

Final Report

Emergency Medical Services System Study Patrick County, Virginia February, 2008

Prepared for:
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I. Executive Summary

The Virginia Department of Health, Office of Emergency Medical Services (hereinafter mentioned as “OEMS”) was engaged by the Virginia Department of Health, Office of Health Policy and Planning (hereinafter mentioned as “OHPP”) to provide a comprehensive assessment of the EMS system surrounding the Critical Access Hospital, RJ Reynolds –Patrick County Memorial Hospital (hereinafter mentioned as “RJRPCM”), located in Stuart, Patrick County, Virginia.

RJRPCM is one of seven hospitals in Virginia that has been designated as a CAH facility. This assessment is part of a larger study, evaluating EMS systems in the counties surrounding the Critical Access Hospitals (hereinafter mentioned as “CAH”) in the Commonwealth of Virginia. CAH Designation criteria are defined as follows:

- Physical location in a state that has an established Medicare Rural Hospital Flexibility Program (Flex Program)
- Be located in a rural area
- Provide 24 hour emergency care services, using on site or on call staff
- Provide no more than 25 inpatient beds
- Have an average length of stay of 96 hours or less; and
- Be either 35 miles from another hospital or another CAH, or 15 miles in areas with mountainous terrain or only secondary roads.

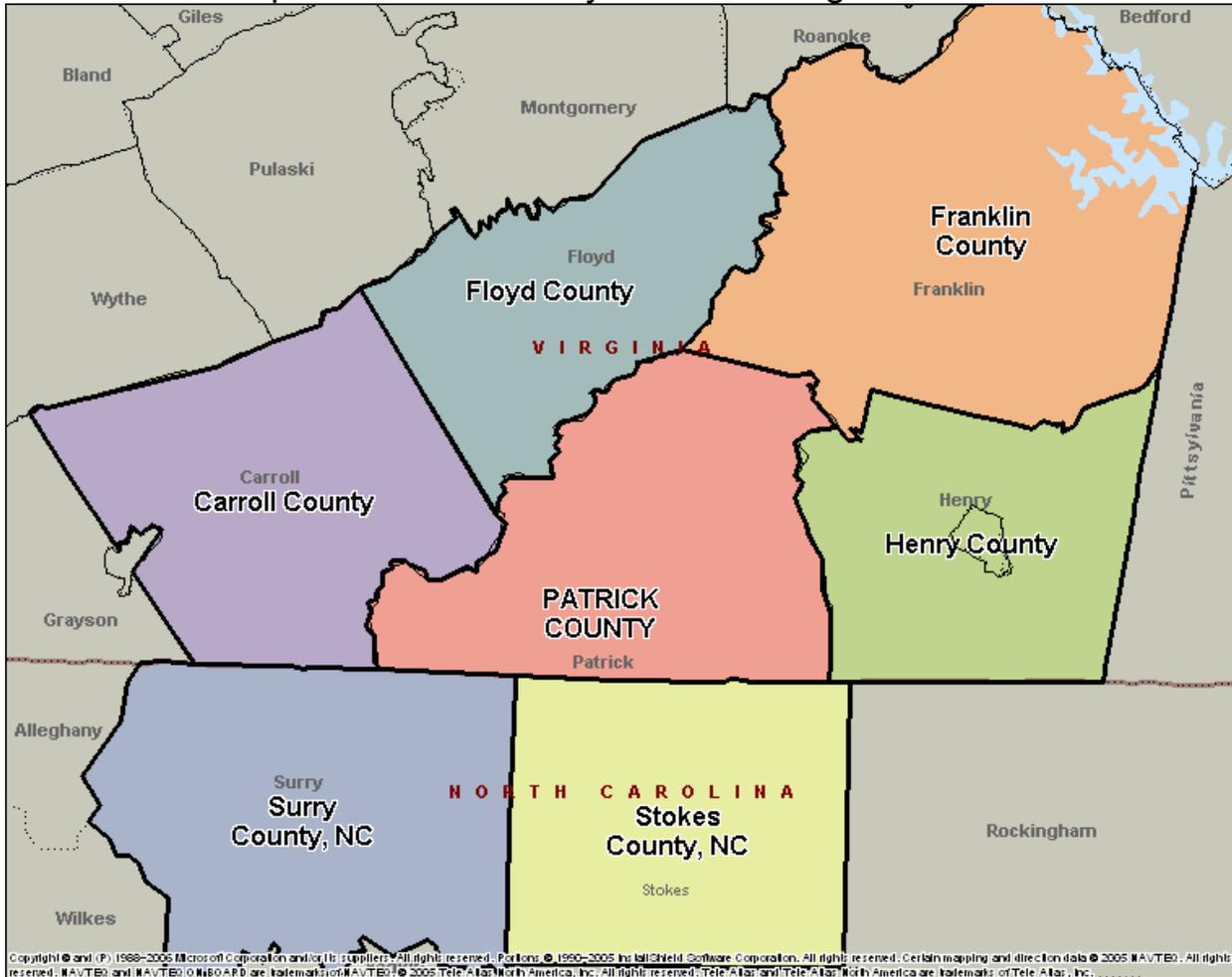
During the latter half of 2007, staff from OEMS, with assistance from subcontractor agencies, performed the assessment of both the hospital itself, and the agencies that serve the county the hospital is located in. This assessment included development and distribution of surveys, interviews with system stakeholders, and review of pertinent documents.

Eight recommendations, based on key findings in eight different study areas appear at the end of this report. The Office of EMS believes that each one of the recommendations will have a positive impact on the EMS system in Patrick County, and remains ready to assist the agencies in Patrick County to implement each of the recommendations, and provide technical assistance as needed.

II. Introduction

Patrick County, Virginia is a predominantly rural county located in the southwest portion of the Commonwealth of Virginia. It is bordered by Carroll, Floyd, Franklin, and Henry Counties in Virginia, as well as Surry and Stokes Counties in North Carolina (see Map 1).

Map 1 – Patrick County and Bordering Counties



The Blue Ridge Mountains run through a significant portion of Patrick County, creating some difficulties in terms of response and transport times, as well as radio communication.

Demographic information – Patrick County

Population (2000 Census): 19,407
 County Size: 486 Square Miles
 Population Density: 40 people per square mile.

Age distribution:

21.7% - Under 18

7.1% - 18-24

28% - 25-44

26.7% - 45-64

16.5% - 65+

Median Age: 40

Gender Distribution:

100 women / 96.9 men

Over 18: 100 women / 94.9 men

Race Distribution:

91.7% White

6.2% African – American

1.9% Hispanic/Latino

Less than 1% - Native American, Asian, and “Other”

The county seat is Stuart, which is also the location of the CAH, as well as CCDF Fire and Rescue, Jeb Stuart Rescue Squad, the County Sheriff’s Department, and the County Administration offices.

The (CAH) in Patrick County is RJRPCMH. RJRPCMH has had CAH designation since January of 2005. In preparation for CAH designation, the Virginia Department of Health worked closely with hospital personnel on charting requirements and trained staff on CAH regulations. Admission criteria changed to a length of stay of 96 hours. Other changes included closing the Cardiac Care and Labor and Delivery units; no CT scan capability; and the lack of full-time orthopedic surgeon on staff all of which increased Emergency Department (ED) transfers to hospitals in surrounding areas. No deficiencies were reported during the CAH designation process by RJRPCMH staff, or in review of designation documents. RJRPCMH has also been accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) having successfully completed a JCAHO inspection in January 2007. The capacity of the CAH is 25 beds.

The hospital however already had an ED physician on staff 24 hours per day, 7 days per week. The CAH conversion did not change the hospital’s relationship with area EMS providers who work closely with hospital staff often times helping in the ED if needed.

There are seven licensed EMS agencies that operate in Patrick County. They are: Ararat Rescue Squad, Blue Ridge Volunteer Rescue Squad (Blue Ridge VRS), CCDF Volunteer Fire Department and Rescue Squad (CCDF), Jeb Stuart Rescue Squad, Smith River Rescue Squad, Vesta Rescue Squad, and RJRPCMH’s own Patient Transport Services (PTS). In addition to these agencies, there are two first responder agencies that serve Patrick County – Moorefield Store Fire Department and Patrick Henry Fire Department (located in the adjacent county of Henry). Law enforcement is coordinated by the Patrick County Sheriff’s department.

III. Purpose and Methods of the EMS System Study

As outlined in the scope of services within the Memorandum of Agreement between the OHPP and OEMS, the following areas are to be addressed in the pages to follow:

1. Examination of Network Agreements for CAH Certification
2. Study Survey
 - 2a. Questions for EMS Personnel for assessing EMS capabilities in agencies in areas served by the CAH.
 - 2b. Develop questions for CAH personnel for the purpose of assessing the overall function of the local EMS system
3. Study Components
 - 3a. Demographics of the CAH area
 - 3b. Staffing of the local EMS System
 - 3c. Placement of units on basis of call volume and population density
 - 3d. Training Initiatives
 - 3e. Communications
 - 3f. Resource Management
 - 3g. Fiscal Support
 - 3h. Medical Direction
 - 3i. Quality Assurance
 - 3j. Mass Casualty Preparedness
 - 3k. System Partnerships
 - 3l. Hospital Capabilities
4. Recommendations

To accomplish this task, the Virginia Office of EMS:

1. Partnered with the Western Virginia EMS Council (hereinafter mentioned as “WVEMS”) to assist OEMS in addressing some of the items listed in the scope of services above. A report from WVEMS was received by OEMS in August of 2007, and is “Appendix 1” of this report. Information from the WVEMS report is included in various different sections of this report.
2. Formal interviews were conducted with various stakeholders of the EMS System in Patrick County, including the Patrick County Administrator, the Patrick County Sheriff, and the Patrick County 911 Coordinator. In addition, the CEO and Director of Nursing at RJRPCMH.
3. All of the EMS agencies in Patrick County participated in a survey to gather some additional information about the EMS system capability, as well as the relationship with the CAH.

A copy of the survey, as well as the responses from the study participants themselves is attached to this report, as “Appendix 2”.

4. Site visits were held by study reviewers during agency inspections of selected agencies operating in Patrick County, as well as an unannounced visit to the RJRPCMH Emergency Department (ED).
5. Several documents were reviewed in preparation for the study report, including:
 - All documents related to the CAH designation by RJRPCMH.
 - EMS network agreements for RJRPCMH, as required in the original CAH certification application.
 - OEMS licensure database information to determine the number and age of EMS vehicles of each of the agencies operating within Patrick County.
 - OEMS PPCR database information for all EMS calls within Patrick County for calendar years 2005 and 2006.
 - OEMS Training database information for all certified EMS providers within Patrick County.
 - Mutual Aid agreements existing between agencies in Patrick County.
 - Return to Locality reports of expenditures submitted by Patrick County Administration for Fiscal Years 2006 and 2007.
 - Rescue Squad Assistance Fund (RSAF) information for all EMS agencies within Patrick County for 1997-2006 grant cycles, including items awarded and denied.

IV. Study Results

Demographics:

Demographic information for Patrick County was mentioned in the Introduction section of this report, and seems to be relatively similar to other rural counties and areas within the Commonwealth of Virginia, and other counties that were examined as part of the CAH Study. There are five long term care facilities within a 20 mile radius of RJR, however only two of those facilities, Blue Ridge Nursing Center and the RJR Long Term Care Unit, are closer to RJR than to other facilities.

Staffing:

There are 101 Certified EMS Providers in Patrick County. The distribution of providers by level is below:

Table 1 – Distribution of Certified Providers in Patrick County

Certification Level	Number of Certified Providers
EMS First Responder	10 (7 male, 3 female – 10% of total providers in the county)
Emergency Medical Technician (EMT)	54 (29 female, 25 male – 53% of total providers in the county)
EMT – Paramedic (EMT-P)	6 (6 male– 6% of total providers in the county)
EMT – Enhanced (EMT-E)	15 (9 female, 6 male – 15% of total providers in the county)
EMT – Intermediate (EMT-I)	11 (6 female, 5 male – 11% of total providers in the county)
EMT – Shock Trauma Technician (EMT-ST)	2 (1 female, 1 male– 2% of total providers in the county)
EMT – Cardiac Technician (EMT-CT)	3 (1 female, 2 male – 3% of total providers in the county)
Total	101 (52 male, 49 female)

Source: Virginia OEMS Division of Educational Development Provider Database

Staffing of local EMS agencies within Patrick County is predominantly volunteer as mentioned previously, seven EMS agencies are currently licensed in Patrick County; The two first responder agencies that serve Patrick County - Moorefield Store Fire Department and Patrick Henry Fire Department, do not transport patients. The only career EMS agency is PTS.

Ararat Rescue Squad, Blue Ridge VRS, CCDF, Jeb Stuart Rescue Squad, Smith River Rescue Squad, Vesta Rescue Squad VRS all provide volunteer 911 on call coverage 24 hours a day, 7 days a week. However, none of the agencies reported dedicated in house staffing. Each agency has between 18 and 32 members, who range in age from 16 to 72 years of age. The majority of providers for all agencies are Caucasian. Recruitment initiatives for these agencies include open houses; providing fees for tuition and books for training; and purchasing jump kits and radios for providers. Not all of the agencies actively recruit members.

The only career EMS service is PTS, which is part of RJRPCMH. PTS provides dedicated service to Patrick County 16 hours per day, with 8 hours of on call coverage daily. 66% of all ALS coverage in the county is provided by PTS. They employ six full-time and nine part-time Emergency Medical Technicians (EMT), ranging in age from 20 to 50 years of age.

All but three are male and all are Caucasian. All hospital EMT's also are members of volunteer Emergency Medical Services (EMS) agencies in the county. New RJRPCMH PTS employees are recruited through the RJRPCMH hospital system, and their human resources department.

Placement of Units

In review of PPCR data reported by the agencies in Patrick County for calendar years 2005 and 2006; average response times vary for each agency. For the purposes of this study, average response time is defined as time from receipt of call by the agency, until the agency reports enroute. The average response times are shown in the table below:

Table 2 – Average Response Times – Patrick Co. Agencies – 2005/2006

Patrick County EMS Agency	Average Response Time
Ararat Rescue Squad	16 minutes
Blue Ridge VRS	7 minutes
CCDF	11.5 minutes
Jeb Stuart Rescue Squad	9.5 minutes
RJRPCMH PTS	2 minutes
Smith River Rescue Squad	10 minutes
Vesta Rescue Squad	10 minutes

Source: OEMS PPCR Reporting Database for Calendar Year 2005 and 2006

None of the agencies reported utilizing strategic placement of vehicles by volume, location, or response time.

EMS Training Initiatives

The EMS training and continuing education (CE) opportunities for agencies and providers in Patrick County are quite plentiful, and local to the county. EMS providers in the county are fortunate in the fact that courses are available in county, and do not require travel outside of the county, which providers in similarly rural counties often have to do in order to receive the training that they need, however, providers do travel to other locations within the same planning district to receive EMS training. One EMT - Basic course is held within Patrick County on a yearly basis.

Much of the ALS CE hours are provided by WVEMS, as well as an annual offering of an EMT-Enhanced course. These courses are held at the Patrick Henry Community College – Stuart location. WVEMS offers a minimum of 24 ALS CE hours to providers in Patrick County per year at the Patrick Henry Community College – Stuart location, and also offers International Trauma Life Support (ITLS), Pediatric Education for Prehospital Professionals (PEPP). WVEMS will be offering Advanced Medical Life Support (AMLS) courses in 2008.

WVEMS has trained 5 Patrick County providers in PEPP and 11 Patrick County providers in ITLS over the past 3 years. It is of note that many times, these courses are cancelled due to lack of enrollment/participation.

The nursing staff of RJRPCMH has provided supervised precepting of student enrolled in WVEMS sponsored initial certification programs. RN's employed by the hospital are actively teaching CE courses offered by WVEMS as well as teaching an EMT - Basic course yearly in the Patrick County area. RJRPCMH will begin offering ALS classes to all residents in Patrick County who are interested in the certification in the coming year.

Additionally, both CCDF, and the Patrick County Training Center are designated as site locations for Emergency Medical Services Satellite Training (EMSAT), which is a monthly, one-hour interactive training and information program for Virginia EMS and Fire personnel. EMSAT broadcasts and DVDs offer required EMS topics at the ALS and BLS levels, and enrichment classes that may not be widely available throughout the state. Certified Virginia EMS providers may receive continuing education credit by viewing an EMSAT broadcast at a designated state site. Providers may also receive continuing education credit for viewing EMSAT DVDs.

Communications

Patrick County has Enhanced – 911 (E-911). All 911 dispatch in the county is centralized, and the 911 center is located in the County Sheriff's office. The dispatch office sends tones using a radio system to dispatch calls to the agencies. The 911 Administrator stated during an interview that the 911 center faces challenges in getting a rescue squad together for a call, especially during daytime hours. During these situations, PTS is used to respond to calls.

The EMS agencies who participated in this study reported using radio primarily, and at times cell phones, to communicate with the Critical Access Hospital (CAH). These agencies have provided patient reports to the Emergency Department (ED) 76 to 100 percent of the time within the past twelve months. The two first responder units do not communicate with the ED at the CAH.

The challenges in communications between EMS agencies and the CAH are due to the rural, mountainous terrain of Patrick County. Dead pockets occur where radio and cell phone communication does not function. Cell phone coverage is hit or miss in many areas of Patrick County. EMS agencies are using the "HEAR system" to communicate with the CAH.

None of the parties who participated in this study reported there are no current efforts to upgrade the communications system in Patrick County.

Resource Management

There are 17 permitted EMS vehicles among the seven agencies in Patrick County. All 17 vehicles are ambulances of some type.

As of the last inspections of each agency in Patrick County by OEMS field representatives in September of 2007, all vehicles were in good working condition, without any mechanical failures noted in inspection reports. The vehicles range in age from 2 to 22 years of

age at the time of inspection. According to inspection reports, each vehicle is equipped at the ALS level.

All agencies reported having mutual aid agreements that are honored with agencies in Patrick County and agencies in surrounding counties including Henry, Floyd, and Carroll counties.

Fiscal Support

For Fiscal Year 2006 and 2007, Patrick County received \$15,334.46 and \$16,035.67, respectively, in "Return to Locality" (RTL) funding from the Virginia Department of Health from the "Four for Life" revenues from passenger vehicle registration. The Code of Virginia states that the Department of Health shall return twenty-six percent (26%) of the registration fees collected to the locality wherein such vehicle is registered to provide funding for EMS Training of volunteer or salaried emergency medical service personnel of licensed, nonprofit emergency medical service agencies; or for the purchase of necessary equipment and supplies for licensed, nonprofit emergency medical service agencies. Patrick County uses these funds to assist in matching funds for equipment purchases by the EMS agencies within Patrick County.

The information reflected in Table 3 below reflects the information in funding reports submitted to OEMS by Patrick County for RTL funds distributed in Fiscal Year 2006 and 2007, as well as the receiving agencies.

Table 3 - RTL Funding Distribution for Patrick County – Fiscal Year 2006 - 2007

Patrick County – Return to Locality – Fiscal Year 2006				
Agency Receiving Funds	Summary of Use of Funds			
	Training	Equipment	Supplies	Total
CCDF	\$50.00	\$1,348.04	\$1,157.70	\$2,555.74
Ararat VRS	\$200.00	\$800.76	\$1,555.00	\$2,555.76
Jeb Stuart VRS		\$1,215.90	\$1,339.84	\$2,555.74
Smith River VRS		\$555.00	\$2000.74	\$2,555.74
Vesta VRS	\$325.00		\$2,230.74	\$2,555.74
Blue Ridge VRS		\$2,555.74		\$2,555.74

Patrick County – Return to Locality – Fiscal Year 2007				
Agency Receiving Funds	Summary of Use of Funds			
	Training	Equipment	Supplies	Total
CCDF	\$280.00	\$956.88	1,456.62	\$2,693.50
Ararat VRS		\$2,408.50		\$2,408.50
Jeb Stuart VRS		\$1,070.80	\$1,615.00	\$2,685.80
Smith River VRS		\$2,408.50		\$2,408.50
Vesta VRS	\$453.50	\$1,606.23	\$750.85	\$2,810.58
Blue Ridge VRS	\$280.00	\$500.00	\$2,248.78	\$3,028.78

Source: Virginia OEMS Return to Localities Funding Reports – Patrick County

These funds were reported as used for training, equipment, and supplies, but reports are not required by OEMS to specify what needs these funds are used to satisfy.

In 2007, it was discovered that the gas detectors in use by the Fire Departments have sensors that have expired. The EMS Coordinator was able to get local funds approved by the Patrick County Board of Supervisors to purchase new sensors for the detectors. In addition, he is seeking funds (grant or other) to help upgrade the AED's in the schools, county administration offices, and some of the volunteer EMS/Fire agencies in the county. The "blue" AED's require a software upgrade and the "orange" AED's need to be replaced, though it wasn't disclosed what types of AED models those are.

Of the EMS agencies in the study, PTS, Blue Ridge Volunteer Rescue Squad, CCDF, and Jeb Stuart Rescue Squad have fee-for-service programs in place for patient transports. Blue Ridge VRS utilizes Diversified Ambulance Billing (DAB) as their billing company, and CCDF and Jeb Stuart uses EMS Management and Consultants, based out of North Carolina as their billing company, with PTS using the RJRPCMH billing department for their billing needs.

PTS' collection rate is 26 to 50%. CCDF bills Medicare and Anthem with a collection rate of 0 to 25%. They are fine tuning their billing process to increase the collection rate. Jeb Stuart reports a collection rate of 26 to 50%.

In interviews with personnel from Ararat Rescue Squad, they hold one fund raiser each year with assistance from the local Ruritan chapter. The agency fears that most of the population in their response area can't afford to be billed for EMS service, and that they wouldn't call 911 if they knew they'd be charged.

Rescue Squad Assistance Fund Activity – Recent History

Dating back to 1997, Patrick County agencies have actively participated in RSAF grant processes. In that time, Patrick County agencies have been awarded a total of \$699,966.53 for equipment purchases. Though they received funds in 1998, RJRPCMH PTS is not eligible for RSAF awards, as they are not a non-profit entity, and it is unsure as to the reason that it occurred.

Items of note include the fact that CCFD Fire Department Volunteer Rescue Squad has not applied for any RSAF funding since June of 2005. Moorefield Store Fire Department has not applied for RSAF funding since 2004.

The table below outlines RSAF grant awards for agencies in Patrick County. This includes the cycle that the grant was awarded, the item that was requested, the amount of the award, and the percentage of matching funds by the agency for each awarded item.

Table 4 - RSAF Awards for Patrick County – December 1997 to June 2007

Ararat Rescue Squad			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
06/1997	Extrication Equipment	\$9,290.00	20%
06/1999	Defibrillator	\$8,556.00	20%
12/1999	Computer Equipment	\$625.00	50%
12/2001	12 Lead Defibrillator	\$5,977.00	50%
06/2002	Ambulance	\$31,255.00	50%
06/2007	Heavy Rescue Vehicle	\$92,285.20	20%
Total Award Amounts		\$147,988.50	

Blue Ridge Volunteer Rescue Squad			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
12/1997	1 Ambulance	\$43,900.00	20%
12/2001	1 Defibrillator	\$6,432.00	50%
06/2002	1 Defibrillator	\$9,560.00	20%
06/2002	5 radios	\$2,500.00	20%
12/2004	1 Computer	\$699.00	50%
06/2005	15 Monitoring Pagers	\$5,280.00	20%
06/2005	1 Training Manikin	\$3,436.00	20%
06/2006	1 Ambulance	\$67,576.00	20%
Total Award Amounts		\$139,383.50	

CCDF Fire Department and Volunteer Rescue Squad			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
06/1998	1 Ambulance	\$57,626.00	20%
06/1999	Extrication Equipment	\$3,484.00	20%
06/2000	Computer System/Printer	\$875.00	50%
06/2000	2 Mobile Radios	\$1,895.00	50%
06/2005	1 Ambulance	\$85,407.00	20%
Total Award Amounts		\$149,287.20	

Jeb Stuart Volunteer Rescue Squad			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
06/2000	Computer System	\$625.00	50%
12/2000	1 Ambulance	\$57,704.00	20%
12/2003	1 Defibrillator	\$4,400	20%
06/2004	1 Ambulance	\$36,581.00	50%
06/2005	25 Portable Radios	\$6,156.00	20%
12/2006	2 Defibrillators	\$21,000.00	20%
Total Award Amounts		\$126,466.00	

Moorefield Store Volunteer Fire Department			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
12/2000	Computer System	\$799.20	20%
12/2004	1 Defibrillator	\$1,200.00	20%
	Total Award Amounts	\$1,999.20	

RJRPMH Patient Transport Service			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
06/1998	1 Defibrillator	\$6,620.00	20%
12/1998	1 Ambulance	\$56,750.00	20%
	Total Award Amounts	\$63,370.00	

Smith River Volunteer Rescue Squad			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
12/1999	Computer System	\$775.00	50%
06/2002	1 Defibrillator	\$6,500.00	50%
12/2004	CPR Manikins/Training Equip.	\$1,563.12	50%
12/2006	1 Defibrillator	\$10,836.00	50%
06/2007	22 Portable Radios	\$5,465.00	50%
	Total Award Amounts	\$25,139.12	

Vesta Volunteer Rescue Squad			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
06/2000	Computer System	\$750.00	50%
06/2000	1 Defibrillator	\$5,500.00	50%
12/2001	1 Extrication Tool	\$11,500.00	50%
12/2002	1 Mobile Radio	\$700.00	50%
12/2002	1 Defibrillator	\$6,000.00	50%
06/2003	6 Portable Radios	\$1,350.00	50%
06/2006	15 Portable Radios	\$3,102.00	50%
06/2006	2 Mobile Radios	\$581.00	50%
06/2006	1 Computer	\$750.00	50%
06/2007	Training manikins	\$1,500.00	50%
06/2007	1 Ambulance stretcher	\$2,600.00	50%
06/2007	1 Defibrillator	\$12,000.00	20%
	Total Award Amounts	\$46,333.00	

Source: Virginia OEMS RSAF Grant Awards Database

Medical Direction

There is only one Operational Medical Director (OMD) in Patrick County, Dr. Diane Rowell. Dr. Rowell is also the ED Director for RJRPMH. During site visits to Patrick County agencies and to the CAH itself, it was mentioned many times how much Dr. Rowell is involved in the EMS system in Patrick County, including an impromptu meeting that took place between Dr Rowell and a EMS agency director to discuss a Performance Improvement

(PI) issue that had taken place that morning, and assisted in a corrective action plan. Dr. Rowell is well known and well respected within the EMS system in the county, and is an active participant in every aspect of EMS in Patrick County, including PI and TPI programs for each of the agencies in the county, as well as monitoring the Emergency Medical Technician (EMT) program at the hospital.

Additionally, Dr. Rowell is a member of the WVEMS Medical Direction Committee, and has been an active participant in review and revision of regional treatment and transport protocols, including the most recent revision in 2006.

In addition to the OMD support, Patrick County EMS providers utilize the protocols established by the WVEMS Medical Direction Committee for off-line medical direction, and are able to receive on-line medical direction from the RJRPCMH ED at any time.

Quality Assurance

In calendar years 2005 and 2006, a total of 1,510 and 1,762 PPCR reports were submitted to OEMS by agencies in Patrick County. This number is based on EMS responses based in Patrick County only. Out of the total number of EMS calls for 2005, 38.2% of those calls were ALS, and 39.8% of the calls in 2006 were ALS.

In terms of Trauma versus Medical, all EMS responses with an incident disposition of either "transported" or "treated/transferred care" were considered in the evaluation. Additionally, "trauma" was determined to be any PPCR report with a clinical assessment equal to "traumatic injury", and call type not equal to "medical emergency". For "medical", PPCR reports had a clinical assessment not including "traumatic injury", and a call type of "medical emergency". Based on those criteria, 8.3% of the calls in Patrick County in 2005, and 6.3% of the calls in 2006 were classified as "Trauma".

Based on PPCR data, RJRPCMH received 55% and 51% of patients transported by Patrick County agencies in 2005 and 2006, respectively. Of note is the fact that 10% of reports in 2005, and 13% of all reports in 2006 had "No hospital listed" as their destination.

Also of note is that 17% of all patients in 2005 and 18% of all patients in 2006 went to hospitals out of state (North Carolina), and 11% of patients in both 2005 and 2006 went to the Memorial Hospital of Martinsville and Henry County, in Martinsville.

In terms of response data, response times for each agency have been mentioned previously in this report, and response times to medical facilities vary as well. Based on data reviewed for 2005 and 2006, transport times for Patrick County agencies averaged 19.5 and 23 minutes, respectively. RJRPCMH PTS had transport times exceeding 30 minutes in both 2005 and 2006.

For transfers from RJRPCMH to other hospitals, the overwhelming majority of patient transfers are done by RJRPCMH PTS. The hospital is in need of a new ambulance as its current truck has over 300,000 miles.

Most of the volunteer EMS agencies in the county do not transport patients outside the county because this would leave their agencies without coverage locally.

RJRPCMH PTS contracts with the local nursing home for routine transports as well. The hospital has a 25 bed nursing home. Approximately 47% of these transfers for the PTS are emergency transports versus 53% scheduled transports. Occasionally the hospital will call Stone's Ambulance Service in Martinsville (commercial ambulance service) for a transfer. The Veterans Administration will transfer its patients from RJRPCMH.

In the past twelve months, the hospital has not been unable to admit patients from the Emergency Department (ED) due to a lack of available beds.

All patients are transferred outside of the county to a supporting hospital for care. Transfers from RJRPCMH [98 (YTD 2007); 356 (2006)] to the following supporting hospitals:

- Wake Forest University Baptist Hospital (WFBH), Winston-Salem, NC
- Forsyth Memorial Hospital (FMH), Winston-Salem, North Carolina
- Carilion Roanoke Memorial Hospital (CRMH), Roanoke, Virginia
- UVA Medical Center (UVA), Charlottesville, Virginia
- Brennan's Children Hospital (BCH), Greensboro, North Carolina
- Martinsville Memorial Hospital (MMH), Martinsville, Virginia. RJRPCMH uses this hospital for outpatient x-rays as well.

Transport times and distances for these facilities are as follows:

- WFBH: 68 miles; 55 minutes
- FMH: 56 miles; 60 minutes
- CRMH: 76 miles; 1 hour 10 minutes
- UVA: 189 miles; 3 hours
- BCH: 68 miles; 55 minutes
- MMH: 27 miles; 30 minutes

Transfers are dependent on patient diagnosis, and transports often occur for services not available at the CAH, including: Cardiac Care, Labor and Delivery, Orthopedic Services, and CT Scan. The hospital does have a helipad on site, and is serviced primarily by Wake Forest Air Care, and Carilion Roanoke Memorial Hospital Life Guard 10.

As was stated previously, all agencies in Patrick County have established PI programs. These programs involve regular reviews of PPCR reports completed by the respective agency, and include the participation of Dr. Rowell. However, upon agency inspection by OEMS Field Representatives in 2007, Blue Ridge Rescue squad was found to be in need of more detailed documentation of agency PI activity and PPCR reviews, and Jeb Stuart Rescue Squad has no documentation that PPCRs are being reviewed on a regular basis.. This may or may not be

indicative of a lack of regular reviews, but rather a lack of proper documentation of such. These are correctable action items, and did not negatively affect the agency's inspection.

Additionally, in reviewing PPCR submission compliance information for 12 quarters for calendar years 2004-2006, Jeb Stuart, Smith River, and Vesta Rescue Squads had missing information for one or more quarters.

Mass Casualty Preparedness

In the event of a large scale emergency, RJRPCMH has the surge capacity for up to 20 additional beds, in addition to the five ED, and 25 regular beds currently in place at the hospital. Future expansion plans for the ED at RJRPCMH include a capacity of eight beds, and three specialty evaluation rooms.

The Near Southwest Preparedness Alliance has provided emergency and disaster training to both the CAH and the EMS agencies in Patrick County.

System Partnerships

All of the EMS agencies within Patrick County have mutual aid agreements in place, both with each other, and with agencies in counties that adjoin Patrick, including those counties that are in the state of North Carolina. There is also a strong working relationship that exists between the county EMS agencies, and the county administration, the county sheriff's office.

Based on interviews conducted and review of survey information, three EMS agencies were unable to define a Critical Access Hospital (CAH) and did not identify RJ Reynolds Patrick County Memorial Hospital as a CAH. All agencies transport patients to the CAH and communicate en route with the hospital's ED. Two agencies reported that they had been redirected to another ED by the CAH primarily due to the lack of CT services at the hospital. Although the CAH does not reimburse these agencies for the transports, they have a restocking agreement with all the County volunteer EMS agencies at no charge to these agencies. They provide 14 to 15 drug boxes/year to each agency as well as other patient care supplies and linens.

Hospital Capabilities

RJRPCMH has one physician on staff in the ED 24 hours a day, 7 days a week. The hospital contracts with United Emergency Services for this position. In addition, the hospital contracts with Night Hawk Radiology Services for radiology review services 24 hours a day, 7 days a week. One nurse and one unit secretary are on staff 24 hours a day, 7 days a week as well. RJRPCMH PTS employees work as patient care assistants when not on EMS calls, often handling tasks such as, but not limited to: patient assessment and triage, IV's, phlebotomy, and EKG's.

RJRPCMh has had a volume of patients in the ED of 968 patients in 2006. As of January - March 2007, they had seen 170 patients. They do not track ALS versus BLS. The type of patients they receive was reported as follows:

Trauma: 24.8% (YTD 2007); 24.4% (2006)
Behavioral: 2.4% (YTD 2007); 2.2% (2006)
Toxic: 2.2% (YTD 2007); 4.6% (2006)
Cardiac: 1.9% (YTD 2007); 2.9% (2006)
Burns: 0.3% (YTD 2007); 0.4% (2006)
Total Rechecks: 0.3% (YTD 2007); 0.3% (2006)
Perinatal: 0.2% (YTD 2007); 0.1% (2006)

Patient Disposition information (outside of regular discharge) is as follows:

Admits: 5.9% (YTD 2007); 7.3% (2006)
LWOT: 0.5% (YTD 2007); 0.3% (2006)
AMA: 0.4% (YTD 2007); 0.7% (2006)
Transfers: 7.1% (YTD 2007); 5.6% (2006)
Expired: 0.4% (YTD 2007); 0.1% (2006)

Network agreements exist with Wake Forest University Baptist Hospital (WFBH), Winston-Salem, NC, and transfer agreements with the other hospitals listed previously in this report. RJRPCMh does not track the equipment that may be used for transfers, or the number and percentage of transfers where hospital staff (nurse and/or respiratory therapist) accompanied the EMS crew.

V. Key Findings and Recommendations

For each area evaluated in the information in Section IV of this report, key findings, as well as some recommendations for future feasibilities will be made.

Staffing/Placement of EMS Units:

Key Findings:

In Patrick County, there are 101 certified EMTs for the population size of 19,407 people, or 1 EMT for every 192 people in the county. This is a higher rate compared to the total number of EMTs versus people in the Commonwealth of 1 to 204.

The number of volunteer versus career providers also seems to be comparable to most rural counties in Virginia, with a majority of providers being affiliated with volunteer agencies. None of the agencies that participated in interviews mentioned the recruitment or retention of EMS providers as issues that their respective agencies are currently facing. The age, gender, and race of EMS providers in Patrick seem to be relatively consistent with the demographic information of the county as a whole.

In terms of hours of EMS coverage in the county, as response times, the mere fact that PTS provides dedicated 24/7 staffing certainly aids in keeping response times down. Obviously, the extreme remoteness of the county, and the response and transport times are significant as a key finding.

Recruitment and retention initiatives are varied, and most of the agencies reported doing something in terms of both recruitment and retention. Some agencies reported no programs in place whatsoever.

Recommendation 1:

OEMS recommends that volunteer agencies in Patrick County utilize the “Keeping the Best” series of recruitment and retention workbooks offered to all EMS agencies by OEMS, in order to maintain, and increase their agency rosters. While it may be that they may not be facing urgent staffing issues, it is also appropriate to continue to strive to maintain and increase current provider numbers.

EMS Training Initiatives

Key findings:

It seems that educational opportunities for providers in Patrick are relatively robust, with educational opportunities for individuals who wish to become certified as EMTs and advanced level EMTs, as well as continuing education hours, and specialty courses, such as ITLS and PEPP. It is worth noting that the level of involvement in EMS training by CAH nursing staff is remarkable.

WVEMS is doing an acceptable job of making those courses available to those providers within that planning district.

The one item of note is the low numbers of providers who are enrolling, and completing these courses, but at the same time, the numbers of advanced level providers in the county are relatively low as well.

Recommendation 2:

EMS System stakeholders, including the CAH, WVEMS, and the individual agencies themselves, should continue to work collaboratively to ensure that opportunities for providers to obtain or maintain EMS certification.

Communications

Key Findings:

Like many other rural areas, Patrick struggles with the ability to have reliable radio and cellular coverage over 100% of the county.

It is also worth making note of the fact that high numbers of agencies provide patient report information to the CAH, and are even able to send cardiac monitoring information to the CAH prior to arrival.

One item of mention is the fact that none of the agencies, or county representatives reported any efforts being made to improve the communications system.

Recommendation 3:

Patrick County governmental administration should work collaboratively with internal and external entities and resources to upgrade communications abilities in Patrick County. Grant opportunities, through various funding streams (Virginia Rescue Squad Assistance Fund, Department of Homeland Security) should be sought out to assist in building equipment and infrastructure to reduce the number of “dead areas” in Patrick County. Additionally, RJRPCMH should work collaboratively with transport agencies to promote the use of transmission of 12 Lead EKG information from the field.

Fiscal Support

Key findings:

During the evaluation process, none of the agencies that participated stated that finances were an issue, though both agencies that bill for service stated that they have collections rates of less than 50%.

Additionally, it is worth reporting that agencies are consistent in applying, as well as receiving RSAF funds. Over \$700,000 has been awarded to agencies in Patrick County in the past 10 years of RSAF grant cycles.

Recommendation 4:

Eligible agencies in Patrick County should continue to apply for RSAF grant funding on a consistent basis, in order to obtain updated vehicles and equipment.

Additionally, agencies that are billing for service should strive to improve their collection rates for additional revenue. OEMS does have guidance documents to assist those agencies who bill for service, or wish to bill for service, which may be helpful to these agencies.

Medical Direction

Key findings:

The agencies of Patrick are fortunate to have active involvement by Dr. Rowell. The fact that she is also the ED director of the CAH lends to maintain strong positive working relationships between the CAH and the EMS system in the county.

Dr. Rowell has had a major positive effect on system and protocol development, and in provision of online and offline medical direction.

Finally, Dr. Rowell is an active participant in performance improvement processes in place by the respective agencies she is affiliated with.

Recommendation 5:

Dr. Rowell should continue to maintain the relationships with the EMS agencies that exists, as well as provide mentoring opportunities to other doctors who may have interest in the OMD process. Additionally, involvement of Dr. Charles Lane, who serves as the Regional Medical Director, and the participation of interested physicians in the OMD training course may also provide useful in furthering the EMS system in Patrick County as a whole.

Quality Assurance

Key Findings:

In reviewing reports and data related to quality assurance, it seems that Patrick County agencies are similar to most rural agencies in Virginia in terms of volume, response times, and transport times. Additionally, the level of care that is provided, and the percentage of emergencies that are medical is also comparable to other rural agencies in the Commonwealth.

In terms of CAH interfacility transports, RJRPCMH seems to be relatively comparable to other CAH facilities and rural hospitals in terms of the number of transfers, and the reasons for those transports. It is obvious and acceptable that RJRPCMH not have the means to provide specialty service for every type of medical condition, otherwise they would not have received CAH designation, but it is a good indication of strong collaboration that the CAH has agreements in place for transports of patients to other facilities. Study reviewers understand the issues that may arise in those processes, which may delay transport.

However, reviewers did discover deficiencies related to regular performance improvement activities by some of the agencies, as well as a lack of consistent data reporting.

Recommendation 6a:

It is recommended that EMS agencies continue to strive to improve response times. Strategic placement of EMS units may assist in this process. In terms of transports from the CAH to other facilities, it is recommended that RJRPCMH continues to work collaboratively with its partner facilities to maintain network agreements, and provide an effective interfacility transport system.

Recommendation 6b:

WVEMS should work to assist those agencies in Patrick County to fulfill their required responsibilities related to performance improvement, including providing guidance documents and templates, in order to strengthen those agency performance improvement programs.

Mass Casualty Preparedness/System Partnerships

Key Findings:

The NSPA is providing the organizational structure and planning to address mass casualty/surge capacity events. RJRPCMH has preparedness policies in place to address such events. Also, several training opportunities are offered to CAH and EMS staff for Mass Casualty events.

It seems that network agreements between the CAH and partner facilities, as well as mutual aid agreements between EMS agencies in Patrick County, and areas outside of Patrick, are in place, and being honored.

Recommendation 7:

NSPA should continue to set the pace in terms of Mass Casualty Preparedness, with participation and cooperation from the CAH. Additionally, EMS agencies in Patrick should review, revise, and update mutual aid agreements on an annual basis.

Hospital Capabilities

Key Findings

One of the items that stood out in evaluating the capabilities of the CAH is the information that could be useful to the EMS System that is not tracked or gathered by the CAH. It would be very helpful, for this evaluation, or for future similar evaluations, that RJRPCMH use their database to determine walk in versus transport by EMS agency, as well as categorize by specific EMS agency. It seems that staffing levels are appropriate for patient volume. Additionally, as has been stated previously, transport numbers and patterns seem consistent with other CAH facilities. It would be helpful to reviewers in the future for the CAH to provide specific information regarding numbers and percentages of transports to specific facilities.

Recommendation 8:

The CAH should seek to collect data information as stated above.

Conclusion:

The Virginia OEMS believes that between existing and continuing efforts to maintain and improve the EMS System in Patrick County, coupled with the recommendations that have been made in this report, that the EMS system in Patrick County will be better than ever as it moves into the future. The Virginia OEMS remains committed to provide whatever materials are necessary to meet that goal.

Study Participants:

RJ Reynolds –Patrick County Memorial Hospital
Janice Wilkins
Leslie Mordue
Dr. Diane Rowell

Patrick County Administration:

Mike Burnette
Sheriff David Hubbard
Mickie Martin

Patrick County EMS Agencies:

Ed Hartman
Sheila Marshall
Jane Fulk
Charles Pack
Crystal Harris
Jonathan Nowlin

Appendices:

Appendix 1 - Western Virginia EMS Council Report to OEMS

Appendix 2 – Responses to survey questions by study participants.