, vehicles and dispatch systems (as contrasted with the Daniel Freeman program, which initially utilized nurse-specialists, a specialized cardiac vehicle and a physician-initiated dispatch system)[14]."

The Los Angeles County Fire Department already had some experience responding to medical emergencies before the pilot program. The fire department had been responding to calls for medical assistance since 1928. Before the implementation of the paramedic program all recruit firefighters were trained in first aid and fire engines would routinely respond to medical emergencies in their districts if a rescue unit was too far[15]. For years, rescue units were staffed by a single fire fighter, which was considered sufficient considering the fact that the fire department relied on private ambulances to transport patients to the hospital. Finally, in 1968, all L.A. County fire department Rescue Squads were transformed into two man combination firefighting/rescue units[16].

The Los Angeles City fire department also went through organizational changes in the late 1960s. The fire department was chosen to replace the existing ambulance service. Unlike the

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County fire department, the City not only provided emergency medical care, they provided emergency medical transportation as well[17].

Dr. Criley recruited trainees from LA County and City fire departments to undergo 180 hours of training in emergency medical care. The initial recruits had finished their training by December of 1969, but they were in legal limbo. Since the paramedic profession was so new, laws did not yet exist allowing them to practice. Although 25 other states had already started implementing advanced pre-hospital care by non-physicians without explicit legal authority, Dr.'s Criley and Graf were concerned about the legal status of the newly trained paramedics.

Since the doctors felt uncomfortable allowing the paramedics to operate independently, they decided to add CCU nurses to the paramedic crews. A few months after the Harbor General Paramedics completed their training, the Daniel Freeman recruits finished theirs. Los Angeles city and county finally had paramedics, but no legal authority to use their services.

Dr. Graf approached LA County Supervisor Kenneth Hahn, , an extremely powerful politician. Hahn pushed for approval and "…ordered county officials to prepare a draft for submission to the legislature in Sacramento[18]." The original draft of the proposed law stated that a physician must supervise all paramedic calls from the radio at the base station hospital, but Graf did not agree with this provision on the grounds that many smaller hospitals were not capable of providing full-time physician coverage. He believed that nurses were capable of supervising paramedics as well.

State Senator James Wedworth and State Assemblyman Larry Townsend introduced the proposed legislation, which eventually passed making paramedicine a legally recognized form of emergency medical care.

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The potential role of the paramedic was discussed during the Sixth Bethesda Conference of the American College of Cardiology. A panel concluded that the role of the paramedic "…would be similar to that of personnel in a hospital-based coronary care unit, but might involve important diagnostic decisions and therapeutic measures in the absence of a physician[19]."

The city of Seattle also launched a paramedic program during this time. Dr. Leonard Cobb of the University of Washington collaborated with Gordon Vickery, Seattle's fire chief at the time. They received a small grant from the national network of regional medical programs and "…designed a citywide system for handling out-of-hospital cardiac emergencies[20]." Nine Seattle firefighters went through about 150 hours of training and 10 months of physician supervised runs to become Seattle's first paramedics.

Seattle's Medic II program set out to train Seattle citizens in CPR. The fire department provided instructors, movies, and materials. The program was able to train 40,000 people in the first 18 months. Less than two years after the start of Seattle's paramedic program, bystanders at the scene of emergencies initiated 20% of the resuscitations, which was up from 5% just three years earlier.

Not only did CPR training teach lay people how to initiate resuscitation, the fire department used the training as an opportunity to discuss "…other aspects of emergency care, including early warning signs of heart attacks and the availability of local emergency services[21]" such as the universal emergency telephone number (911). Seattle paramedics were required to complete detailed paperwork from the very beginning of their program. University of

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Washington researches analyzed the data supplied by Seattle paramedics and concluded that "…an advanced EMS system…can save lives[22]."

Seattle set an example for the rest of the country by appropriately managing a dual-role fire department. Fire Chief Frank Hansen successfully bridged the gap "…between tradition and the new realities of EMS in the fire service[23]." Seattle found that the most efficient way to manage the dual role department was to have a tiered-response system, which reserved paramedics for those cases that truly required Advanced Life Support (ALS). The responsibility of the first-response engine companies and aid units was to provide basic life support and triage (determine medical priority and decide if a paramedic ALS unit should be dispatched). Unlike other parts of the country where paramedics were overworked and constantly responding to ALS as well as BLS (Basic Life Support) calls, Seattle utilized its resources efficiently and only dispatched paramedics when advanced life support was required.

The Federal government was becoming aware of the newly emerging field of Emergency Medical Services. Congress passed the Emergency Medical Systems Services Act of 1973 in order for the government to have more control and oversight of the newly emerging field of EMS. The act helped ensure that efficient and appropriate pre-hospital medical care was available by coordinating various components of the EMS system (e.g. hospitals, ambulances and personnel). The act also required that ambulance response times meet a certain standard; 95% of all calls had to be responded to within ten minutes in urban areas and twenty minutes in rural areas[24].

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[24] Jonathan D. Mayer, "Response Time and Its Significance in Medical Emergencies," Geographical Review 70 (1980): 79-87.

In 1981, the Omnibus Budget Reconciliation Act restructured funding for EMS that was previously provided federally by the EMS Systems Act of 1973. It "…consolidated EMS funding into state preventive health and health service block grants[25]" which eventually led to the great variety we now see in the way EMS is delivered from region to region. This is because states had to fund their EMS systems based on their own priorities, which obviously vary from region to region[26].

Roles and Responsibilities of EMTs:

It is important to have a basic understanding of the roles and responsibilities of each pre-hospital care provider. EMS professionals have various levels of training. The Emergency Medical Technician-Basic, also known as an EMT-1 and commonly referred to as an EMT (no suffix added) is the first level of care. EMTs are trained to provide "Basic Life Support" commonly abbreviated BLS, and can manage various emergencies, assess a patient's medical condition, and determine if an advanced level of care is necessary. The EMT-Intermediate, also known as an EMT-2 or EMT-3 has more training than an EMT-B and is able to administer intravenous fluids, operate a manual defibrillator to shock a patient's heart, and apply advanced airway techniques. The EMT-P, also known as a Paramedic, or EMT-4 is the highest level of Emergency Medical Technician training one can achieve. Paramedics are trained to provide "Advanced Life Support," commonly abbreviated ALS, and can administer drugs orally and intravenously, interpret electrocardiograms (EKGs) and perform other more advanced procedures. Working conditions for EMTs and EMS professionals can be quite challenging[27]. A lot of bending, kneeling, and heavy lifting is required as well as exposure to communicable

[25] National Association of EMTs
[26] National Association of EMTs
[27] U.S. Department of Labor, *Occupational Outlook Handbook*, 4 August 2006, < http://www.bls.gov/oco/ocos101.htm> (3 January 2007).

diseases and violence from patients as well as bystanders. In addition to the physical challenges of EMS, emotional and psychological issues often arise. EMTs hold a lot of responsibility and commonly witness pain and suffering. Long and irregular hours are common as well. It is not unheard of for an EMT to work an excess of 72 hours a week.

A high school diploma as well as an EMT course and a passing score on the certifying exam are required to become an EMT. Every state as well as Washington D.C. has certain certification requirements. Some states require registration with the National Registry of Emergency Medical Technicians (NREMT) at all or some certification levels. Other states administer their own test and do not rely on the NREMT. EMTs must meet continuing education requirements (usually every two years) in order to re-register and maintain their certification[28].

All EMT courses teach "…emergency skills, such as managing respiratory, trauma, and cardiac emergencies, bleeding, fractures, airway obstruction, cardiac arrest, childbirth and patient assessment[29]." Advanced EMT courses, such as EMT-2,3 and P teach other skills, but the EMT-Basic level of certification is a minimum pre-requisite for more advanced training.

Various Systems:

Public EMS

Public EMS is usually provided by local fire departments and funded by tax dollars. They serve the communities they are in and there is much variation between departments and regions. Some require all firefighters to be medically trained as EMTs or paramedics; some do not. Many public fire departments provide EMS services to the communities they serve. Some provide medical services and are "first-in" but contract out with a private Ambulance Company for transportation and support services. Others are first in, and transport as well.

[28] U.S. Department of Labor
[29] U.S. Department of Labor

Many cities have a tiered response system, which can appear inefficient to the lay person, but actually saves the cities valuable and scarce resources. Seattle is an example of a city that has three levels of EMS response. When someone calls 911 with a medical emergency, a fire engine company will be dispatched to the scene if they are the closest unit available. This first level of response consists of firefighters who are trained EMTs, but cannot transport. The second level of response is an "aid unit" staffed by civilian EMTs in a privately owned ambulance. The third level of response is staffed at the ALS level by fire department paramedics. This mix of public and private response is extremely common and efficient[30]. If the patient only requires BLS care and transportation, ALS is not dispatched and remains available for more critical calls instead of being tied up with a BLS call.

Los Angeles County uses a similar system. When someone calls for medical assistance, the closest BLS fire engine is dispatched, along with a fire department paramedic squad truck staffed by two paramedics. The dispatcher then calls a private ambulance staffed at the BLS level. The engine usually makes it on scene first, as there are more engines than squads. The EMTs from the engine treat the patient until the ALS squad arrives. If it is determined that the patient needs advanced life support, one of the paramedics will accompany the private EMTs in the ambulance and the other will drive the squad truck to the hospital. If the patient only requires BLS assistance, the private EMTs transport, and the fire department is cleared from the call once the private EMTs take over care[31].

The city of Los Angeles Fire department has a different system. BLS Fire engines are dispatched along with ALS crews as in the LA County system, but the ALS crews arrive in an

[30] Mayer
[31] John Austin, EMT, Personal Interview, 13 February 2007.

Ambulance[32]. This allows the fire department to treat and transport and not rely on an outside agency or private company. Although this may appear more efficient than the LA County system, the fact that the ambulance is staffed at the ALS level means that every patient (even those that only require BLS) is attended to by an ALS crew, which must also transport the patient. Because of this, LAFD paramedics can become overworked or tied up on one call and unable to respond to another.

Volunteer EMS

There are many volunteer EMS organizations including community-based squads, volunteer fire departments and even college EMS groups. Hatzolah is an example of a community-based volunteer group in the city of Los Angeles. The group's website explains that they do not "…offer a substitute…to 911…" but instead "…provide a lifesaving bridge during the few critical moments it takes the mandated EMS provider to arrive…[33]" The organization is very similar to many campus based EMS organizations because it serves the immediate community free of charge until the local EMS agency arrives. Upon arrival of the mandated provider, Hatzolah releases care, but is available for assistance if needed. They also prepare for mass casualty events or disasters and are available to "…augment the local emergency resources…[34]"

The college sphere

The college/university population has unique healthcare and EMS needs, and most college/university campuses have a physical layout that is unfamiliar to local EMS authorities; therefore, many schools have felt the need to institute their own EMS programs. Schools that

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[32] Austin
[33] Hatzolah, *Hatzolah of Los Angeles, Emergency Medical Services*, <http://www.hatzolah.org/> (13 February 2007).
[34] Hatzolah

have their own EMS systems have an advantage, because they can cater to their own needs and do not have to rely on the regional EMS authorities to change to accommodate them. Also, they benefit from rapid response times and occasionally save the patient money if local authorities do not become involved.

Approximately 25 percent of colleges and universities provide EMS services for students, faculty and guests, or more generally: anyone who sets foot on the campus and experiences a medical emergency. Campus EMS programs usually have an extremely rapid response time, averaging 2.6 minutes[35] and usually follow three basic models: 1) independent student organizations, 2) campus health services based squads, or 3) campus security based organizations. Occasionally, however, schools will integrate and borrow aspects of all three models to form a hybrid type organization that fits the school's unique needs.[36]

Analysis of Campus Based EMS:

There are many benefits to having an EMS program on campus, including shorter response times than community based EMS as well as providing experience for students interested in pursuing a career in medicine. Campus based EMS programs commonly provide health education to the general campus community as well (e.g. alcohol awareness, etc.), which has the added benefit of preventing some medical emergencies.

Another benefit of campus EMS squads is the potential for community integration and mutual aid. Communities can integrate campus based EMS programs into community EMS systems in times of disaster. The campus based EMS program can act as a reserve of EMS

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[35] Jonathan Fisher, "Collegiate-Based Emergency Medical Services (EMS): A Survey of EMS Systems on College Campuses," Original Research 23 March 2006.
[36] Mark Milliron, "Various Aspects of Campus EMS," Winter 1998. <http://www.ncemsf.org/resources/essays/various-aspects.ems> (5 March 2007).

personnel and resources until an emergency occurs. If the proper steps are taken before such an emergency, the campus based EMS squad can easily supplement or even temporarily replace existing community based personnel and resources, if needed.

The federal government has recognized the importance of mutual aid between agencies and jurisdictions. It is extremely important for different agencies to be able to smoothly integrate in emergency situations with as little confusion as possible; therefore, a system called the National Incident Management System, or NIMS was created. The department of Homeland Security introduced the system in 2004 to help people from different agencies and professions collaborate when responding to emergencies[37]. NIMS sets protocol, guidelines, and standards for everyone to follow as well as a common language, so there is no confusion among agencies. The Department of Health Services requires that all personnel with a "direct role in emergency management and response" must be NIMS trained in order to ensure that everybody is using the same protocols and can effectively communicate and collaborate in times of crisis. Many different people and agencies must be NIMS trained in order to ensure the best preparation possible. This includes people in EMS, hospitals, public health, the fire service, law enforcement, public works and utilities, and many others. If a campus based EMS squad wanted to be able to smoothly integrate into a community based EMS system, it would have to be aware of all NIMS protocols and procedures.

Despite all the benefits of campus based EMS programs, there are a few potential negative consequences that need to be explored. First, most campus based volunteer squads rely on student volunteers, many of whom have no prior EMS experience. This obstacle can easily be overcome by ensuring that senior members properly train and supervise new recruits. Even if all

[37] Timothy Miller, "All Together Now," The American City and Country 122, no. 1 (2007): 34.

the squad members have no outside experience (e.g working for a private ambulance company, fire department, or local EMS agency), senior members who have been on the squad for 2-3 years may have enough experience and knowledge of the school's protocols and medical emergencies encountered on campus to train and supervise the new recruits.

Other potential problems include lack of support from the administration, as well as distrust of medical personnel. Lack of administrative support could lead to a small or insufficient budget, as well as bureaucratic obstacles that are difficult to overcome. Also, the familiarity one may have with rescue personnel (e.g., the EMT may be patient's classmate, student, roommate, etc.) may actually have a negative impact on the professional image the EMT is trying to portray. Although the EMT may be extremely professional while on duty, the patient's non-professional relationship with the EMT (e.g., a friend, student, acquaintance) may negatively impact the trust that is required to establish a good rapport. The patient may feel embarrassed that someone they see on a regular basis has seen them as vulnerable, or is privy to personal information about them. Also, if the personal relationship the patient has with the EMT is not good (e.g. ex-girlfriend/boyfriend, poor student, etc.) the chances that the patient will feel comfortable under the EMTs care are extremely low.

Yet another negative consequence of campus based EMS programs that have staffing at the BLS level (which is the case for the vast majority of schools) is the fact that the campus community may rely too heavily on campus-based BLS and neglect to call for community based ALS when it is necessary. For example, if someone on campus experiences chest pain (a condition that requires ALS), the campus-based BLS unit may be dispatched immediately to the patient. If response time is 2.6 minutes, which is the average, and it takes the EMTs 1.0 minutes to perform an initial assessment and determine that ALS is in fact required, a total of 3.6 minutes

has been unnecessarily added to the response time of the ALS unit. The patient endures a longer wait for the appropriate level of care than if the EMT program did not exist on campus and the patient had called the community-based EMS group.

Comparison Schools

Many schools have determined that a campus based EMS program is beneficial, and have created one at their own institution. Four schools are worth examining as comparison schools for Occidental College, due to student population and location: Loyola Marymount University, Lynchburg College, Muhlenberg College, and Willamette University. The schools all have populations of less than 5,500 and are all in large cities of over 50,000 people.

Loyola Marymount University, located in the city of Los Angeles has a student population of 5,341 has had an EMS program since the mid 1980s. It relies strictly on student volunteers and is in service when the student health center is closed (nights and weekends). Students interested in joining the EMS club must become certified on their own, as LMU does not provide training on campus and does not reimburse students for training and certification. LMU EMS averages approximately 400 calls/year, and does not transport, so they must call the Los Angeles Fire Department for transportation and ALS support. LMU EMS average response time is under five minutes, and the campus dispatcher simultaneously dispatches ALS support if the chief complaint requires ALS [38].

Lynchburg College, located in Lynchburg Virginia has a student population of 2,400. The EMT program is in service 24 hours a day 7 days a week while school is in session, and EMT training is provided on campus. Student EMTs are required to work a minimum of one 24 hour shift a week on a rotating schedule. This allows for the EMTs to be on call a different day each

[38] Sean Harris, EMT and LMU Alumna, Personal Interview, 12 March 2007.

week and avoid getting stuck working the same day all the time. Lynchburg EMS response time is approximately 2-3 minutes; however they do not simultaneously dispatch ALS when it is needed. Instead, BLS EMTs arrive on scene, assess the patient and determine whether or not to call ALS. They are also a non transporting agency, so when transportation or ALS is needed, Lynchburg EMS must call for outside assistance[39].

Muhlenberg College, located in Allentown Pennsylvania, has a student population of 2,125. Their EMT program was founded in 1999 and the college offers an EMT class on campus, but students do not receive academic credit for completing the course or volunteering as EMTs. The group responds to approximately 300 calls per academic year. Student volunteers are required to work a minimum of two weeknight and one weekend shifts per month. Muhlenberg occasionally suffers from staffing problems because it is difficult to find crew chiefs for each shift. Since there are fewer crew chiefs than ordinary members, crew chiefs must be on duty more often than regular members. Muhlenberg does not have transport capabilities, therefore they call the local EMS agency when a patient requires transportation to the local hospital. They also call the local EMS agency when ALS support is needed; however, the determination is made after an initial assessment by the campus EMTs. The dispatcher does not simultaneously dispatch ALS, when medical assistance is requested[40].

Willamette University in the city of Salem Oregon has a student population of 1800 students. Their EMS program is currently in service on the weekends because of staffing issues, but has been in service 24 hours a day, 7 days a week during the school year in the past when there were enough members to have full coverage. Currently, each member is required to work one 24 hour-weekend shift each week. The school's dispatcher simultaneously dispatches ALS

[39] Timothy Wolff, EMT at Lynchburg College, Personal Interview, 27 February 2007.
[40] Les Polk, EMT at Muhlenberg College, Personal Interview, 11 March 2007.

for calls with a chief complaint of Loss of Consciousness or a compromised airway. Every other call is assessed by the EMTs and they make the determination to call the local EMS agency, or treat the patient themselves. The organization responds to about 40 calls a year and does not provide transportation. The local EMS agency is called if transportation or ALS support services are needed[41].

Analysis of potential EMS program at Occidental College:

A lot of Seattle's success can be attributed to the fact that paramedics were required to provide extremely detailed documentation. The paperwork provided researchers with information about Seattle's medical emergencies. Studies based on the information found in the EMS paperwork proved that Medic II was a success and actually lowered mortality rates. Since Occidental does not currently keep records of medical emergencies on campus, the EMS group can keep statistics not only for their own records, but for campus safety as well as the Emmons health center. Occidental should attempt to emulate Seattle's Medic II program by requiring detailed paperwork as well as conducting quality improvement meetings and analyzing the data that is collected.

Occidental currently does not keep readily accessible records of medical emergencies on campus. Campus safety writes a report, but statistics are not available about the amount and type of calls. When campus safety officers respond to a medical emergency, the incident report is filed along with all the other types of incidents, there is no differentiation among call types; therefore campus safety does not know how many medial emergencies are experienced on campus. Also, Emmons, the student health center, does not have records of students that experience a medical emergency on campus and are transported to the hospital, because it

[41] Bret Gorham EMT and Co-director of Willamette EMS, Personal Interview, 9 March 2007.

happens after hours, or if during office hours, they are not notified because they are not an emergency/transporting agency. This is a serious problem. If Occidental College had an EMT program, the EMT run sheet could become part of the student's medical record at Emmons. It would help the health care providers, and it would give Emmons valuable information about the patient. Some of the medical problems Emmons is currently unaware their patients suffer from (e.g. alcohol abuse, etc.) may be addressed by the share of information between EMTs and Emmons. A medical emergency may be a wake up call for the patient and a perfect opportunity for Emmons to provide counseling or educational services for the patient.

Occidental College can take a lesson from each of the comparison schools. The safest and most appropriate way to handle the dispatching of medical calls is to provide the dispatcher with a list of chief complaints that automatically warrant simultaneous ALS/BLS dispatch. It is unsafe and inappropriate to delay the arrival of ALS support. Willamette and Loyola Marymount University both have criteria to determine whether or not to dispatch ALS prior to BLS assessment and arrival.

Muhlenburg and Llynchburg set a good example by providing on campus EMT training. Students can become certified EMTs on campus, which makes it much easier for the EMS squads to recruit members. Students at Loyola Marymount and Willamette have to become certified off campus, which makes it much harder for those interested in becoming certified to actually complete the process. .

A campus based EMS program at Occidental College would not only benefit students, it would provide a needed service to the city of Los Angeles. The Los Angeles fire department is extremely busy as LAFD paramedics respond to almost all emergency incidents including fires and all calls for medical assistance. About 70% of these medical assistance calls only require

BLS and can be handled by EMTs[42]. But since LAFD's tiered response always includes an ALS response, paramedics often get tied up on BLS calls. Calls for BLS medical assistance on Occidental's campus can be handled by campus EMTs, which would decrease the workload for the LAFD. Even if transportation is necessary, and the LAFD is called for assistance, much of the work will already have been done by the campus squad, which still saves the fire department time. The campus-based squad will save students money (because patients will not be billed for services), time (shorter response times than community based EMS squads), and will save the LAFD from unnecessarily responding to many BLS calls on campus.

Occidental's EMS program should emulate Seattle's Medic II program by providing education for the general public and requiring detailed paperwork and documentation. Education is extremely important for an EMS program for several reasons. First, easy access is of the utmost importance during an emergency. Every campus community member must know how to get in contact with the campus based EMS squad. Second, lay-rescuer assistance can be extremely helpful during an emergency. For example, CPR started immediately by a bystander can drastically increase survival rates. Additionally, the campus EMS group can educate community members about when to call for medical assistance. The American College of Emergency Physicians offers a list of 10 warning signs that indicate a medical emergency. The warning signs listed below could be made into flyers that also provide the contact information for the campus EMS group.

1) Difficulty breathing, shortness of breath
2) Chest or upper abdominal pain or pressure
3) Fainting, sudden dizziness, weakness
4) Changes in vision
5) Confusion or changes in mental status

[42] John Kendall, "Audit Finds Paramedics Too Busy, Too Slow," Los Angeles Times, 15 April 1988, Metro.

6) Any sudden or severe pain
7) Uncontrolled bleeding
8) Severe or persistent vomiting or diarrhea
9) Coughing or vomiting blood
10) Suicidal or homicidal feelings[43]

According to a report, many would be-lay rescuers are overcome by panic and fear and are unable to perform during an emergency. Oxy EMS could help this situation in two ways. First, the program could provide educational opportunities to the campus community (e.g. CPR training) and second, it could be a resource for those that are still too afraid to act or do not possess the skill. The report stated that even people that possess the technical skills (e.g. CPR, first aid training) often fear failure or the "legal consequences" of their actions. Many people do not provide assistance for fear of being sued. What many lay rescuers do not know is that good Samaritan laws protect them and that there has never been a successful lawsuit against a person providing first aid or CPR in good faith[44]. It would benefit the campus community to have access to this information. An educational campaign led by Occidental EMS could make this information widely available and may ease the fear of many lay rescuers.

Although a delay in ALS dispatch time is a major problem and cause for great concern, this obstacle can also be overcome with proper training and procedures set in place by the campus based EMS program. When someone calls for medical assistance on campus, the dispatcher (usually campus safety/security) should be trained to recognize medical conditions that require ALS assistance and or transport. If any of the conditions are met, the community based ALS ambulance should be simultaneously dispatched to the patient along with the campus

[43] Anonymous, "When to go to Emergency Room," New Pittsburgh Courier, 20-26 September 2006, Health.
[44] Ralph M. Shenefelt, "AED, CPR, and First Aid Preparedness for the Real World," *Occupational Health and Safety* 75, no. 12 (2006): 52-54.

based BLS unit. Since campus based EMS squads usually have a shorter response time than community-based squads, the campus EMTs can assess and stabilize the patient until ALS assistance arrives.

This BLS/ALS tiered response has many benefits. First, the patient receives medical assistance much sooner than if the campus-based EMS squad was neglected and the dispatcher relied exclusively on ALS. While ALS is in route, the campus-based BLS squad may perform an assessment on the patient, obtain a history, and initiate treatment. Once ALS arrives on scene, the BLS squad can give ALS a report, which saves the patient and the ALS squad time. The BLS squad has done much of the initial work that the ALS squad would normally have to do and the patient receives treatment sooner than would be possible if the campus based EMS squad did not exist or was not dispatched.

Implementing the simultaneous dispatch program is in everyone's best interest. It saves the school from the liability of delaying the proper level of care, it protects the patients' best interest, it provides BLS assistance to the ALS crew, and it is easy to employ. The campus dispatcher does not need much medical training in order to recognize when ALS is necessary. A simple list of chief complaints near the dispatch phone is all that is necessary. When someone calls for assistance, the dispatcher must ask what the chief complaint is. Wake Forest University has created a comprehensive list of chief complaints that require ALS assistance and or transport, which can be easily applied to any school. If the chief complaint is any of the following, the dispatcher should simultaneously dispatch ALS along with the campus based BLS squad. The list includes: "Chest pain, unconsciousness, stroke, shock, gunshot, stabbing, suicide, sudden death, drug overdose/reaction, electrocution, choking, diabetic emergencies, pedestrians or bicyclists struck by motor vehicles, drowning, severe burns, difficulty breathing, and unknown

medicals[45].” The chief complaint list helps the dispatcher determine whether or not to immediately dispatch ALS, but is by no means comprehensive. Once the EMTs arrive on scene, if the patient’s vital signs are unstable, regardless of the chief complaint; or the EMTs determine that ALS is required for any reason, the EMTs should notify dispatch that ALS support is required.

Access to EMT classes is also another important issue that needs to be addressed in order to increase participation at Occidental. Since on campus training is not provided due to financial constraints, students must enroll at other institutions to become certified. This creates a huge barrier for several reasons. First, many students may find it extremely inconvenient to add another class to their full course load at Occidental College. Second, since training is off campus, students would have to search for a class, enroll and find transportation to another institution. Third, the cost of the EMT class may be too expensive for some students.

Occidental College could help students overcome these issues by providing transportation to and from a training site. For example, Pasadena City College, a local community college offers an EMT class. Students could arrange a car pool from Oxy’s campus to PCC, or lobby the administration to allow the Bengal Bus to be used as a shuttle between the campuses. Another incentive Occidental could provide for students is tuition reimbursement and/or transfer of academic credit. In order to recruit members, the EMT group on campus could reimburse students for the cost of training and certification. Also, Occidental could offer to accept academic credit for an EMT class offered elsewhere. Therefore, students would not have to add a class to their already full course load, they could simply supplement their schedule with an EMT class

[45] Wake Forest Emergency Response Team, “Wake Forest Emergency Response Team Standard Operating Procedures” 10 January 1999, <http://groups.wfu.edu/wfert/WFERTSOPs.htm> (27 February 2007).

offered off campus. This would make their workload manageable and remove a huge barrier to certification.

Another barrier Occidental may face in the first years of the program is the fact that the student EMTs will most likely be inexperienced. Currently, there is a small community (approximately 5 people) of Occidental students interested in participating in a campus based EMS squad and certified as EMTs. Even fewer have previous experience off campus. Under ideal conditions, inexperienced EMTs should be supervised during a probationary period to enable them to develop the necessary skills and confidence required to perform to the best of their ability. Currently, there are not enough experienced EMTs with prior experience able to supervise the would-be probationary EMTs. Because of this, the program is likely to suffer severe staffing problems. The experienced members may not always be available to supervise and new members may be left on their own to respond to calls without the guidance that would be provided in an ideal situation.

Yet another obstacle that Occidental EMS is likely to face is lack of adequate staffing. Ideally, the EMS program would be in service 24 hours a day, seven days a week during the academic year. With only a few EMTs currently on campus, this is not likely to happen within the next few years. The most efficient strategy is to have the EMT program in service during peak hours (weekend nights[46]). Coverage from 8:00pm Friday night until 5:00am Sunday morning every weekend is possible with a minimal number of dedicated volunteers. EMTs could be paired into crews that work on a rotating schedule which requires a 33 hour shift every so often. For example, if there were six volunteer EMTs on campus, they would be divided into

[46] Kevin Lockhart, LAFD Firefighter/Paramedic, Personal Interview, 27 February 2007.

three crews of two. Each crew would be required to work a 33 hour shift every third weekend. This allows the EMTs to have some weekends off, but still provides full coverage.

Although a 33 hour shift may sound impossible to handle to the lay-person, long shifts are extremely common in EMS. This is because the nature of the industry lends itself to such "marathon shifts". EMTs experience a lot of "down time" in which they are not responding to calls and are usually allowed to sleep, run personal errands, or attend to personal matters all while on the job. Therefore, unless a "marathon shift" is unusually busy, Occidental EMTs will have enough down time to get an adequate amount of sleep and time to study while on duty. In fact, while on duty, Oxy EMTs would be able to go about their normal activities with certain restrictions. They would not be able to leave campus or consume anything that would impair their judgment or ability to respond to a call. They would also have to carry a radio or pager with them as well as a "Jump bag" first aid kit. At the beginning of their shift on Friday evening, the EMTs could pick up their equipment from campus safety and or Emmons. The equipment should be returned sometime on Sunday morning or afternoon, but not necessarily at 5:00am when their shift is over. This allows EMTs to sleep in and go about their normal activities as much as possible without the inconvenience of a 5:00am wake up call.

Despite all the problems Occidental EMS may face, it is a program worth pursuing. An EMS program at Occidental has the support of LAFD Fire station 55 (Occidental's current "first-in EMS response agency) as well Emmons health center. LAFD paramedic Kevin Lockhart stated that having an EMS program on campus would help the LAFD in two ways. First , Oxy EMS would be able to assess and treat BLS calls and make the determination if ALS or ambulance transportation is necessary. If LAFD's services are not needed, Oxy EMS could treat and release the patient, or treat and arrange for alternative transportation to the hospital (e.g. a

ride from campus safety or a friend), This would reduce the workload for the LAFD and allow them to be available for more serious ALS calls.

Additionally, if an LAFD response is necessary, campus EMTs will have most likely been on scene for several minutes before ALS arrival. This allows the campus EMTs to perform an initial assessment and obtain valuable information they can then pass along to the paramedics upon their arrival. This saves the ALS crew time because they do not have to gather information on scene and can transport the patient to the hospital much sooner.

Emmons also supports an EMT program on campus. Nurse practitioner Cindy Chu, believes that an EMS program "…would be an extension of health care services provided by Emmons[47]." She also supports the idea of close communication between campus EMTs and Emmons regarding the emergency medical treatment students receive from Oxy EMS. A copy of the EMS report would be sent to Emmons and staff would follow up with the patient at a later time as needed.

Although there will no doubt be ongoing challenges, especially during the first years, there are a few strategies a program at Occidental College can implement to relieve some of the problems. Since Occidental's Campus safety department already has an emergency phone number and a dispatch center, it would be most efficient for Oxy EMS to use their services. The campus safety dispatcher could also dispatch campus EMS, thus eliminating the need for extra staffing or volunteers.

The first year the program is in service will most likely be the most difficult as inexperience and inadequate staffing will be major challenges. Hopefully, students will see the benefit of an EMS program at Occidental college and those who are interested will become

[47] Cindy Chu, Nurse Practitioner at Emmons Health Center, Personal Interview, 8 March 2007.

certified and join the group. Veteran members who gained experience during the few first years could train new members, and pass along valuable information.

In conclusion, despite the fact that Occidental will most likely experience numerous challenges, especially during the first few years, EMS programs at other institutions are generally extremely effective and beneficial for the campus community. They provide rapid response and care as well as provide an opportunity for those interested in EMS to gain valuable experience. In order to increase the chances for success, Occidental must learn from the mistakes of other similar institutions and base its program on strategies proven to work and easily applicable to Occidental's campus.