DEVELOPING ALTERNATIVE COMPONENTS FOR IMPROVEMENT OF EMS SYSTEM PARAMEDIC WORKFORCE RESOURCES IN MARION COUNTY, FLORIDA

EXECUTIVE LEADERSHIP

BY: David B. Palmer
Marion County, Florida
Marion County Emergency Medical Services Alliance

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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Abstract

The problem was that Marion County's Emergency Medical Services System is having difficulty meeting its paramedic workforce requirements within the rapidly growing community causing difficulty in staffing the operational schedule and raising concerns for the organizations ability to expand paramedic services. The purpose of the study was to identify the magnitude and scope of paramedic workforce problems and develop alternative components which could be implemented to improve EMS workforce planning and customer service in Marion County, Florida. The research questions are:

1) What do industry benchmarks and components for workforce planning state relative to emergency medical services organizations?
2) What processes are other jurisdictions using to meet their paramedic staffing needs?
3) What do the Marion County Emergency Medical Services documents identify as paramedic workforce issues?
4) What do stakeholders of Marion County understand as the staffing issues for the paramedic ?

The procedures involved using the evaluative research methodology. EMS workforce and call data was analyzed for a 5-year period to study and gain an understanding of the scope of the workforce issues in Marion County. Data was evaluated and reported regarding paramedic position needs for the Marion County, Florida community and the linkage to growth in population and 911 service call volume over time. A EMS Paramedic Workforce questionnaire was created for the research project. The results were: Marion County has seen a 33.5% growth in population over the past 5

year period from 2000– 2006 (U.S. Census, 2000), and a 23 % increase in total EMS calls during the past 5 years, 2002-2006. In addition, a comparison of annual budget documents for FY-2002 to FY-2007 shows an 87% net growth for the5-year period in the total number of full-time EMT-Paramedic positions needed within the system to meet the increasing trend in Advanced Life Support call growth. Lagging response times have also been a factor. Regarding respondent agencies, 16 or 100% use paramedics as a part of their operational workforce. With regard to using any steps or processes for paramedic workforce planning, 100% of the agencies do so. Regarding specific workforce processes, 100% of the agencies use position needs assessment, paramedic retention programs external paramedic recruiting and internal paramedic recruiting. Also, 6 of 16 or 37% use a department job fair for recruiting and lastly 18% or 3 of 16 agencies use a dedicated recruiter. For the top 3 factors used when adding paramedics, the respondents indicated they use increasing call demand, increasing acuity levels of calls and growing population numbers in considering workforce issues. Next, 16 or 100% of the agencies reported using competitive pay and benefits, external recruiting, department sponsored training and a retention program as most essential. In addition, 13 departments representing 81% use internal recruiting "growing their own" paramedics, 6 agencies, totaling 37% of respondents use recruiting incentives for incumbent staff and 5 agencies, 31% use recruiting incentives for new hires. Pursuant to recruiting tools, 100% of the agencies use career websites, staff word of mouth, local news media, recruiting brochures/packages and local government employment bureaus or agencies. 93% or 15 of the departments use internal recruiting of EMT's for paramedic positions. 87% or 14 of the agencies use school or college career fairs. Pertaining to applicant recruiting

incentives, 5 department or 31% use this approach. National print advertisement is used by 25 % or 4 agencies. Lastly, 18% of agencies, 3 respondents use both recruiting booths and displays and a dedicated EMS recruiter. For the top 3 obstacles, 100% of the 16 respondent agencies stated they are impacted by the shrinking number of paramedics in the market, regarding local competition for paramedics, 87% or 14 agencies were impacted. Funding challenges were listed by 62% or 10 of the agencies as an impact and paramedic turnover rates were seen by 37% or 6 agencies as significant while 31% or 5 agencies listed availability of training programs as an obstacle. As to the perception of a paramedic shortage, 75% or 12 departments agreed that this is true while 25% or 4 did not.

The recommendations, based on this study, are for Marion County EMS Alliance to plan and implement a systematic and comprehensive paramedic workforce enhancement program. This should be undertaken using a number of the specific components identified to be successful in improving the organizational workforce and the EMS service level. Recommended components include developing a strategic direction and goals for retention and recruitment that will involve every member of the organization directly. The revised process will use creative retention elements, mentoring and educational incentives. Steps will include revising recruitment processes into quicker, more aggressive and responsive methods with the use of technology mixed with personal contacts and follow-up. It is also recommended that a pilot program be implemented to address the issues of long hospital wait times and non-emergency utilization of the 911 EMS services resources.

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Introduction

Marion County, Florida is an older North Central Florida community with a current population of 335,000 permanent residents (U.S. Census, 2005 and Withlacootchee Regional Planning Council, 2007) living within the 1653 square mile county and in the incorporated cities of Ocala, Dunnellon, Belleview, Reddick and MacIntosh. Marion County is bordered by seven Florida counties including Alachua, Putnam, Levy, Volusia, Lake, Sumter and Citrus. The community is part of the Gainesville Metropolitan Statistical Area (MSA). Marion is recognized by Florida's Regional Planning Council's Association as one of the fastest growing counties in Florida. The City of Ocala is positioned as an important and growing center in the manufacturing, retail, health, equine, commercial and banking markets in the North Central Florida area. The county is administered and governed through the County Commission – County Administrator form of organization and has five Board of County Commission members who are elected at-large and in rotation.

Marion County's Emergency Medical Services Alliance is a career department of 250 full-time and part-time personnel responding to more than 60,000 EMS calls on an annual basis. The organization maintains a fleet of 40 advanced life support ambulances staffed by one Emergency Medical Technician (EMT) and one EMT-Paramedic (EMT-P), which are dynamically deployed through a modified system status management (SSM) plan. EMSA operates a training center, a headquarters housing operations, logistics, fleet maintenance and administrative offices. There is a separate financial services office and a 911 communications center. EMSA provides 911 emergency and non-emergency medical responses and transports, inter-facility transportation, emergency management support and public education programs for the county's growing number of residents and visitors. During a 24-hour staggered shift

schedule, EMSA staffs 40 Advanced Life Support (ALS) level Ambulances supported by two Shift Officers, a Captain and a Lieutenant, and a communications center staff of eight. There is no tiered BLS and ALS Ambulance capability within Marion County however Advanced Life Support First Response service is provided by the Marion County Fire-Rescue Department and the City of Ocala Fire Department. In addition, the Dunnellon Fire Department, a combination career and volunteer organization, provides BLS with Automatic External Defibrillator first responder service.

Marion County's calls for emergency medical services are received and dispatched from the Marion County Sheriff's Office (MCSO) Emergency Communications Center (ECC) by a team of EMS communicators utilizing the National Academies of Emergency Medical Dispatch protocols on a Tritech Computer Aided Dispatch platform. This center is the county's designated Public Safety Answering Point (PSAP). The Marion County Emergency Operations Center (EOC) and support offices are also co-located at the PSAP. The ECC is manned by full-time career and some part-time personnel who are cross trained to provide call taking and dispatch functions for EMS and Fire operations. Law enforcement call taking and dispatch functions are handled by a law enforcement only ECC staff in the same center for all calls outside of The City of Ocala. A separate Ocala Police Department PSAP is located within that jurisdiction and handles call taking for all incoming 911 service calls that originate from within the city limits. Medical and fire calls are transferred to the Marion County ECC by a one button transfer from the Ocala PSAP.

Since Fiscal Year 2004-05, all EMSA and Marion County Fire-Rescue 911 Center dispatchers maintain training qualifications as Emergency Medical Dispatchers and Emergency Fire Dispatchers and provide interrogation of callers and pre-arrival first aid instructions based

upon physician approved protocols. The center also utilizes the Medical Priority Dispatching, ProQA system at the highest level in the EMS industry including the use of unit response determinants for hot and cold responses based upon the severity of the medical call. Marion County 911 does utilize a prioritization system for dispatching EMS calls and a standardized approach for prioritizing first responder and ambulance transport resources. EMSA and Marion County Fire-Rescue units also provide limited mutual aid to neighboring jurisdictions in the Central Florida region. The EMS Alliance has an annual operating budget of $19.7 million dollars with some additional special revenue sources coming from grant revenues averaging $650,000.00 annually.

Over the thirty-five year history of EMS in Marion County, the system has seen many changes in emergency medical services operations. In October 2003, the agency became a modified public utility/governmental 501c3 agency of Marion County and the City of Ocala. Prior to the formation of Marion County EMSA, the predecessor EMS agency was operated by Munroe Regional Medical Center. Other advances have included implementation of programs including accreditation as a Medical Priority Dispatch Center of Excellence System, expansion of cardiac a stroke care services with local hospitals and improved trauma care services including a strong relationship with the level one trauma center at Shands University Hospital in Gainesville, Florida. Over the last several years the department has implemented several activities to assist in improving the management and use of 911 services, especially Emergency Medical Services utilization. The impact of these activities has been monitored through 911 run data and call time interval analysis and through other program assessment tools such as the growth in population data from state level, and regional planning agencies and university based centers such as those at the University of Florida. The research suggests the multi-year growth

trend is continuing in both demand for emergency medical services and in the population of higher risk aged citizens. There are no indications or expectations that these trends will significantly change direction over the next 20 years.

During the most recent 5 year period a specific on-going challenge faces the organization regarding the availability of a sustainable, full-time paramedic level workforce and the ability to effectively man the growing number of units needed on a daily and annual basis. The problem is that Marion County's Emergency Medical Services System is having difficulty meeting its paramedic workforce requirements within the rapidly growing community causing difficulty in staffing the operational schedule and raising concerns for the organization's ability to expand paramedic services. The purpose of the study was to evaluate the magnitude and scope of paramedic workforce problems and identify the available criteria and factors that may lead to a higher level of success in managing the paramedic level resources. This is an evaluative research project intended to help determine specific workforce components which could be implemented to improve current EMS staffing requirements and future paramedic level workforce success in Marion County, Florida. The research questions are:

1) What do industry benchmarks and components for workforce planning state relative to emergency medical services organizations?
2) What processes are other jurisdictions using to meet their paramedic staffing needs?
3) What do the Marion County Emergency Medical Services documents identify as paramedic workforce issues?
4) What do stakeholders of Marion County understand as the staffing issues for the paramedic workforce?

Background and Significance

Over the past 40 years, Emergency Medical Service Systems (EMSS) across the United States have continued to evolve as a principle public safety and health care service provided by many local governments, fire departments and third party public and private EMS agencies and organizations (NHTSA, 2001). These services are provided by dedicated emergency medical professionals who deliver essential care to patients in communities across the country. "EMT's and paramedics are the backbone of pre-hospital emergency care in the United states and deliver essential care for patients in emergency situations and frequently are able to reduce morbidity and mortality" (NIO, 2007). EMT-Paramedics (paramedics) are the most highly skilled emergency medical personnel and provide the most extensive care which includes Advanced Life Support treatments. These treatments include drug and intravenous (IV) fluid administration, acquisition and interpretation of 12-lead EKG's, use of both manual and external defibrillators and external pacing equipment, use of advanced airway management techniques for those with breathing difficulty, performance of endotracheal and nasotracheal intubations and the performance of needle chest decompressions (NHTSA, 2004).

The demand for Emergency Medical Services (EMS) in Marion County, Florida has increased significantly based upon the historical call data and population growth trends analyzed during the project research. Specifically, Marion County has seen a 33.5% growth in population over the past 5 year period from 2000– 2005 (U.S. Census, 2000), and a 23 % increase in total EMS calls during the past 5 years, 2002-2006. In addition, a comparison of annual budget documents for FY-2002 through FY-2006-07 inclusive shows a net growth for the period of 87% in the total number of full-time EMT-Paramedic positions needed within the system to meet the increasing trend in Advanced Life Support call growth (EMSA, 2007).

In regards to population growth and community development, trends in new home site construction and new business permits are expected to grow into the future as Marion County continues to attract development in a very significant way. In 2005, Marion County Building permit data reported nearly 10,000 new building permits were issued although this has moderated in the recent 18 month time period.

Over the past decade, Marion County saw an increasing trend in demand for Emergency Medical Services within one particular population sector within the community. As might be expected based upon generally applied community risk assessment techniques, the largest growth in users of the EMS system were among those citizens in the 55+ demographic age cohorts (Fitch, J., 2003, Denslow et al, 2005) among all users of the EMSA service. It has also been demonstrated in the 2000 U. S. Census, that Marion County has a higher percentage of its total population in the 55 years old and older category at 36.3% than the Florida statewide figure of 27.2%. This also compares to the national population of 20.9% of the total number of U.S. citizens in the 55 years old and over age group (U.S. Census Fact Finder, 2007). The reasoning for this on a national scale is reported to be due to an aging population of baby boomers and a steadily expanding population of seniors of retirement age because of improved health care, wellness and lifestyle improvements all resulting in longer life-spans (CDC-NHIS, 2005). In addition, the increasing popularity of Florida as a preferred retirement location is believed to have added significantly to the higher growth level in Florida's population of higher medical risk persons within the state and in its communities. Marion County's growth in this demographic sector can also be attributed to the significant emphasis by developers on building and attracting people who are 55 and over to deed restricted, gated communities, many with thousands of homes and age oriented amenities. Marion County's expansive rural areas also invite developers

and land speculators to expand development in this area of Florida which does not have the same degree of problems with housing density, traffic and crime that such areas as Miami – Dade, Greater Ft. Lauderdale and many East Coast Florida cities have experienced (Withlacoochee, 2007).

The population of older Americans, including those with high risk chronic diseases and those who are disabled, is also growing because of improved health care technology and support systems. (U.S. Census, 2000). Nationwide data and projections on disabled population demographics and the numbers of people with acute illness expenses and disabilities are very significant. The Centers for Disease Control – National Health Information System reports the impact of acute health care delivery at a local, regional and statewide hospital level using an annual survey instrument (CDC-NHIS, 2005). Denslow and Weissert also reported on the growing costs of acute medical care in Florida in their extensive report *Tough Choices, Shaping Florida's Future* (Bureau of Economic and Business Research, 2005). The National Organization on Disabilities (NOD) reports 54 million adults and children have disabilities and will require special needs services during emergency management operations and response (NOD, 2005). Marion County is reported to have a higher than average number of disabled citizens as compared to the U.S. national average (U.S. Census, 2000).

Prior to the 2000 Fiscal Year, the demand for and availability of well qualified paramedics was being managed well based upon the available historic staffing records and personal interviews of agency staff members present during that time period (Darley, D. Personal Interview, July 25, 2007). In fact, a relatively long waiting list for Paramedic and EMT applicants was described by several colleagues from a historical perspective. During the distant past these waiting list applicants were expected to volunteer with the predecessor agency for

some period of time prior to their being offered employment. Indications suggest the relative turnover rate and the growth in the number of paramedic positions in the agency during those earlier years had not yet exceeded the supply of qualified paramedics who were completing training internally or those who were available externally in the broader market place. There was braod agreement among the respondents that the number of paramedic positions and openings in years past was much smaller as compared to current levels and projected future needs (Enderle et al. Personal Interview, September 10, 2007).

Marion County EMS managers and local leaders have monitored operations and program implementation in the context of the public's utilization of the county's 911 system for emergency medical services. As the agency's knowledge and understanding of historical data, trends and current conditions has increased through monthly and annual reporting, careful attention has focused on unmet needs, gaps and shortfalls in service levels and in workforce issues in particular. In addition, lagging response times, as directly impacted by levels of paramedic workforce, point to a gap in providing adequate response times. EMS response times have been broadly publicized and accepted as one of the most important citizen and community-wide measures of a successful emergency medical service systems (Fitch, 2005). For Marion County officials, EMSA's Chief and staff , service quality must be measured through the process of evaluating the number of people served and not served, system-wide patient care quality, program costs and cost effectiveness and other measurements of organizational success such as response times compliance, employee recruitment and retention and the agency's public reputation. The measurements of success must be determined using national, state and local industry benchmarks and community standards for organizational effectiveness and ultimately by the quality of the patient care consistently delivered (NHTSA, 1997).

Historically, increasing employee concerns, perceptions and internal complaints regarding insufficient workforce to meet the growing demand for services led to short term fixes in tactical operations and planning and drove some changes regarding paramedic workforce resources and budget preparation activities. However, these efforts were often isolated and not necessarily systematic or comprehensive. Two examples were the aggressive hiring of extra part-time paramedics to fill vacancies and the payment of large overtime bonuses to incumbent paramedics for high numbers of additional shifts worked (EMSA, 2007a).

Currently, two significant factors persisted in regards to the relative weaknesses of the agency's paramedic workforce. The first was emphasized by the continuing frequency and intensity of complaints and outcries from a significant number of the organization's labor pool, both line and staff personnel. These complaints specifically centered on the impact of the significant numbers of paramedic openings, scheduling difficulties and the amount of mandatory overtime required of the full-time and part-time staff to cover the vacancies. The second issue was the lagging response times as reported monthly as part of the agency's regular operational reporting to the EMSA Board of Directors. Although it can be argued that the first factor or variable has contributed to the second in a cause and effect manner, the factors are symptoms of a significant workforce challenge that must be addressed in a decisive, systematic and comprehensive manner. This is a very real and on-going dilemma for the operational work schedules and current and future unit deployment plans. The EMSA paramedic workforce issue is a major factor negatively impacting the organization's success. The future impacts of the workforce difficulties now being experienced will continue be negative for the organization and the community without significant intervention and priority being given to the recommendations determined as a result of this research. The goal is to systematically improve the paramedic

workforce in the EMSA organization currently and in the future resulting in significantly greater organizational success through improved service levels and capability.

This Applied Research Project relates directly to the *Executive Leadership* course and the application of the following course content elements: leadership, decision making skills, influencing, persuasion and negotiating, networking with others, workforce succession planning and evaluating. This project is an evaluation and assessment of industry benchmarks, historical experiences, considerations, processes and components which are in use currently regarding the paramedic workforce issue. The results and recommendations are intended to enhance the availability, retention, recruitment, utilization and effectiveness of EMS human resource strategies now and in the near future for Marion County EMSA. As a result of this research, it is anticipated there will be recognition and implementation of a more comprehensive and coordinated system of Paramedic workforce components to improve Marion County's EMS System's service quality, employee satisfaction and organizational reputation in the community. Lessons learned through this research may have application for other EMS, Fire-Rescue agencies considering the improvement and implementation of paramedic workforce components and methods. This research problem relates to the United States Fire Administration's operational objective "To respond appropriately in a timely manner to emerging issues" (NFA, 2002 and 2005, p. II-2) by utilizing improved components and processes to enhance paramedic workforce management and planning, service effectiveness, response and emergency care provided by Marion County's Emergency Medical Services Alliance.

Literature Review

The purpose of this literature review is to obtain and evaluate existing information and data to construct the foundation for the study. Four questions needed to be addressed.

1) What do industry benchmarks and components for workforce planning state relative to emergency medical services organizations?

There are a number of prominent and frequently benchmarked industry guidelines and standards regarding paramedic workforce issues in the literature. Of principal importance is the frequent reference and referral in much of the current literature to the controlling nature of state government agencies that govern EMS agency and personnel licensure and certifications via specific laws and regulations. Additional primary EMS industry benchmarks and components have been promulgated by the National Highway Traffic Safety Administration (NHTSA), the National Fire Protection Association (NFPA), the Commission on Accreditation of Ambulance Services (CAAS), The American Society for Testing and Materials International and the American Heart Association. Also, there is a considerable depth of industry oriented literature regarding workforce problems and challenges, recommended benchmarks, components, planning suggestions and study initiatives.

For this study, the State of Florida Department of Health, Bureau of Emergency Medical Services sets the legal and binding standard for the provision of Advanced Life Support services and the paramedic workforce engaged in that delivery. The applicable Florida Emergency Medical Services Statutes state that minimum crew certification levels are required under state law in order to operate and licensed Advanced Life Support ambulance anywhere within the state (Fl ss. 401.2101-401.45). The statutory language goes on to require every entity which furnishes, operates, conducts, maintains, advertises, engages in, proposes to engage in, or professes to engage in the business or service of providing pre-hospital or inter-facility advanced life support services must be licensed as an advanced life support service, before offering such service to the

public. The entity providing ALS service must include documentation that they meet or exceed the appropriate Florida Administrative Code regulations and requirements for an advanced life support service as specified by rule of the department (Fl ss. 401.281, Florida Department of Health, 2007). In addition statutory language specifically requires the workforce configuration for advanced life support EMS work will assure that each permitted advanced life support ambulance must be occupied by at least two persons: one who is a certified paramedic or licensed physician; and one who is a certified emergency medical technician, certified paramedic, or licensed physician who also meets the requirements of (Fl ss. 401.281) for drivers. The person with the highest medical certifications shall be in charge of patient care. In Marion County, State certified Paramedics are the personnel with the highest medical certifications.

Another essential component of paramedic workforce planning is employee training and development. Florida statute also addresses minimum requirements as they relate to paramedic training criteria and certification as stating the paramedic candidate must " Have completed a paramedic training program equivalent to the most recent paramedic course of the United States Department of Transportation as approved by the department; Certify under oath that he or she is not addicted to alcohol or any controlled substance; Certify under oath that he or she is free from any physical or mental defect or disease that might impair the applicant's ability to perform his or her duties; Within 1 year after course completion have passed an examination developed or required by the department and "For a paramedic, hold a certificate of successful course completion in advanced cardiac life support from the American Heart Association or its equivalent as defined by department rule " (Fl Statute ss. 401.27 2,3,4). At the core of essential paramedic workforce planning at a nationwide level are the state requirements as found in

statutes such as those in Florida. These statutory elements form the basis on which many of the minimum required workforce planning components are built.

The National Highway Traffic Safety Administration EMS Office has long held the position of being the nation's primary federal agency charged with oversight and development of the EMS system. This agency's EMS role has evolved from the original function of being primarily an educational standards developer into the areas of system planning and development. The mission statement for NHTSA's Office of EMS is "to reduce death and disability by providing leadership and coordination to the EMS community in assessing, planning, developing and promoting comprehensive, evidence-based emergency medical services and 9-1-1 systems" (HHTSA Online, 2007). NHTSA's contributions to workforce planning has centered on its leadership since the 1970's in the development and implementation of National Standard Curricula for the training and education of EMS providers at the Basic EMT, Intermediate, Paramedic and Instructor levels. In the more recent 12-15 year period, the agency has added significantly to the literature through publication of programs such as: A Leadership Guide to Quality Improvement for Emergency Medical Services (EMS) Systems; Trauma System Agenda for the Future; EMS Agenda for the Future and its subsequent Implementation Guide and the EMS National Research Agenda. These important contributions to the body of EMS literature identify key workforce issues and the critical role of training and educational components to every EMS agency's workforce and its success.

The role of the EMT-Paramedic in the nation's EMS services has grown exponentially since the first curricula were developed in the late 1970's (IOM, 2007). Several revisions have occurred and the scope of a paramedic's duties have also expanded (NHTSA, 2004). Most

recently NHTSA and the Health Resources and Services Administration are the primary underwriters and sponsors for a nationwide The EMS Workforce for the 21st Century Project. In conjunction with the National Association of EMT's and other agencies, The EMS Workforce Project is intended to examine the future of the EMS pre-hospital workforce in the United States. Rapid and dramatic changes in the healthcare and public safety industries have created significant, often unanticipated changes in the nation's EMS workforce. Nationally, EMS leaders has voiced strong concern with workforce issues including increasing turnover, challenges with recruitment and concern with worker wellness and safety. The EMS Workforce for the 21st Century project includes a systematic assessment of the nation's EMS workforce and an internet site for EMS provider input. The goals of this project are to develop a national consensus EMS workforce policy agenda, and to develop priority action steps for assuring a robust and sustainable EMS workforce. The project is being coordinated and managed under contract by the Center for Health professions at the University of California-San Francisco (NHTSA, 2007).

The Commission on Accreditation of Ambulance Services (CAAS), a commission founded in 1990 by a group of leading emergency industry organizations to promulgate EMS and Ambulance Service benchmarks and standards, sets the following voluntary accreditation staffing and workforce benchmarks. "Appropriate levels of trained personnel will be assigned to requests for service (CAAS, 2004). This independent agency goes on to define the characteristics of the staffing as "with input and approval from the Medical Director, the agency shall have established staffing certifications and qualification standards for each level of service provided". (CAAS, 2004) An important point to emphasize with regard to workforce benchmarking is the accrediting body's criteria that all EMS agencies and staff will be held to the licensure standards within the state and locality where they operate.

The National Fire Protection Association in its 2004 Guideline entitled: *Organization and Deployment of Fire Suppression Operations by Career Fire Departments* (NFPA 1710, 2004), sets a staffing guideline for Advanced Life Support EMS System functions and operations. Specifically, this guideline states " On-duty EMS units shall be staff with the minimum personnel necessary for emergency medical care relative to the level of EMS provided by the fire department". NFPA adds " Units that provide ALS transport shall be staffed and trained at the level prescribed by the state of provincial agency responsible for providing emergency medical services licensing" as additional criteria for departments that provide advanced life support transport services in their communities.

An evaluation of the literature from the American Society of Testing and Materials, International (ASTM) revealed in their Standard Guide for Structure and Responsibilities of Emergency Medical Services Systems Organizations, 2004, that for EMS organization staffing: "The minimum number of qualified ambulance attendants shall be consistent with state requirements (ASTM, 2006).

An additional Advanced Life Support workforce industry benchmark was promulgated by the American Heart Association as a critical link in emergency cardiac care. "Early ACLS provided by paramedics at the scene is another critical link in the management of cardiac arrest" (AHA, 2005). "EMS systems should have sufficient staff to provide a minimum of 2 responders trained in Advanced Cardiac Life Support" (Eisenburg, 1996). Because of the difficulties in treating cardiac arrest in the field, additional responders should be present. In systems with survival rates of >20% for patients with ventricular fibrillation, response teams have at a minimum 2 (ACLS) providers plus 2 BLS personnel at the scene. "Most experts agree that 4 responders (2 trained in ACLS and 2 trained in Basic Life Support (BLS) provide the most

effective team in resuscitation of cardiac arrest victims"(AHA, 2005). The AHA further recommends that every EMS system should attain this workforce goal for emergency cardiac care situations.

These principle aforementioned contributors to the body of EMS workforce benchmarks and components demonstrate the interrelated nature of their guidelines and standard benchmarks for paramedic level workforce planning by pointing and deferring to state level licensure and requirements. They clearly share the broadly accepted foundational criteria of state credentialing for staffing, standardized training and delivery of Advanced Life Support services. Annual or bi-annual review of agency and personnel certifications and training is also a common element in the benchmarks and documentation from these agencies.

A recent national publication, The Institute of Medicine's Emergency Medical Services at the Crossroads is creating much discussion regarding the State of Emergency Medical Services in the United States. Of particular relevance are the components identified in the report to support a high-quality EMS workforce (IOM, 2007).

Other literature emphasizes additional benchmarks and components for EMS workforce planning. One such example is the National Association of EMT's (NAEMT), the largest voluntary Emergency Medical Services industry advocacy organization in the U.S. The NAEMT has identified several EMS Workforce Issues as part of their 2007-2008 policy platform and strategic planning approach. The components emphasized include: Define and promote safe, healthy and secure work environments and become a national leader in spotlighting and addressing EMS workforce issues. NAEMT proposes to do so with a strategy and actions items such as: 1. Create and empower an EMS Workforce Committee with representation of general membership to understand and address current EMS workforce issues. 2. Support EMS

Workforce for the 21st Century Project 3. In cooperation with EMS Workforce Committee, conduct workforce survey of NAEMT members. 4. Sponsor one EMS workforce research project annually. 5. Resource, empower and provide incentives for the Health and Safety Task Force, and launch and sustain a Health and Safety campaign. 6. Create section on Web site that provides information and links concerning workforce issues. 7. Conceptualize and plan a professionally facilitated summit addressing national EMS workforce issues (NAEMT, 2007).

Dr. Jay Fitch further suggests several components as essential when evaluating workforce benchmarks and factors. He offers that EMS workforce dynamics are changing in a significant way. In his opinion, these changes include factors such as there are fewer workers with more employment options and less organizational loyalty, there are less workers between the ages of 18-34, a prime age group who have become EMS personnel in the past, and those that are in this age cohort will hold nine or more jobs between those age levels. Fitch recommends that EMS leaders must implement four strategic workforce components including: 1) reframe the leaders perspective from traditional recruitment and retention philosophies to more creative, technology oriented and aggressive approaches; 2) create options that are perceived as more employee friendly; 3) focus more on education and professional development support, and 4) enhance community involvement. Dr. Fitch goes on to detail twenty-five recruiting actions that build upon the four strategic components (Fitch, 2005).

In summary, there are a broad range of organizations and entities who publish industry benchmarks and components for paramedic workforce planning. Most of these agencies recognize the role of individual state legislation and regulation as controlling for the credentialing, training and discipline for advanced life support services personnel and agencies.

DOT-NHTSA and American Heart Association are long-standing EMS industry leader organizations that have contributed significantly to the development of workforce training and staffing bench marks with a focus on quality care and positive patient outcomes. Other industry groups and EMS system consultants and authors have further developed certain workforce components that should be considered helpful (NASEMSO, 2007, NAEMT, 2007, Fitch, 2005).

2) What processes are other jurisdictions using to meet their paramedic staffing needs?

The literature indicates there is a large and rapidly growing body of knowledge and experience with processes related to paramedic workforce planning in states across the nation and at a national level. It is also evident from the research that there is an extensive paramedic workforce crises in many local EMS organizations from coast to coast. Local fire and EMS departments in California, Illinois, Oklahoma, Wisconsin, North and South Carolina, Virginia, and Florida (Bertram, 2003 and Bryce, 2005 and Evans, 2006, Ferreri, 2006) are experiencing significant service level challenges related to the paramedic workforce. Specifically, several of these departments have seen significant, even massive paramedic turnover rates, some apparently related to low pay and benefits (Puknuitis, 2002 and Ferreri, 2006, Barishanky, 2007). With regard to processes, many agencies are increasing paramedic wages in order to stay more competitive in their specific regions (Miller, 2005 and Wolfe-Miller, 2007). In once agency's process, a local ordinance was passed to require that paramedic certification was a required level to have and maintain in order to be eligible for promotion within the agency (Puknaitus, 2002).

In addition, the number of paramedics who are working in non-EMS agencies, for other related health care or in other industries seems to point to a higher degree of competition and greater options for qualified paramedics (Heightman, 2000 and Williams, 2005). Other retention related industry documentation states that job dissatisfaction and health and safety concerns are a

major contributor to worsening paramedic retention (Williams, 2007 and Maiero, 2002). From a process perspective, certain jurisdictions are using all expenses paid training as an incentive to grow the workforce. In one case, non-trained civilians are recruited at an entry level to attend EMT academy with the contractual expectation that they will train up to paramedic within a 2-3 year period (Wolfe-Miller, 2006). Another agency is providing full scholarship and base pay for existing EMT's to train up to the paramedic certification level. This agency requires the new paramedic to work for the sponsoring agency for a minimum of 2 years beyond completion of the paramedic training program (Darley, 2007 personal interview). Additional retention oriented processes being used by agencies include: free training and professional development support, more flexible work scheduling, opportunities for involvement in community services functions and using a mentoring process with formally designated field training officers or managers for those seeking future leadership roles (Fitch, 2004 and Brown, 2003). Several Virginia EMS organizations are using EMT-intermediate certified providers in place of paramedics as a stopgap measure (Virginia Department of Health, 2007).

From the recruiting perspective, the literature suggests that the prime EMS workforce recruiting pool age group, those persons between the ages 18-34, is actually shrinking based upon lower birth rates in the generation following the baby boomers (Studnek, 2006, Fitch, 2005, DOL, 2007). This can certainly be a contributing factor to the challenges of a much tougher recruiting environment. In addition, given the level of competition for paramedics and the wider employment options available to them in the broader workplace, agencies must be creative and aggressively competitive within the marketplace in order to attract and retain qualified persons. From a processes standpoint, several agencies have stepped up their recruiting processes in a significant way. Examples of improved or at least different recruiting processes include: all on-

line application processing, dedicated recruiters with incentives for success, broad use of internet based websites and services and the offering of sign-on incentives and relocation expenses assistance (Barishannky, 2007 and Lowe, 2002). These and several other retention strategies provide potential opportunities to meet the purpose of this research.

Local jurisdiction EMS workforce planning processes are being driven in large part by quality of care standards, medical protocols and response time goals derived from industry benchmarks. These same drivers are constrained by public funding pressure and scared resources (FEMA, 1995). Although the workforce configuration requirements for providing Basic and Advanced Life Support services are regulated and mandated by the state licensing agencies as previously noted, response time benchmarks or mandates are ultimately determined at the local level because there is no national mandate or requirement for minimum acceptable response times. The National Institutes of Health and the American Heart Association guidelines recommend ambulance deployment strategies focused on rapid delivery of Basic and Advanced Life Support care in cardiac emergencies (NIH, publication No. 93-3304 and AHA, 2007). The American Heart Association's deployment guidelines, based upon the well known Chain of Survival criteria, state "In systems that have attained survival rates higher than 20 percent for patients with ventricular fibrillation, the response teams have a minimum of two ACLS providers plus a minimum of two BLS personnel at a scene. AHA recommends that four responders (at least two trained in Advanced Cardiac Life Support and two trained in BLS are the minimum required to provide ACLS to cardiac arrest victims" (AHA, 2007). The AHA's Chain of Survival includes: 1) Rapid 911 phone Access to the EMS system, 2) Early CPR by either bystanders or first-responder rescuers, 3) Early defibrillation by first responders, emergency medical technicians (EMTs), paramedics, or other on-scene trained personnel. In addition, public access

defibrillation, using automatic or semiautomatic external defibrillators accessible to the lay public, can improve survival in cardiac arrest, and 4) Early advanced life support care. The NFPA also offers personnel deployment guidelines to include an "ALS emergency response to include a minimum of two members trained at the emergency medical technician–paramedic level and two members trained at the emergency medical technician–basic level arriving on scene within the established response time" (NFPA 1710, 2004). NFPA guidelines recommend that the fire department shall also adopt service delivery objectives based on time standards for the deployment of each service component for which it is responsible. When providing a first responder with AED capability, the department shall deploy to provide for the arrival of a first responder with AED unit within a 4-minute response time to 90 percent of the calls (NFPA, 2004). When providing ALS, units shall be deployed to provide an arrival of the ALS crew/unit within an 8-minute response time to 90 percent of the incidents (NFPA 1710 and 450, 2004).

To summarize, paramedic workforce shortages in many EMS agencies is a major on-going issue that is compounded by the need to expand and grow services to meet the growing EMS delivery needs in many communities. The processes being used by other jurisdictions to reverse this national trend are varied and growing in number. Emergency Medial Services agencies are using a number of strategies and tactics to improve staff retention and recruit qualified personnel. Improved compensation and benefits packages, internal and external incentives that are monetary and/or training and professional development oriented are increasing in use. The legal, authoritative role of standard setting entities, including personnel and agency licensing authorities at State levels, the National Institutes of Health, the American Heart Association and NFPA guidelines will continue to drive the service delivery goals and objectives for EMS and Fire services. These mandates and guidelines, tools and

recommendations may be applied to local EMS systems deployment and workforce planning efforts.

3) What do the Marion County Emergency Medical Services documents identify as paramedic workforce issues?

The literature search surrounding Marion County EMSA's agency documentation identifies a very dynamic environment both internally and externally. Identified as key workforce issues for the agency is a continuing rapid population growth trend in Florida and in Marion County in particular, continuous growth in EMS calls and advanced life support calls, a fluctuating workforce turnover and paramedic vacancy rate and a growth in full-time paramedic positions to meet the growing demand and lagging response times (EMSA, 2007).

Marion County's population growth rate over the most recent 5 year period was just over 33% (Denslow, 2005, BEBR, 2007 and Withlacootchee, 2007). Specific workforce data shows the agency has faced an annual average turnover rate for all agency positions ranging from 16% in 2002 to just over 8% currently compared to a national EMS turnover rate of 15% among the 200 most populous cities (Williams, 2007). The full-time paramedic vacancy rate has fluctuated from a high of just over 40% in 2002 to 10% in 2006 (EMSA, 2007a). It should be noted that the full-time paramedic vacancy rate was evaluated separately during the research because the number of funded positions grew by 87% from 2003-2007. Although there were significant gaps in the number of full-time positions filled over the time period, with improvement seen in the past 18 months, the agency was able to maintain coverage with the use of mandatory overtime and a significant number of part-time paramedics who covered the operational vacancies (EMSA, 2007).

In assessing call volume and type, the agency documentation identifies that there continues to be significant growth in total EMS calls over the period studied. EMSA saw a 23% growth in its total EMS call load from 2002-2006. Advanced Life Support calls during the same time frame also grew by a 23% margin (EMSA, 2007b). The assessment of deployment methodology shows that Marion County EMSA uses a System Status Management (SSM) style of deployment, sometimes called street corner posting. This deployment method, using 100% Advanced Life Support ambulance units with a minimum of 1 EMT and 1 Paramedic as minimum required staffing, places units dynamically at key street locations based upon historical call demand for services. Using the Tritech Computer Aided Dispatch System, this deployment scheme statistically maximizes response times by locating available ambulance units in locations closest to call demand (Fitch, 2004).

The evaluation of the workforce parameters was undertaken with a focus on 5 years of data in order to establish reasonable trend analysis and identify specific workforce issues. The evaluation included Florida statewide and county population trends, internal workforce utilization and trends for all positions including paramedics, agency call volume and response times, deployment strategies and external factors effecting the organization and the workforce.

A 2003 EMS consultant's study produced for the community, suggested a minimum ambulance and organizational staffing configuration and a number of response time goals/benchmarks for Marion County EMSA ambulance units (Fitch & Associates, 2003). The literature and data reviewed included ambulance response time compliance levels on life threatening call types. The ALS ambulance data is deemed reliable understanding that there is always a statistical margin for error given the large quantity of incidents reviewed over multiple

years. The response time data shows lagging response time compliance with voluntary self-imposed agency standards.

In summary, the organizational literature identifies that Marion County EMS Alliance faces significant issues regarding its paramedic workforce. Included key among these issues are the ongoing growing population base and increase in 911 EMS calls including life threatening calls, growth in the number of paramedic positions to meet increasing demand, widely fluctuating levels of success in the recruiting and retention of staff and lagging response times. Based upon the factors now identified, there are significant opportunities to make recommendations through this research to improve specific components of the workforce system in order to enhance service delivery in the Marion County Community.

4) What do stakeholders of Marion County understand as the staffing issues for the paramedic workforce?

Based upon substantive personal interviews, a majority of Marion County's stakeholders believe there are insufficient numbers of paramedics in the workforce to staff the number of ambulances and unit hours needed to meet the growing EMS call demand. As previously stated, the response time goals and criterion used are voluntary and self-imposed. These response times, are classified as urban, suburban or rural and reflect population densities and the large geographic area of the county. They are derived from EMS industry level benchmarked response time parameters (CAAS, 2004 and NFPA 1710, 2004) and the 2003 Fitch and Associates System Study (Fitch, 2003). Stakeholders largely agree that good response times are most critical for life threatening calls although local hospital leaders expect response times to non-emergency inter-facility transports to meet hospital criteria.

Personal interview questions further gleaned contributory or other possible issues from the stakeholders. The perceived issues identified included: recruitment and retention issues, competition for paramedic staff, pay and benefits concerns, hospital turn-around times which are frequently referred to as "waiting the wall" in hospital emergency departments and operational scheduling problems such as misuse of sick leave or other non-critical absenteeism issue (Darley, et al, Personal Interview, 2007). Several external stakeholders suggested that there may be some duplication of services and personnel with the county fire department and therefore the current agency should look for ways to maximize and improve existing staff across multiple agencies.

The organization's budget documents and meeting minutes from the EMSA Audit/Finance Committee and the Board of Directors shed some additional light on the issues that key stakeholders perceive and understand as workforce issues. In addition to the several issues already mentioned, several stakeholders suggested that traffic congestion, misuse of the EMS system by non-emergency patients and the need for improved deployment and dispatching technology may be contributing to response time problems and the broader workforce issues.

To summarize, Marion County's stakeholders, both internal and external, have communicated a diversity of views as to what they understand as paramedic workforce issues facing the community. The depth of these views has influenced the research and its recommendations by challenging the status quo and current thinking. This has resulted in a broader search for effective workforce methods and components.

Procedures

This Applied Research Paper was prepared using the Executive Fire Officer Program, Operational Policies and Procedures Applied Research Guidelines of June 1, 2002, as revised.

The procedures utilized for this project focus on the evaluative research method. This is an evaluative applied research project using a retrospective approach that includes a thorough assessment of Marion County's EMS Alliance current paramedic workforce components and issues. Comparisons are makes to similar departments and nationally published benchmarks and guidelines. Data was evaluated and reported regarding paramedic position needs for the Marion County, Florida community and the direct linkage to growth in population and 911 service call volume over time. As a framework for gathering data, the author utilized key elements of the Workforce Utilizations Strategies and EMS Retention Workbook (Virginia Department of Health, 2007).

The evaluation of the workforce parameters was undertaken with a focus on 5 years of data in order to establish reasonable trend analysis and identify specific workforce issues. The evaluation included Florida statewide and county population trends, internal workforce utilization and trends for all positions including paramedics, agency call volume and response times, deployment strategies and external factors effecting the organization and the workforce such as extended hospital turn-around times and non-emergency use of the EMS system. In addition, certain archival workforce reports were acquired to develop the multi-year trend reports for further analysis.

A single formal questionnaire was developed as an original research element for the study in the area of paramedic workforce program planning and distributed as a convenience survey among agencies providing paramedic level emergency medical services. The procedure also included a more informal yet structured personal and telephone interview process to glean internal historical workforce information and stakeholder understandings regarding the paramedic workforce. A search of Federal and state laws, EMS industry guidelines and

recommendations was conducted with relevant findings evaluated as part of the research methodology. Additional research was undertaken to evaluate the rate of growth in the Florida and Marion County population and the demand for paramedic level services using Federal and regional census and population data and local comparative 911 call and call type data.

A thorough literature review of industry publications and writings, including professional journals, current textbooks and guidelines, reliable on-line sources and governmental publications was undertaken regarding paramedic workforce issues with extensive references as required Results and findings are reported in a narrative form supported by descriptive statistical data and selected graphs.

In answering the research questions, the research procedures were designed to evaluate the relative performance level of the Marion County EMS Alliance organization in its paramedic workforce practices compared to industry benchmarks and with other EMS services who use paramedics as part of their workforce. In addition, the project undertakes to fulfill the essential purpose of evaluating certain specific criteria, practices and components of the present agency's paramedic workforce activities and determining possible alternatives to improve upon our business operations. Significant effort has been undertaken to evaluate and determine meaningful factors that are objective and measurable to the highest possible degree and then evaluate the organization's relative performance against these elements.

Marion County's EMS call and run data was gathered retrospectively from the agency's Tritech Computer Aided Dispatch (CAD) system and from the HealthEMS Patient Care reporting system database files for a 5-year period including calendar years 2002 through 2006. Data was validated through a cross-checking process between these separate systems involving departmental employees and the organization's 911 center staff. Data in the department's

HealthEMS database system was compared to 911 CAD system files for the same time periods. The data shows reliability. Research surrounding this data was undertaken to assess and identify the magnitude and scope of the growth in utilization of paramedic services. Population data was acquired from the U.S. Department of Commerce, Bureau of Census, the University of Florida Bureau of Economic and Business Research (BEBR) and the Withlacoochee Regional Planning Council. In addition, 16 of 44 agencies completed and returned the Workforce Questionnaire for a feddback rate of 36%.

Feedback Form/Paramedic Workforce Questionnaire

A feedback questionnaire was designed and distributed to collect data specifically pertaining to EMS paramedic workforce components and efforts. The questionnaire was reviewed by the Executive Team Members of the Emergency Medical Services Alliance for this project. The author revised the questionnaire based upon suggestions offered by several of these persons. The methodology and considerations used to develop the questionnaire involved focusing on key elements identified during the course of the literature review, implementation of elements identified in the Government Accounting Office Publication – *Developing and Using Questionnaires (GAO/PEMD, 1993)* and in an effort to create clear, understandable and relevant questions to be distributed among colleagues. The Paramedic Workforce Questionnaire constructs addressed were:

1. EMS Organization type? 2. Does your agency utilize paramedics? 3. Does your agency use any steps to determine workforce needs? 4. Of the steps and/or processes listed, which one(s) best describe(s) how your organization operates? 5. From the list below, please select the top 3 factors or criteria your department considers when seeking to add paramedics to your workforce? 6. Of the paramedic workforce methods your organization uses, which of the following methods do you consider essential to your success in meeting your current and future paramedic staff needs?

7. From the list provide below, what paramedic recruiting tools best describe those used by your department? 8. From the following list, what are the top 3 obstacles, in your opinion, that face your department as it plans for current and future paramedic workforce needs? 9.Do you perceive that a paramedic shortage is a real problem in your experience? 10.Of the possible causes listed below, which one do you believe is the most significant reason that EMS agencies have paramedic workforce shortages?

Population

A convenience sample was used for the purposes of this research component. The questionnaire was distributed in person and by e-mail as a convenience sample to 44 selected member agency chiefs of the Florida Association of County EMS Agencies (FACEMS), The Florida State Fire Chiefs Association and the Virginia Association of Governmental EMS Administrators. The 16 responses, representing a 36% return rate for the questionnaire, were tabulated numerically. Careful instructions were provided to each agency's contact person. In addition, the author's phone and FAX numbers and an e-mail address were provided as a means for respondents to ask questions or seek clarifications regarding the contents of the questionnaire. Follow-up phone calls and one additional e-mailing was made to agency contacts by the author to stimulate responses. The included departments and agencies were selected as the sample population because each utilizes paramedics in their workforces. A combination of fire based, third service, public utility model and combination volunteer/career EMS agencies were surveyed in an attempt to receive broad and representative input within the industry. Virginia agencies were included as part of the convenience sample in part because the author spent a recent 28 year career in that state with extensive statewide EMS involvement and knowledge of agencies in that region. The decision to limit the sample population to the aforementioned agencies was based upon the relative ease of access and follow-up, the limited research funds

and the timeframe to complete the research. Additional selection criteria included the reasoning that all surveyed agencies participate in at least one state level industry organization. Each of these organizations shares the common element that all provide paramedic level services and therefore have a paramedic workforce as an integral element of their operations. It is reasonable to derive useful information and evaluative results from a representative cross section of the selected EMS agencies. The total number of departments that responded to the questionnaire was 16. For this research, no attempt was made to obtain data from all Florida, Virginia or all U.S. EMS Agencies or departments who provide emergency medical services.

Limitations and Assumptions

This is an evaluative study; therefore a more detailed analysis of all possible paramedic workforce components or alternatives, programs or their impacts is beyond the scope of this research. The use of a convenience, judgment sampling for the research questionnaire does not provide the level of scientifically robust results that could be achieved from a more rigorous scientific survey approach such as an experimental method. However, the author utilized this approach as a valid method given that the agencies surveyed "correspond to certain aspects of the population" being studied (GAO/PEMD 10.1.7, 43, 1993). Also, personal interviews, whether in person or by telephone, are subject to respondent opinions and biases that may not be immediately evident to the interviewer. The author personally conducted all interviews. It is assumed certain additional efforts to glean interview results, such as a reminder to complete the written survey, achieved a balanced research approach. Other questions not addressed in the framework of this research will require additional study. It is assumed that all respondents answered the questions contained in the questionnaire and during personal interviews in an honest and forthright manner.

Definition of Terms

ACEP – American College of Emergency Physicians

ACLS – Advanced Cardiac Life Support, an American Heart Association Training Program for advanced EMT and medical personnel.

Acuity – the severity or acuteness of a patient's condition.

AHJ – Authority Having Jurisdiction

AHA- American Heart Association

ALS – Advanced Life Support "Advanced life support" means treatment of life-threatening medical emergencies through the use of techniques such as endotracheal intubation, the administration of drugs or intravenous fluids, telemetry, cardiac monitoring, and cardiac defibrillation by a qualified person, pursuant to rules of the department.

ASTM - American Society for Testing and Materials

BLS – Basic Life Support- "Basic life support" means treatment of medical emergencies by a qualified person through the use of techniques such as patient assessment, cardiopulmonary resuscitation (CPR), splinting, obstetrical assistance, bandaging, administration of oxygen, application of medical anti-shock trousers, administration of a subcutaneous injection using a pre-measured auto-injector of epinephrine to a person suffering an anaphylactic reaction, and other techniques described in the Emergency Medical Technician Basic Training Course Curriculum of the United States Department of Transportation. The term "basic life support" also includes other techniques which have been approved and are performed under conditions specified by rules of the department.

CAAS- The Commission on Accreditation of Ambulance Services

CAD- Computer Aided Dispatch. The computer system used to dispatch emergency calls, typically in a 911 communications center.

Certification- "Certification" means any authorization issued pursuant to this part to a person to act as an emergency medical technician or a paramedic.

DOT – Department of Transportation

ECC – Emergency Communications Center; also called a 911 center.

EMD – Emergency Medical Dispatch

EMS – Emergency Medical Service (s)

EMSA- Marion County Emergency Medical Services Alliance

EMT- "Emergency medical technician" means a person who is certified by the department to perform basic life support pursuant to this part.

EOC – Emergency Operations Center – the emergency management operations base during disasters or declared local emergencies.

FEMA operational standards for emergency operations centers (EOC's).

FEMA- Federal Emergency Management Agency. Now an agency under the Department of Homeland Security.

Low Priority Requests - Non-emergent – The same a non-urgent; not requiring specialized assistance, care or special needs sheltering.

MCSO – Marion County Sheriff's Office and Emergency Management Division

Medical Direction- "Medical direction" means direct supervision by a physician through two-way voice communication or, when such voice communication is unavailable, through established standing orders, pursuant to rules of the department.

Medical Director- "Medical director" means a physician who is employed or contracted by a licensee and who provides medical supervision, including appropriate quality assurance but not including administrative and managerial functions, for daily operations and training pursuant to this part.

NAEMSP – National Association of EMS Physicians

NHTSA – National Highway Traffic Safety Administration

NOD – National Organization on Disabilities.

Non-emergent – The same a non-urgent; not requiring specialized treatment, patient care packaging or stabilization equipment or ambulance transport to the closest Hospital Emergency Department.

Non-urgent – The sane as non-emergent; not requiring specialized treatment, patient care packaging or stabilization equipment or ambulance transport to the closest Hospital Emergency Department.

Paramedic- "Paramedic" means a person who is certified by the department to perform basic and advanced life support pursuant to this part.

PSAP – Public Safety Answering Point, most frequently a 911 call receiving center.

SME – Subject matter expert.

Results

The results were: Marion County has seen a 33.5% growth in population over the past 5 year period from 2000– 2006 (U.S. Census, 2000), and a 23 % increase in total EMS calls during the past 5 years, 2002-2006. In addition, a comparison of annual budget documents for FY-2002 to FY-2007 shows an 87% net growth for the5-year period in the total number of full-time EMT-Paramedic positions needed within the system to meet the increasing trend in Advanced Life

Support call growth. Lagging response times have also been a factor and have created some concerns among stakeholders about service level quality. Regarding the formal questionnaire, 16 of 44 agencies responded for a return rate of 37%. Results were: 16 or 100% use paramedics as a part of their operational workforce. With regard to using any steps or processes for paramedic workforce planning, 100% of the agencies do so. Regarding specific workforce processes, 100% of the agencies use position needs assessment, paramedic retention programs external paramedic recruiting and internal paramedic recruiting. Also, 6 of 16 or 37% use a department job fair for recruiting and lastly 18% or agencies, 3 of 16 use a dedicated recruiter. For the top 3 factors used when adding paramedics, the respondents indicated they use increasing call demand, increasing acuity levels of calls and growing population numbers in considering workforce issues. Next, 16 or 100% of the agencies reported using competitive pay and benefits, external recruiting, department sponsored training and a retention program as most essential. In addition, 13 departments representing 81% use internal recruiting "growing their own" paramedics, 6 agencies, totaling 37% or respondents use recruiting incentives for incumbent staff and 5 agencies, 31% use recruiting incentives for new hires. Pursuant to recruiting tools, 100% of the agencies use career websites, staff word of mouth, local news media, recruiting brochures/packages and local government employment bureaus or agencies. 93% or 15 of the departments use internal recruiting of EMT's for paramedics' positions. 87% or 14 of the agencies use school or college career fairs. Pertaining to applicant recruiting incentives, 5 department or 31% use this approach. National print advertisement is used by 25 % or 4 agencies. Lastly, 18% of agencies, 3 respondents use both recruiting booths and displays and a dedicated EMS recruiter. For the top 3 obstacles, 100% of the 16 respondent agencies stated they are impacted by the shrinking number of paramedics in the market, regarding local

competition for paramedics, 87% or 14 agencies were impacted. Funding challenges were listed by 62% or 10 of the agencies as an impact and paramedic turnover rates were seen by 37% or 6 agencies as significant while 31% or 5 agencies listed availability of training programs as an obstacle. As to the perception of a paramedic shortage, 75% or 12 departments agreed that this is true while 25% did not share that opinion.

Figure 1

10-Year Florida Population Demographics and Growth Projection with Age Cohorts

Source: University of Florida Bureau of Economic and Business Research (BEBR)

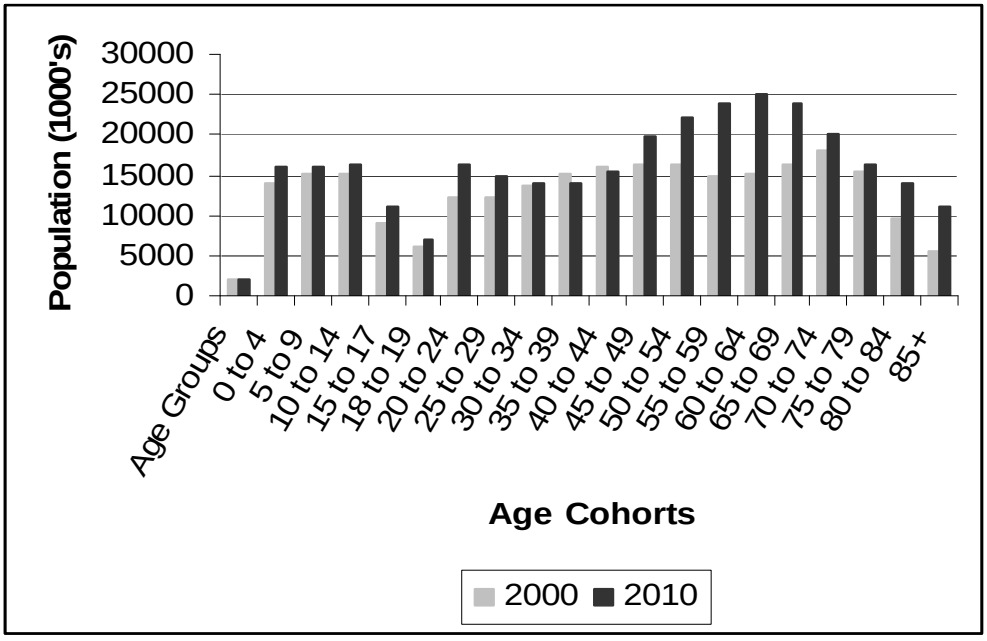


Figure 2

5-Year Comparison of Marion County Total EMS Call Rates for 2002-2006

Source: Marion County EMSA 911 CAD Data and Rescue Net Database, 2007

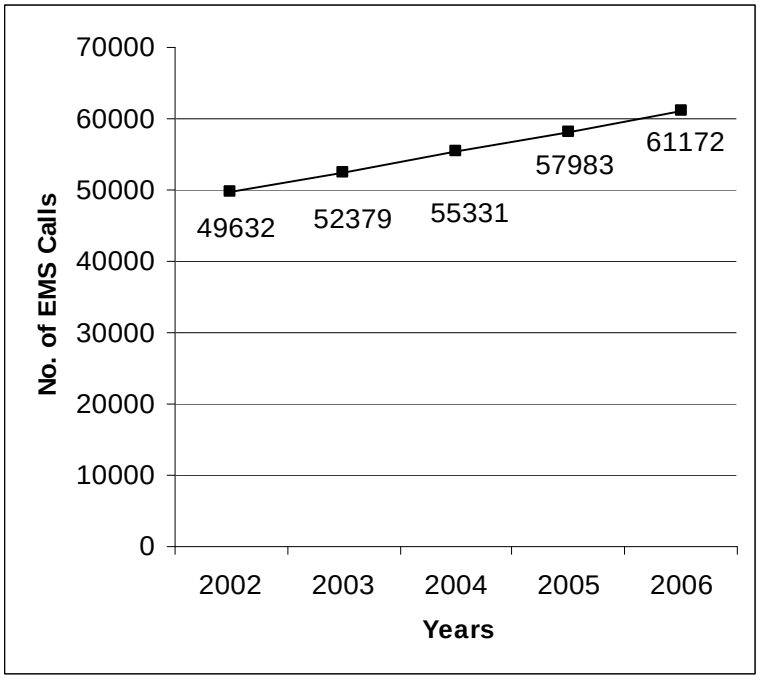


Figure 3

5-year Growth Trend in Advanced Life Support Calls in Marion County 2002-2006

Source: Marion County EMSA 911 CAD Data and Rescue Net Database, 2007

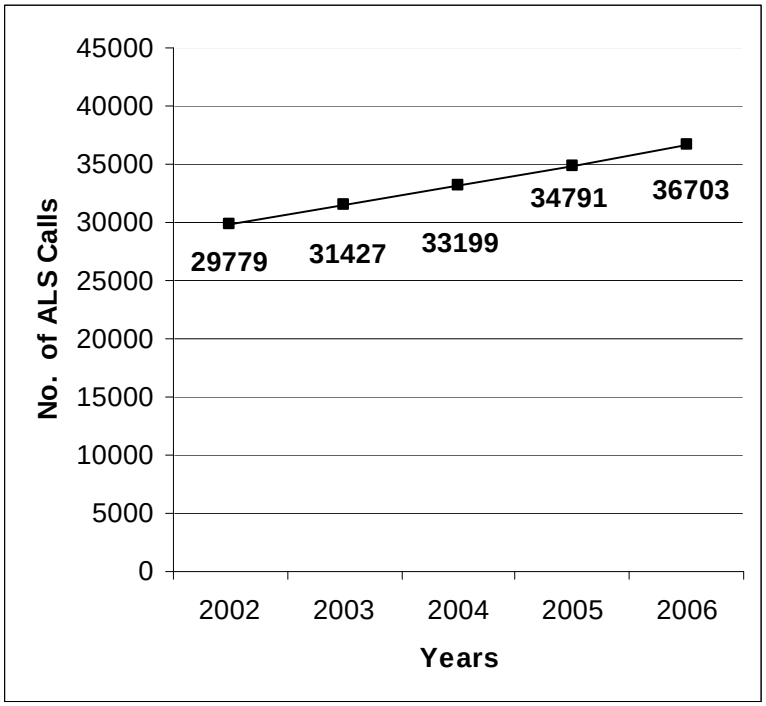


Figure 4

5-Year Growth in Total Full-time Paramedic Positions for Marion County EMSA, 2003-2007

Source: Marion County EMSA Human Resources Database and Budget Documents, 2007

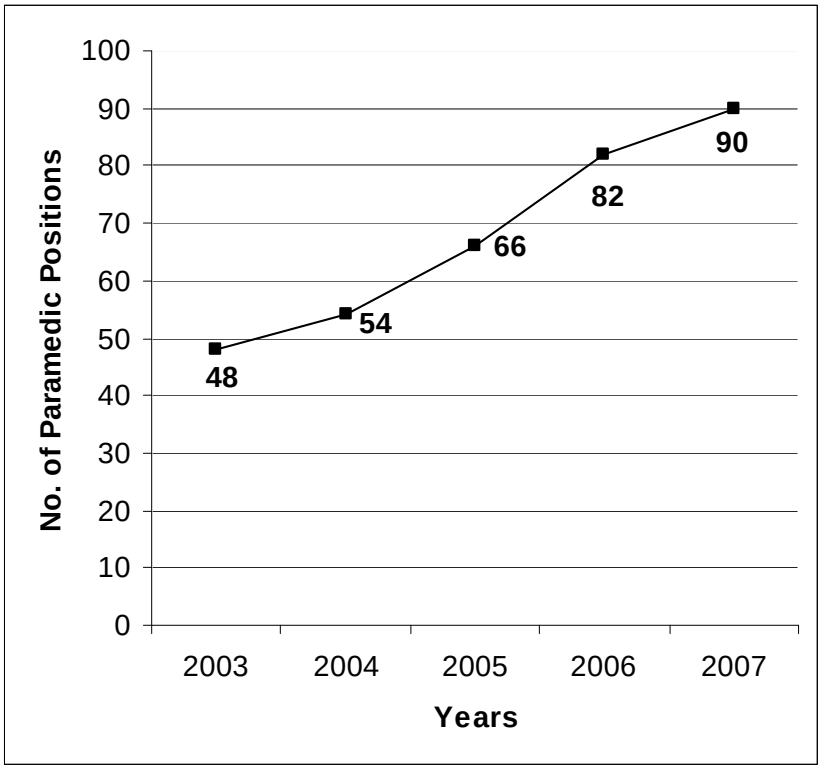
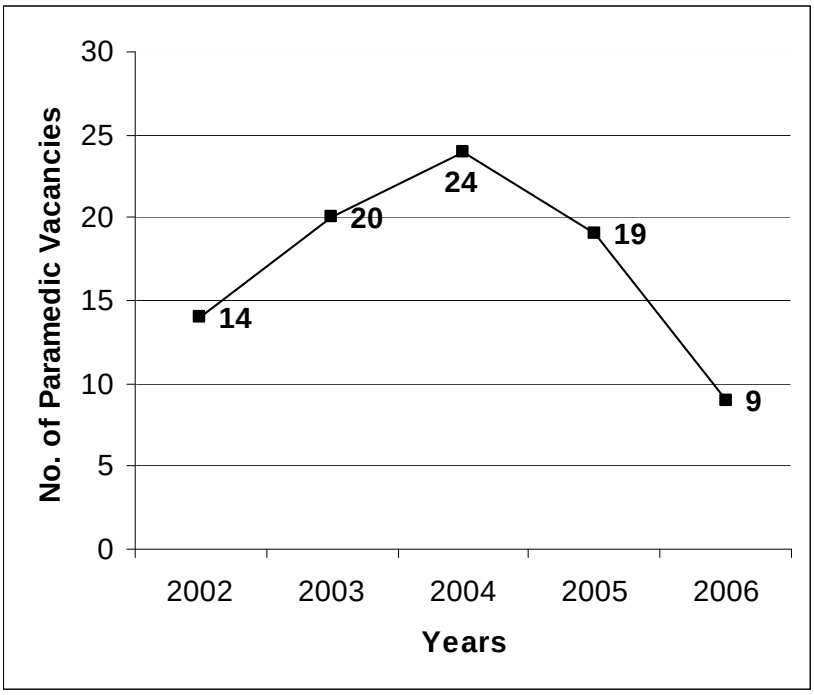


Figure 5

5-year Average Annual Paramedic Position Vacancies - Marion County EMSA 2002-2006

Source: Marion County EMSA Human Resources Database and Budget Documents, 2007



Question 1

Results shows there are certain state and national level industry criteria that exist for paramedic workforce planning (Fl ss. 401.281 And CAAS, 2004) and (NFPA 1710, 2004). These criteria are also referenced by several of the national EMS training program providers as industry standard criteria (NHTSA, 2007). The applicable Florida Emergency Medical Services Statutes state that minimum crew certification levels are required under state law in order to operate and licensed Advanced Life Support ambulance anywhere within the state (ss. 401.2101-401.45). The statutory language goes on the say that "every entity which furnishes, operates, conducts, maintains, advertises, engages in, proposes to engage in, or professes to engage in the business or service of providing pre-hospital or inter-facility advanced life support services or transportation services must be licensed as an advanced life support service, whichever is applicable, before

offering such service to the public". Further entity must include documentation that the organization meets the appropriate requirements and rules for an advanced life support service as specified by rule of the department" (Florida Department of Health, 2007).

In addition, statutory language specifically requires the workforce configuration for advanced life support EMS work will assure that "Each permitted advanced life support ambulance, when transporting a person who is sick, injured, wounded, incapacitated, or helpless, must be occupied by at least two persons: one who is a certified paramedic or licensed physician; and one who is a certified emergency medical technician, certified paramedic, or licensed physician who also meets the requirements of (Fl ss. 401.281) for drivers. The person with the highest medical certifications shall be in charge of patient care. In Marion County, State certified Paramedics are the highest personnel with the highest medical certifications. The per ambulance workforce requirement for Advanced Care is 1 paramedic and 1 EMT on each ambulance unit as the minimum staffing configuration. (Fl Statute ss 401.25 7b).

Another essential component of paramedic workforce planning is employee training and development. Florida statute also addresses minimum requirements as they relate to paramedic training criteria and certification as do all other U.S. states. Additionally a Florida paramedic must hold a certificate of successful course completion in advanced cardiac life support from the American Heart Association or its equivalent as determined by the State EMS Bureau.

The EMS Agenda for the Future Implementation Guide (NHTSA, 1998) also identified key workforce issues as:

- Ensure that alterations in expectations of EMS personnel to provided health care services are preceded by adequate preparation.
- Adopt the principles of the National EMS Education and Practice Blueprint.
- Develop a system for reciprocity of EMS provider credentials.
- Develop collaborative relationships between EMS systems and academic institutions.
- Conduct EMS occupational health research.
- Provide a system for critical incident stress management.

In addition, the following components of the EMS education system were identified as key contributors to workforce planning:

- Ensure adequacy of EMS education programs.
- Update education core content objectives frequently enough so that they reflect patient EMS health care needs.
- Incorporate research, quality improvement, and management learning objectives in higher level EMS education.
- Seek accreditation for EMS education programs.
- Commission the development of national core contents to replace EMS program curricula.
- Conduct EMS education with medical direction.
- Establish innovative and collaborative relationships between EMS education programs and academic institutions.
- Recognize EMS education as an academic achievement.
- Develop bridging and transition programs.

- Include EMS-related objectives in all health professions' education.

There are a broad range of organizations and entities who contribute to industry benchmarks, components and recommendations regarding paramedic workforce planning.(FL Statute and Administrative Code, 2007, NHTSA, 2007, CAAS, 2004, NFPA 1710 and 450, and AHA, 2007). Most of these agencies recognize the role of individual state legislation and regulation as controlling for the credentialing, training and discipline for advanced life support services personnel and agencies. DOT-NHTSA and the American Heart Association are long-standing EMS industry leader organizations that have contributed significantly to the development of workforce training and staffing benchmarks with a focus on quality of emergency care and patient outcomes. Other industry groups and EMS system consultants and authors have further developed certain workforce components that should be considered helpful (NAEMT, 2007, Fitch, 2005).

There are also several additional industry benchmarks that offer detailed criteria for EMS response times (CAAS, 2004, NFPA 1710 and 450, and AHA, 2005). Most of these criteria focus on single response time intervals that are based upon early cardiac arrest and immediate basic life support followed by advanced life support research. Only the Commission on Accreditation of Ambulance Services accreditation standards make mention of rural or remote response criteria and only in the sense that long response time standards in a remote geographic area of a community should be determined by medical director physicians and the agency administration (CAAS, 2004). The American Heart Association and the Maryland Shock Trauma Center have contributed significantly to the development of response time standards which are tied directly to clinical outcomes during life threatening incidents such as cardiac,

respiratory arrest and serious traumatic injury incidents (AHA, 2001 and University of Maryland, 2006).

Question 2

Study results indicate that among the most prominent of methods and processes being used by other jurisdictions to improve the paramedic workforce challenges is the increasing of paramedic wages in order to stay more competitive within in their specific regions (Miller, 2005 and Wolfe-Miller, 2007). Other jurisdictions are using all expenses paid training as an incentive to grow the paramedic workforce. In one department's case, civilians are recruited at the entry level and attend EMT academy with the job requirement that they will train up to paramedic within a specific period. Another organizational approach is providing full scholarship and pay for incumbent EMT's who train to the paramedic certification level. Agencies who offer incentives to train also require the new paramedics to work for the sponsoring agency for a minimum period following successful completion of the paramedic training. Additional retention oriented processes being used by local agencies include: free training and professional development support, more flexible work scheduling, opportunities for involvement in community services functions and using a mentoring process with formally designated field training officers of managers for those seeking future leadership roles (Fitch, 2004 and Brown, 2003). Lastly, several more examples of improved or at least different recruiting processes include: all on-line application processing, dedicated recruiters with incentives for success, broad use of internet based websites and services and the offering of sign-on incentives and relocation expenses assistance

Question 3

Results identify that the Marion County EMS Alliance faces significant issues regarding its paramedic workforce. Included among these issues are the growing population base and increase in 911 EMS calls including life threatening calls, growth in the number of paramedic positions to meet increasing demand, widely fluctuating levels of success in the recruiting and retention of staff and lagging response times.

Specific workforce study results show the agency has faced an annual average turnover rate for all agency positions ranging from 16% in 2002 to just over 8% currently. The full-time paramedic vacancy rate has fluctuated from a high of 40% in 2002 to 10% in 2006 (EMSA, 2007a). It should be noted that the full-time paramedic vacancy rate was evaluated separately during the research because the number of funded positions grew by more than 85% from 2003-2007. Although there were gaps in the number of paramedic positions filled over the time period due to vacancies the agency was able to maintain coverage with the use of mandatory overtime and a significant number of part-time paramedics who covered the operational vacancies (EMSA, 2007). Results show that significant improvement is seen in the past 18 month time period.

Results further showed that the agency has taken some very intentional, if somewhat isolated steps to improve the paramedic workforce. Marion County EMSA has implemented the following recruiting methods over the past 3 year period: 1) a revised pay and classification system that allows pay for experience for new employees, 2) sign-on bonuses and relocation expenses assistance, 3) a mentoring program. From a retention perspective the agency has implemented an internal career advancement program for EMT's which includes 100% all expenses paid financial support for training up to paramedic. In exchange the agency has the dedicated service of the new employee for at least 2 years beyond training completion.

Incumbent employee are also eligible for recruiting incentives and overtime bonus pay for critical positions.

Question 4

Results indicated that Marion County's stakeholders believe there are insufficient numbers of paramedics in the workforce to staff the number of ambulances and unit hours needed to meet the growing EMS call demand. In Marion County, the response time goals and criterion used are voluntary and self-imposed. The stakeholders are most concerned with assuring adequate response times for life threatening calls.

Additional possible workforce issues were determined through the personal interview process. These issues include: recruitment and retention issues, outside agency competition for paramedic staff, pay, benefits and retirement plan concerns, hospital turn-around times, and operational scheduling problems tied to non-critical absenteeism or call outs.

The organization's budget documents and Board of Director related meeting minutes suggested other possible workforce issues and obstacles to meeting response time criteria. These were traffic congestion, misuse of the EMS system by non-emergency patients and the need for improved deployment and dispatching technology.

The results also showed that there were insufficient personnel to staff needed ambulance units hours to meet the EMS call demand in Marion County. This factor contributed significantly to worsening response times which were compounded by a rapid growth in population and calls on a yearly basis. The results clearly showed there were insufficient personnel to staff the needed units to provide the number of available unit hours for the call load in Marion County and meet the self-imposed response time benchmarks.

A unit hour is defined as a fully equipped and manned ambulance on the street for one hour. Effective unit hour utilization, as discussed by Fitch and others (Fitch, J., 2004), suggests that any EMS system must focus on the reasons that unit hours are "robbed" from the system. Examples of unit hour robbers include long communicator-dispatch call processing times, long hospital turn-around times, equipment failures, ineffective use of available technology, demand pattern changes, traffic flow problems, out-of-chute times, dangerous non-emergency call cut-off levels and misuse of the EMS system by non-emergency cases, and poor station or posting locations. Although this is by no means an exhaustive list, it represents the kinds of workforce activities that can have a direct impact on service levels and response time compliance. The goal is to increase available unit hours to the highest degree as economically achievable. The leadership and management opportunity here is to better deal with those unit hour robbing activities that can be controlled and changed by the organization. Examples can include: improving on workforce shortages with recruitment and retention initiatives, improve dispatching processes to shorten call processing time, altering leave time scheduling, implementing newer technologies to improve deployment modeling and planning, implement a non-emergent referral system for patients not needing EMS ambulance or Emergency Department care levels, improving equipment preventative maintenance programs, reducing out-of-chute times, establishing better non-emergency call cut-off levels based upon demand and improving station or posting locations (Fitch, 2006). Marion County EMS faces significant challenges in improving its workforce and response time compliance and overall performance as a system. The opportunities and alternatives to improve are many and should include better leadership and management of the activities that are controllable that currently rob unit hours from the system.

Discussion and Implications

The scope of the paramedic workforce problem may best be described as a building crises for many EMS agencies (IOM, 2007). Nationwide in scope, its impact it felt most acutely at the local EMS agency or department level where the loss of paramedics or at least the difficulty in recruiting in a call growth environment is equated with “hemorrhaging in the street” (Bell, 2005). For the author, this study has accomplished the purpose of the project to identify the magnitude and scope of the paramedic workforce problems and provided a greater understanding of the strategies and alternative components which could be implemented to improve the workforce and the quality of the EMS service in the community.

In terms of how the results of this study compare to the literature findings, the results clearly show that the Marion County EMS Alliance organization shares many of the paramedic workforce problems with other agencies that appear in the literature from many states across the country (EMSA, 2007a, Williams, 2007). The specific EMSA findings include paramedic retention and recruitment difficulties, difficult working conditions and lagging response times (EMSA, 2007 b). Also, external factors such as long hospital wait times for patient turnover and the non-emergent use or abuse of the EMS system are contributors to work related stress and job dissatisfaction (IOM, 2006). Like all other industries, Marion County EMSA faces a much younger and non-traditional, non-baby-boomer workforce who have very different expectations and philosophies from workers of the previous generation (Fitch, 2005). This younger set of workers are expected to, on average, hold more than 9 jobs over the course of their working careers (BOL, 2007). EMS leaders are now required to shift their paradigms in order to attract and retain new members of the newer generation (Barishanky, 2007, Fitch, 2007).

In interpreting the study results, the author agrees with the majority of opinions and analysis expressed in the literature that a serious paramedic workforce shortage exists in many states including the State of Florida (Williams, 2007, Bell, 2007). Also, this researcher disagrees with the published opinion of several EMS writers who believe there is not a national paramedic worker shortage but rather a shifting of qualified paramedics from the 911 based public emergency service organizations to healthcare and other safety related positions in general business and industry (Heightman, 2000, Barishanky, 2007).

The findings from this research are compelling. Change is needed both in Marion County, Florida in the EMSA organization and among the agencies and leaders in the broader EMS community. The paradigm shift points toward the development and implementation of radical and creative changes in paramedic workforce planning immediately.

Given these study results for Marion County EMSA, the implications become significant. When faced with organizational crises such as insufficient staffing and dropping service levels, the risk is always to stay the current course and do nothing in hopes that the crises will somehow pass-by. However, when dealing with the public safety and emergency health care system, the option to do nothing just isn't logical nor a successful approach to solving the problem.

Therefore, there are many alternatives and opportunities to improve workforce planning and the quality of EMS service levels. Adopting systematic components for workforce planning and recruitment is essential to success in a significantly changing work environment. Recruiting factors such as re-framing the leader's perspective, creating options that are employee friendly, focusing and education and enhancing community involvement are several viable strategies on which to build tactical recruiting elements. Paramedic workforce subject matter experts also offer tactics such as website development and internet usage, developing media friendly

recruiting materials, recruiting to regional strengths and recruiting older workers and of course offering competitive salaries and benefits, quality focus, flexible and creative scheduling, power shifts, involvement, referral incentive and mentoring programs, daycare and creating a sense of belonging, educational flexibility, amnesty programs for older medics to regain their credentials, tuition reimbursement programs and specialty operations training (Fitch, 2005).

EMSA must continue an iterative process to evaluate and assess the organization and Marion County operations and performance against recognized high performance EMS agency workforce benchmarks as identified through this study (NHTSA, 1998, Williams, 2007). This process should include initiatives to achieve buy-in from EMSA staff and our broader stakeholder groups to support needed changes for improvement (Virginia Office of Emergency Medical Services, 2007).

In addition, a strong focus must remain on the legal and regulatory rules and standards of practice set down by the state licensing agency in Florida (Fl ss. 401.2101-401). However, the additional standards, requirements and criteria published by industry giants must be kept in clear and present sight (NHTSA, 2000, Institute of Medicine, 2007, American Heart Association, 2006, National Fire Protection Association 2007 and the Commission on Accreditation of Ambulance Services, 2004).

As a public organization created for the purpose of providing emergency care services to the community, one of the vital responsibilities to our patients is to stay current on growing population, housing, high risk facility and EMS demand trends in Marion County using all available resources at a regional state and federal level. Another study implication urges us to enhance utilization and partnerships with Information System – Geographic Information Systems personnel in the community to include transportation, housing, zoning and emergency

management officials, to further develop a high level working knowledge of current operational performance status and keep an close eye to the future and the continuing explosive growth in the community and its impact upon the resources needed to provide adequate EMS services and workforce support.

The organization is compelled to undertake a systematic organizational process evaluation and identify opportunities for broadest efficiency improvements to this workforce planning. Included in the assessment must be recruiting and retention programs and operational policies and practices regarding the workforce. The inclusion of hospital emergency department operations and evaluation and substantial improvement upon of lengthening turn-over delays is also an essential element. The opportunity to update existing Technology to better handle data from the usefulness perspective is essential. The agency should also seek to design and implement a pilot program designed to refer non-emergent patients from 911 and Hospital Emergency Departments, thereby reducing the unit hour commitment to non-emergent cases and resulting in an increase in available emergency response unit hours leading to improved response times performance and compliance and improved working conditions for the workforce.

There are numerous excellent examples of industry mandates, benchmarks, standards, guidelines and recommendations regarding paramedic workforce planning in the literature. These benchmarks and the ongoing discussions and research regarding them point to the fact that although some individual methods and components are in use to improve workforce problems, "the level of the crises" (Roberts, 2004, Wilbur, 2005) in many agencies demands that a more comprehensive and robust approach be taken to make the kind of impact to improve service levels with a more successful workforce (Brown et al, 2003).

Although Marion County EMS and its 911 dispatch center utilizes a robust system for prioritization of EMS calls, the growing number of calls being handled with essentially the same resources and deployment patterns of the past is proving that the system needs to adjust the way in which it does business. In this time of significant workforce challenges and increasing call load with longer committed times hampered by extended turn-around times at local hospital emergency departments, study results further compel EMSA and our partner agencies to establish alternative options and make needed workforce, operational and deployment changes (Johnson, 2004).

A 2003 EMS system study of Marion County recommended that call density changes occurring within each response zone shall be evaluated by EMSA at intervals of not less than once every three years. Should the call density of any contiguous 5-mile square grid within the suburban or rural zones become equal to or greater than the call density to the next higher level zone, then that five-mile square grid will move to the next higher level response time density zone (Fitch and Associates Report, 2003).

The Commission on Accreditation of Ambulance Services (CAAS) has promulgated, in their 2004 standards, certain very specific criteria for response time measures at a 90% reliability rate. Specifically, $\leq$ 8 minutes and 59 seconds, 90% of the time. CAAS also provides for local standards flexibility for response to "extreme" remote areas in which 8 minutes is impossible. This decision is to be made by the Physician Medical Director and the agency's administration. NFPA 450 Emergency Medical Services and NFPA 1710 Fire Suppression Operations both make references to response times with 1710 declaring 8 minutes at 90% for ALS transport, 4 minutes for ALS/BLS first response. This guideline has a decidedly urban flavor. The national Highway Traffic and Safety Administration is largely silent on the matter of specific response

time criteria although NHTSA's Susan McHenry in a personal interview indicated that NHTSA is seeking to create "something" that can be useful however nothing had been promulgated yet (McHenry, S. Personal Interview, June 14, 2007). There are several meaningful references to ambulance deployment in NHTSA's National EMT-Paramedic Curriculum but nothing as detailed as specific response time criteria. The National Paramedic Course curriculum focuses on the broader learning objectives of understanding peak time staffing, demand patterns, acuity issues and traffic flow challenges (NHTSA, 2004).

The EMS related standards promulgated by the American Society for Testing and Materials (ASTM) focus on EMS system organizational elements, much like the EMS Agenda for the Future document and NHTSA's EMS Continuous Quality Improvement publication however do not address specific response time criteria or benchmarking. The AHA and the European Resuscitation Council's early work by Eisenburg and Cummins et al, which led to the current clinical response standards, are now identified in the Utstein Style Template and remains an EMS, pre-hospital care hallmark component (Eisenburg et al, 1996). The trauma care work of Dr. R. Adams Cowley and others and the advent of The Golden Hour achieved a lasting and positive impact on response times, scene times and transport times (Pollak, 2006). In the big scheme of things, I'm pleased that the clinical approach of measuring times and setting guidelines and benchmarks continues to survive the political climates and changing winds so common among elected officials, organized labor and industry advocacy groups.

In regards to implementing a system of alternatives for handling non-emergency cases, an integrated approach is needed to develop medically approved criteria and procedures to insure patient safety and internal tracking and documentation. These criteria should insure that the consensus recommendations of organizations like the Emergency Medical Physicians are taken

well into account (ACEP, 2005, NASEMSO, 2003). With recent supportive studies such as the Richmond, Virginia non-emergency referral program (Casciato, 2007) the opportunity exists to seriously consider embarking on such an effort. If so, opportunities should be provided to representative EMS providers, operational medical directors and general counsel, social services managers, the community services board, local Law Enforcement departments and others at interest who will need to contribute to the process and also understand the alternative care procedures when they are finalized.

Organizational implications for Marion County EMS are significant with regard to this study. The negative impacts are: increasing demand on services which are stressing existing workforce resources, the need to improve efficiencies regarding unit hour utilization, operational difficulties outside of EMSA control such as misuse of the EMS system, long turn-around times a hospitals and more traffic congestion on roadways leads to unit availability and performance problems (EMSA, 2007 b). All of these elements combine to negatively impact EMS service levels and response time performance. Changes need to be planned and implemented using benchmarks and tools that exist in the industry and in other communities, and then tailored to Marion County's needs and the EMSA system. Workforce changes and the use of pilot projects are excellent ways to initiate a substantial change in the manner in which the department delivers services. A significant public education campaign will be absolutely necessary for the success of the program and the improvement of the public image of Marion County EMSA. The environment seems right to consider a broader, better integrated approach leading toward fuller implementation of a workforce planning and management system.

To summarize, Marion County EMSA faces significant challenges in improving its paramedic workforce, response time compliance and overall performance. The opportunities and

alternatives to improve are now identified and quantified. Agency leaders now have the option to provide the vision and direction to plan and implement positive changes. Future readers who desire to replicate or expand this study should be positioned to do so based upon these recommendations and the quantity of the literature and on-going studies pertaining to this topic.

Recommendations

The recommendations, based on this study, are for Marion County EMS Alliance to plan and implement a systematic and comprehensive paramedic workforce enhancement program. This should be undertaken using a number of the specific components identified to be successful in improving the organizational workforce and the EMS service level. Recommended components include developing a strategic direction and goals for retention and recruitment that will involve every member of the organization in some manner. The revised process will use creative retention elements, mentoring and educational incentives. Steps will include revising recruitment processes into quicker, more aggressive and responsive methods with the use of technology mixed with personal contacts, involvement and follow-up. Based upon the research, it is also recommended for Marion County Emergency Medical Services Alliance, its medical directors and its partner agencies, to leverage the new workforce planning program with a pilot project that addresses the issues of long hospital wait times and non-emergency utilization of the 911 EMS services resources.

The design of the EMSA Workforce Strategic Plan components and procedures must include active participation and input from all appropriate sources, agencies and especially from existing staff, labor leaders and key EMS advocates leaders in the community. Planning and development efforts and timetables for workforce activities and component project benchmarks must be well planned and communicated. Each step of the implementation process should have

clear objectives, plans for meeting objectives, and identification of points of contacts and the person(s) accountable to deliver the completed work elements. Legal counsel is another important planning and operational component and should be consulted regarding specific risk and liability issues pertaining to the workforce and the non-emergency referral system. An assessment of the public policy and political impacts of changing the non-emergency response policies and procedures will also be essential to build support and achieve success. In the absence of proper citizen and community leader education and building support for the changes, complaints about services and unmet citizen expectations will be certainty. Therefore implementation planning must include the means to deliver public and leadership education, public service announcements and press/media releases.

This will require more than a marginal change in human resources activity and must be inclusive, innovative and offer cutting edge approaches to the EMS workforce strategy and tactics. New and even radical efforts aimed toward implementing more effective high performance retention, recruiting and operational processes, new technology and appropriate transport alternatives will provide for improved resource utilization and new resource growth targets in the provision of quality, effective patient care and emergency medical services.

Finally, quality improvement and leadership led plans must include provisions to achieve high levels of staff motivation for changes, participation in process change goals and improvement in the collection and analysis of data. Adequate information feedback will support and track the use of the new procedures as well as indicate points where mid-course corrections and changes are needed for continued performance improvement. If Marion County EMSA is going to be more responsive to the citizens it serves and its workforce, continued feedback and

reevaluation is an absolute necessity and will require the aforementioned combination of human motivation and technological tools designed to provide useful and highly reliable information.

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Appendix A

Emergency Medical Services Paramedic Workforce Questionnaire **Page 1 of 2**

This feedback form is a part of an Executive Fire Officer Program Applied Research Project. Responding to all questions is VOLUNTARY. All responses will be compiled and reported in the aggregate with no individual agencies or personnel identified. Biographical information is requested for follow-up contact only during the research period.

Phones: (757) 873-6532 or (352) 427-3077 FAX: (352) 873-6543

Please Circle and/or Fill in the Blanks. **Include all choices that may apply to your agency.**

1. **Organization Name, City/County Name & Type of EMS Organization**:
   _____
   _____
   ____Governmental ____Volunteer ____ Commercial ____ Other – Specify_____
2. **Name of individual completing form: (PRINT**)_____
3. **Phone Number and E-mail address of individual completing form**: (_____)_____

   E-mail address: _____@_____
4. **Does your organization utilize EMT-Paramedics as a part of your workforce on a daily basis?**

   a. Yes **b.** No
5. **Does your agency use specific steps or processes for determining your paramedic level workforce needs?**

   a. Yes **b.** No
6. **Of the steps and/or processes listed below, which one(s) best describe(s) how your organization operates?**

   a. Position Needs assessment **b.** Paramedic Retention Program activities (i.e. awards, training, promotion)
   c. External Recruiting Program **d.** Internal recruiting and training program

   e. dedicated recruiter **f.** Other steps or processes (please specify): _____
7. **From the list below, please select the top 3 factors or criteria your department considers when seeking to add paramedics to your workforce?**

   a. increasing 911 call demand **b**. increasing severity or acuity levels of calls **c.** growing population **d. #**s of paramedics at or near retirement **e.** rate of paramedic turnover (other than retirement) **f.** growth in # of paramedic positions in department **g.** other (please list)_____

8. **Of the paramedic workforce methods your organization uses, which of the following methods do you consider essential to your success in meeting your current and future paramedic staff needs? (Please circle all that apply)**

a. competitive pay and benefits **b.** external recruiting **c.** internal recruiting "growing your own **d.** recruiting incentives such as relocation help or sign-on bonuses **e.** organization sponsored training program **f.** incumbent employee recruiting incentives **g.** retention efforts: awards, incentives, training, and promotion ladder

h. other methods (Please Specify)_____

9. From the list provide below, what paramedic recruiting tools best describe those used by your department? (circle all that may apply)

a. Career websites **b.** current staff word of mouth **c**. local news media advertisements **d.** recruiting brochures/packages specific to agency **e.** local governmental employment bureau/agency **f.** national print advertisement (industry journal(s) etc.) **g.** career fairs at local schools/colleges **h.** recruiting booth/display at state or national EMS conferences **i.** dedicated EMS recruiter in house or contracted **j.** recruiting incentives such as relocation assistance or sign-on bonuses **k.** internal recruiting of EMT's with incentives: free training, promotion guarantees, monetary incentives etc.

i. Other (please specify) _____

10. From the following list, what are the top 3 obstacles, in your opinion, that face your department as it plans for current and future paramedic workforce needs?

a. shrinking number of paramedics in the marketplace **b.** financial resources to stay competitive with pay etc.

c. paramedic turnover rates **d.** availability of paramedic training programs

e. competition for paramedics with other EMS providers in my region

f. Other (please specify)_____

11. **Do you perceive that a paramedic shortage is a real problem in your experience?**

a. Yes **b.** No

12. Of the possible causes listed below, <u>which one</u> do you believe is the most significant reason that EMS agencies have paramedic workforce shortages?

a. number of new paramedic positions have outpaced available trained personnel **b.** retirement turnover rates **c.** non retirement turnover **d.** insufficient succession planning **e.** insufficient #'s of paramedics in market **f.** too few paramedic training programs **g.** too little pay or incentives for the job **h.** high stress and burn-out **i.** insufficient retention program offerings such as recognitions, incentives, training opportunities, advancement opportunities, and job support (i.e. occupational health and wellness, EAP programs, critical incident stress mgt.)

j. other primary cause (please specify)_____

Please Return by Fax to Chief D.B. Palmer, Executive Director - Marion County EMS (352) 873-6543 or to my e-mail at: Dave.palmer@marioncountyfl.org

This feedback form is a part of my Executive Fire Officer Program Applied Research Project. Your responses to any or all questions are VOLUNTARY. **Thank you for your assistance!**

Appendix B

Raw Data

N=16

This feedback form is a part of my Executive Fire Officer Program Applied Research Project. Responding to any or all questions is VOLUNTARY. *Thank You! D.B. Palmer*

n

16 EMS Organization type?

a. Fire Department based EMS Agency **(12)**

b. Third Service Governmental EMS Agency **(3)**
c. Private EMS Firm or Public Utility **(1)**
d. Other (Please Specify)_ **_____(0)_**

16 Does your agency utilize paramedics ?
a. YES **(16)** **b.** NO **(0)**

16 Does your agency use any steps to determine workforce needs?
YES **(16)** **b.** NO **(0)**

16 Of the steps and/or processes listed below, which one(s) best describe(s) how your organization operates?

a. Position Needs assessment **(16)**
b. Paramedic Retention Program activities (i.e. awards, training, promotion) **(16)**
c. External Recruiting Program **(16)**
d. Internal recruiting and training program **(16)**
e. dedicated recruiter **(3)**
f. Other steps or processes (please specify): Dept. Job Fair **(6)**

16 From the list below, please select the top 3 factors or criteria your department considers when seeking to add paramedics to your workforce?

a. increasing 911 call demand **(16)**
b. increasing severity or acuity levels of calls **(16)**
c. growing population **(16)**
d. #s of paramedics at or near retirement **(6)**
e. rate of paramedic turnover (other than retirement) **(10)**
f. growth in # of paramedic positions in department **(9)**
g. other (please list**) (0)**

16 Of the paramedic workforce methods your organization uses, which of the following methods do you consider essential to your success in meeting your current and future paramedic staff needs? (Please circle all that apply)

a. competitive pay and benefits **(16)**
b. external recruiting **(16)**
c. internal recruiting "growing your own **(13)**
d. recruiting incentives such as relocation help or sign-on bonuses **(5)**
e. organization sponsored training program **(16)**
f. incumbent employee recruiting incentives **(6)**
g. retention efforts: awards, incentives, training, promotion ladder **(16)**
h. other methods (Please Specify) **(0)**

16 From the list provide below, what paramedic recruiting tools best describe those used by your department? (circle all that may apply)

a. Career websites **(16)**

b. current staff word of mouth **(16)**

c. local news media advertisements **(16)**

d. recruiting brochures/packages specific to agency **(16)**

e. local governmental employment bureau/agency **(16)**

f. national print advertisement (industry journal(s) etc.) **(4)**

g. career fairs at local schools/colleges **(14)**

h. recruiting booth/display at state or national EMS conferences **(3)**

i. dedicated EMS recruiter in house or contracted **(3)**

j. recruiting incentives such as relocation assistance or sign-on bonuses **(5)**

k. internal recruiting of EMT's with incentives: free training, promotion guarantees, monetary incentives etc. **(15)**

i. Other (please specify) _____

16 From the following list, what are the top 3 obstacles, in your opinion, that face your department as it plans for current and future paramedic workforce needs?

a. shrinking number of paramedics in the marketplace **(16)**

b. financial resources to stay competitive with pay etc. **(10)**

c. paramedic turnover rates **(6)**

d. availability of paramedic training programs **(5)**

e. competition for paramedics with other EMS providers in my region **(14)**

f. Other (please specify) **(0)**

16 Do you perceive that a paramedic shortage is a real problem in your experience?

a. Yes **(12)** **b.** No **(4)**

16 Of the possible causes listed below, <u>which one</u> do you believe is the most significant reason that EMS agencies have paramedic workforce shortages?

a. number of new paramedic positions have outpaced available trained personnel **(4)**

b. retirement turnover rates **(4)**

c. non retirement turnover **(0)**

d. insufficient succession planning **(0)**

e. insufficient #'s of paramedics in market **(3)**

f. too few paramedic training programs **(2)**

g. too little pay or incentives for the job **(1)**

h. high stress and burn-out

i. insufficient retention program offerings such as recognitions, incentives, training opportunities, advancement opportunities, and job support (i.e. occupational health and wellness, EAP programs, critical incident stress mgt.) **(2)**

j. other primary cause (please specify)_____

Appendix C

Data Table Definitions – EMS Paramedic Workforce Questionnaire Feedback

RD (Respondent Designation) - numbers designate respondent departments. Data is reported in aggregate only with no identifiable persons or departments published.

PMUse – a yes or no question as to whether the respondent's agency uses paramedics as part of their workforce.

StpsPro – A yes or no question to determine if respondent agency uses any steps to determine paramedic workforce needs.

Stptyp- question to assess all types of planning steps used. A list of choices is provided labeled a. – f and allows for write-in entry.

RnkCrit – a ranking question seeking top 3 specific criteria used from a list of selections labeled a.- g. with write-in capability.

Essn – a question to determine essential methods the respondent's agency uses to plan for its paramedic workforce needs from a list of selections labeled a.- h. with write-in capability.

Tools – A question that seeks to evaluate specific common recruiting tools or methods used by the respondent agency from a large list of options labeled a.-i. with write-in opportunity.

3obst – a question to evaluate the top 3 obstacles facing each respondent agency regarding paramedic workforce needs from a list labeled a.-f. with write-in allowance.

Pshort – a yes or no question evaluating perception of paramedic workforce shortage in the industry.

1cause – question to evaluate single most significant reason for paramedic workforce shortage from a list of choices labeled a. – j. with write-in option.

Appendix D

EMS Paramedic Workforce Questionnaire Feedback Results – Data Table

RD	PMuse	Stpspro	Stptyp	Rnkcri	Essn	Tools	3obst	Pshort	1cause
1	Y	Y	acdb	abcdef	abcegf	abcdegk	abcde	Y	a
2	Y	Y	acdbf	abce	abcdefg	abcdefghijk	abe	Y	a
3	Y	Y	acdbe	abcdf	abcdefg	abcdefghijk	abce	Y	a
4	Y	Y	acdb	abcdf	abeg	abcdegk	abc	Y	b
5	Y	Y	acdbf	abcef	abceg	abcdeg	abde	N	b
6	Y	Y	acdbe	abce	abcdefg	abcdefghijk	abce	Y	a
7	Y	Y	acdbe	abcde	abeg	abcdefgk	abce	Y	b
8	Y	Y	acdb	abcd	abcdefg	abcdegk	abce	Y	b
9	Y	Y	acdbf	abcf	abceg	abcdegk	abde	Y	e
10	Y	Y	acdbf	abcef	abceg	abcdek	ad	N	e
11	Y	Y	acdb	abcef	abceg	abcdegk	abe	Y	f
12	Y	Y	acdb	abcef	abeg	abcdegk	abe	Y	g
13	Y	Y	acdbf	abc	abceg	abcdegk	abe	Y	e
14	Y	Y	acdb	abcdef	abcdefg	abcdegk	abe	N	f
15	Y	Y	acdb	abce	abceg	abcdegk	abe	Y	i
16	Y	Y	acdbf	abc	abceg	abcdek	ade	N	i

Refer to Appendix C - Data Table Definitions

All responses reported in the aggregate only to assure respondent confidentiality