

# Final Report

## Emergency Medical Services System Study Shenandoah County, Virginia April, 2009

Prepared for:  
Virginia Department of Health  
Office of Minority Health and Public Health Policy

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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 Minority Health and Public Health Policy (hereinafter mentioned as “OMHPP”) to provide a comprehensive assessment of the Emergency Medical Services (hereinafter mentioned as “EMS”) system surrounding the Critical Access Hospital (hereinafter mentioned as “CAH”), Shenandoah Memorial Hospital (hereinafter mentioned as “SMH”), located in Woodstock, Shenandoah County, Virginia, which 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:

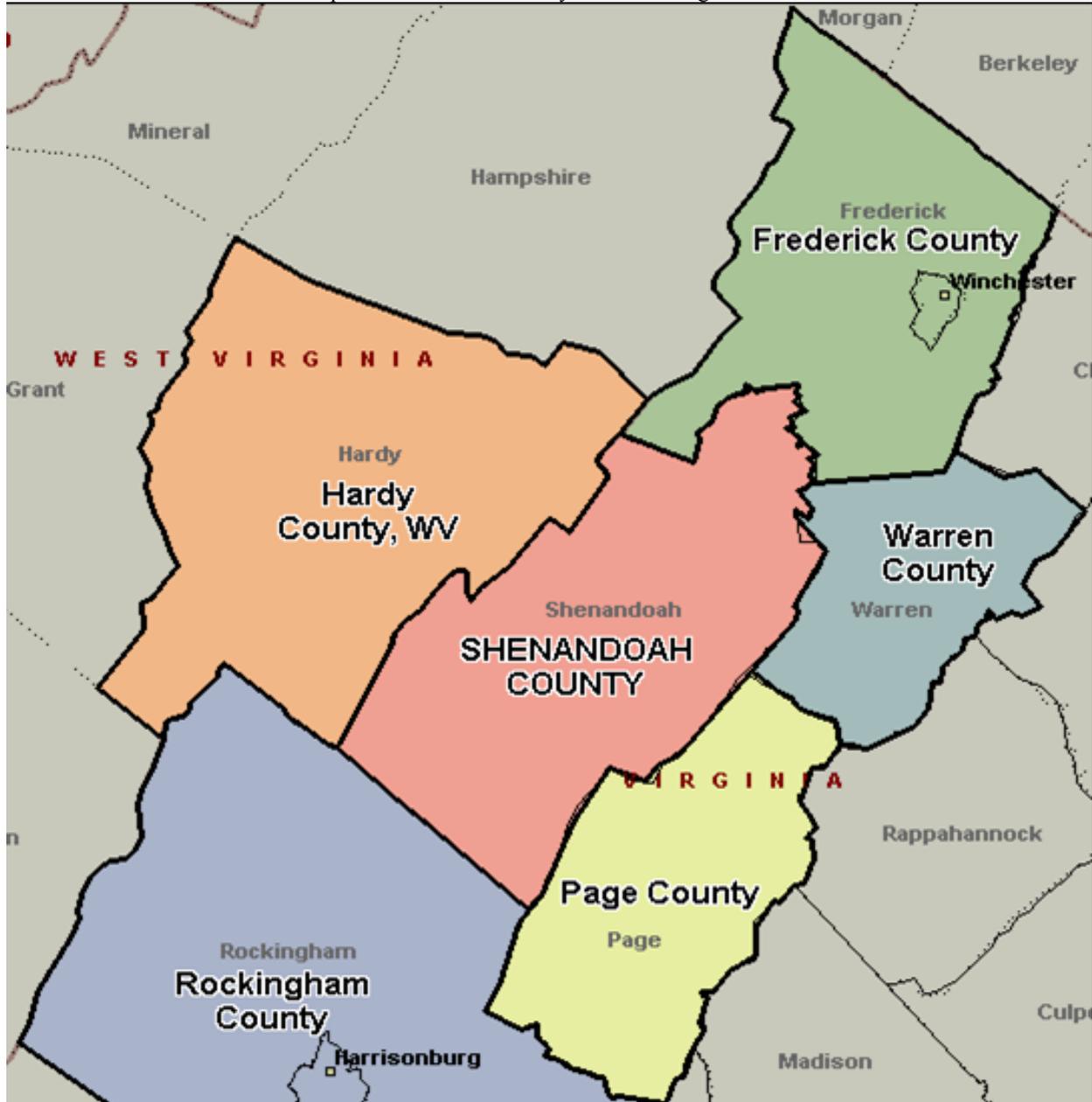
- Physical location in a state that has an established Medicare Rural Hospital Flexibility Program (Flex Program)
- Be located in a rural area
- Provide 24 hour emergency care services, using on site or on call staff
- Provide no more than 25 inpatient beds
- Have an average length of stay of 96 hours 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 2008, and early 2009, staff from OEMS 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.

## II. Introduction

Shenandoah County, Virginia is a predominantly rural county nestled in the Blue Ridge Mountains in the Shenandoah Valley portion of the Commonwealth of Virginia. It is bordered by Frederick, Page, Rockingham, and Warren Counties of Virginia, and Hardy County, West Virginia. (See Map 1).

Map 1 – Shenandoah County and Bordering Counties



According to the 2000 Census, the population of Shenandoah County is 35,075 people. The county size is 513 square miles, with a population density of 68 people per square mile.

The age distribution among the residents of Shenandoah County is as follows:

- 22.3% are under the age of 18.
- 6.6% are in the 18 to 24 age group.
- 27.6% are in the 25 to 44 age group.
- 26.2% are in the 45 to 64 age group.
- 17.3% are 65 or older.

The median age is 41 years old.

Additionally, the gender distribution is 100 women to 94.9 men; and 100 women to 92.8 men over 18 years of age.

Race distribution is as follows:

- 95.6% White
- 3.4% Hispanic/Latino
- 1.2% African American
- Less than 1% of the following groups, respectively:  
Native American, Asian, and "other".

The county seat of Shenandoah County is the town of Woodstock, which is also the location of SMH, Shenandoah County Fire and Rescue, the Woodstock Volunteer Rescue Squad, the county sheriff, 911 center, and county administration offices.

SMH is a not for profit hospital built in 1950, and is part of the Valley Health System, one of the largest healthcare networks in Virginia, and is the only hospital within the geographic boundaries of Shenandoah County. Valley Health also is the owner of another CAH facility, Page Memorial Hospital in Luray in the neighboring county of Page. SMH received designation as a CAH facility in August of 2004. During their designation process, no deficiencies were noted, no recommendations for specific needs or initiatives related to the EMS system were made during the designation process, and the only significant changes of any policy or procedure are related to patient census, as SMH closely monitors both the census and length of patient stay. SMH administration did report that the census and length of stay has at times had an impact on transports of patients located in geographic outliers to other facilities. No changes to policy or procedure have taken place as a result of CAH designation. SMH has also been accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO).

SMH is arguably the largest Critical Access Hospital in Virginia, with a twelve bed Emergency Department, a six bed Intensive Care Unit, a twenty bed Medical/Surgical Unit, and an eight bed Birthing Center. SMH has a full service laboratory 24 hours a day with a blood bank, and daytime pharmacy hours 7 days a week. SMH does between 250-300 ambulatory surgery procedures per month, and has implemented an electronic bar coding system for all patient orders. SMH is also served by Valley Medical Transport (VMT), a division within Valley Health, which provides interfacility transports from SMH to network hospitals, primarily Winchester Medical Center in Winchester, Virginia. VMT also has an agreement with the Woodstock Volunteer Rescue Squad to house the VMT ambulance during down time, and overnight hours.

There are nine EMS agencies in Shenandoah County that are licensed by OEMS. They are Conicville Volunteer Fire Department, Fort Valley Volunteer Fire Department, Mount Jackson Rescue and Fire Department, New Market Volunteer Rescue Squad, Orkney Springs Fire and Rescue, Shenandoah County Fire and Rescue, Strasburg Volunteer Rescue Squad, Toms Brook Volunteer Fire Department, and the Woodstock Volunteer Rescue Squad. Shenandoah County Fire & Rescue employs EMS providers to augment volunteer staffing at the Mount Jackson Rescue and Fire Department, New Market Volunteer Rescue Squad, Strasburg Fire Department, Toms Brook Volunteer Fire Department, and the Woodstock Volunteer Rescue Squad.

### III. Purpose and Methods of the EMS System Study

As outlined in the scope of services within the Memorandum of Agreement between the OMHPHP 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. Formal interviews and site visits were conducted with various stakeholders of the EMS System in Shenandoah County. Additionally, formal interviews and a site visit was conducted with staff from SMH, including the President. These interviews and site visits were held to gather information regarding the relationship between the CAH and the EMS System, and vice versa, as well as to determine the capabilities of both the CAH, and the EMS System in Shenandoah.
2. Representatives from the Mount Jackson Rescue and Fire Department, New Market Volunteer Rescue Squad, Orkney Springs Fire and Rescue, Shenandoah County Fire and Rescue, Strasburg Volunteer Rescue Squad, and the Woodstock Volunteer Rescue Squad all 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 participants is attached to this report, as "Appendix 1"

3. Several documents were reviewed in preparation for the study report, including:
  - All documents related to the CAH designation by SMH.
  - EMS network agreements for SMH, 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 Shenandoah County.
  - OEMS PPCR database information for all EMS calls within Shenandoah County for calendar years 2006 and 2007.
  - OEMS Technician database information for all certified EMS providers within Shenandoah County.
  - Existing Mutual Aid agreements between Fire and EMS agencies in Shenandoah County.
  - Rescue Squad Assistance Fund (RSAF) information for all EMS agencies within Shenandoah County for 1998-2008 grant cycles, including items awarded and denied.
  - Return to Locality (RTL) funds received by Shenandoah County and distributed to Shenandoah County EMS agencies.

**IV. Study Results**

The results of the study of the EMS System and the Critical Access Hospital in Shenandoah County brought forth a great deal of information. As mentioned previously in the purpose and methods of the study, several components were examined.

**Demographics:**

Demographic information for Shenandoah County mentioned in the Introduction section of this report, 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.

**Staffing:**

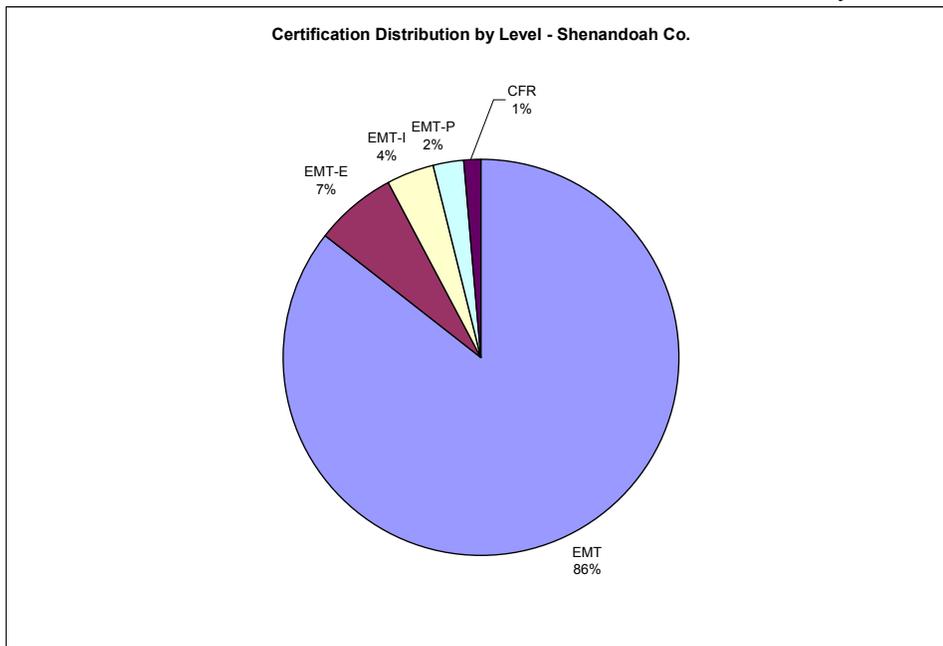
There are 208 certified EMS providers in Shenandoah County. The distribution of providers by level is below:

Table 1 – Distribution of Certified Providers in Shenandoah County

<b>Certification Level</b>	<b>Number of Certified Providers</b>
Emergency Medical Technician (EMT)	178 (85.5% of total providers in county)
EMT – Enhanced (EMT-E)	14 (6.7%)
EMT – Intermediate (EMT-I)	8 (3.8%)
EMT – Paramedic (EMT-P)	5 (2.4%)
Certified First Responder (CFR)	3 (1.4%)
<b>Total</b>	<b>208</b>

Source: Virginia OEMS Division of Educational Development Provider Database

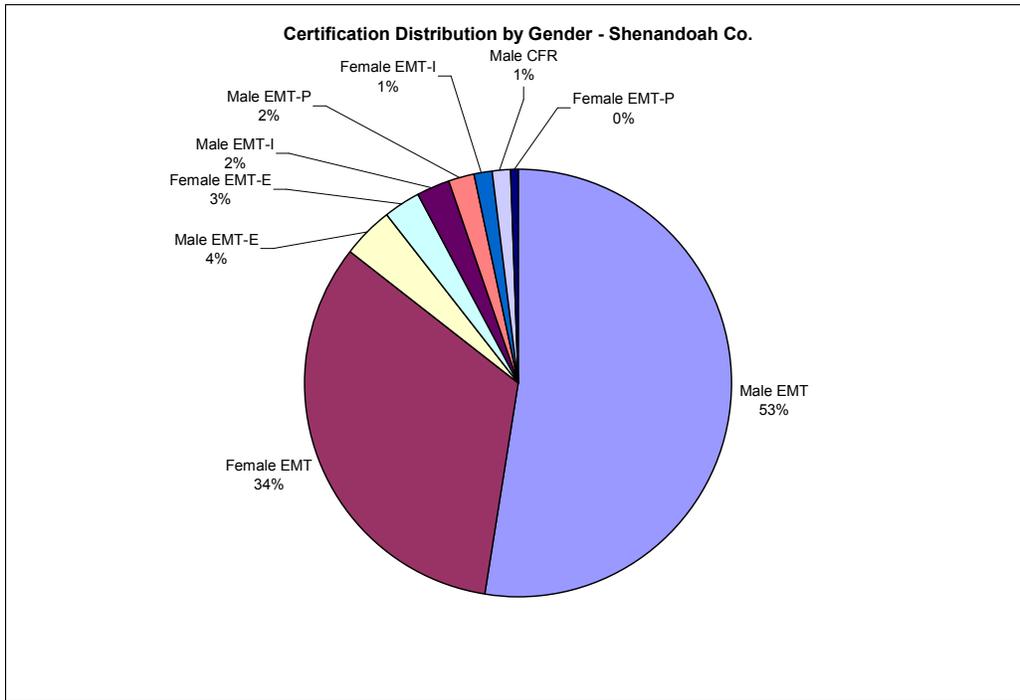
Chart 1 - Distribution of Certified Providers in Shenandoah County



Source: Virginia OEMS Division of Educational Development Provider Database

Additionally, there is a distribution of certified EMS provider by gender and level, as outlined in the following chart:

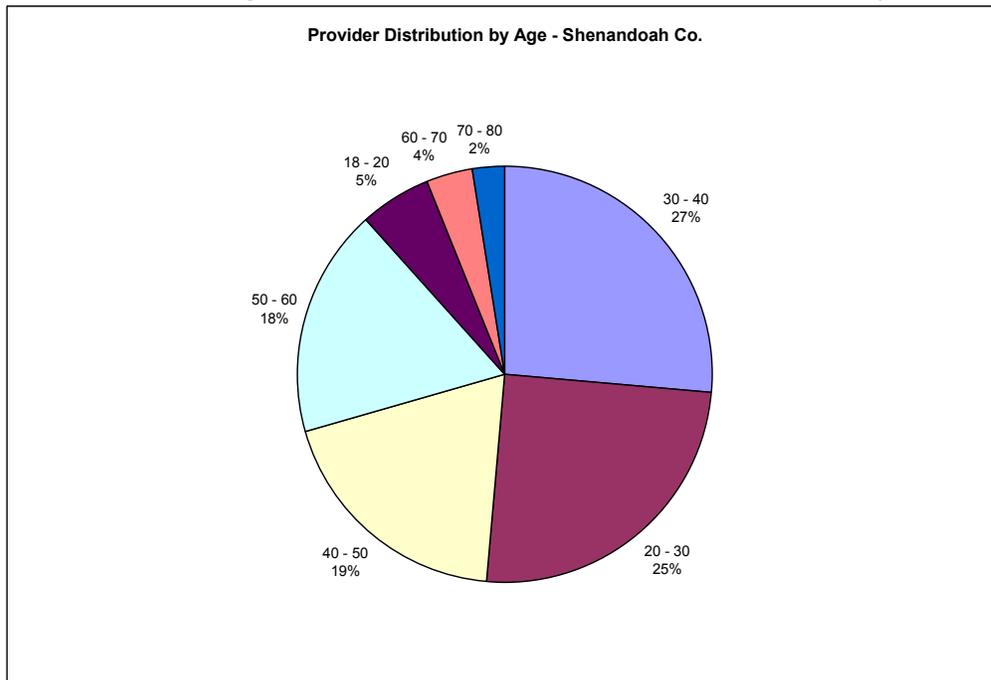
Chart 2 - Distribution of Certified Providers in Shenandoah County by Level and Gender



Source: Virginia OEMS Division of Educational Development Provider Database

The age distribution of EMS Providers in Shenandoah County is reflected in the graph below:

Chart 3 – Age Distribution of Certified Providers in Shenandoah County



Source: Virginia OEMS Division of Educational Development Provider Database

## EMS Coverage to Shenandoah County

Staffing of local EMS agencies within Shenandoah County varies from volunteer to career agencies; and in numbers as well. Conicville Volunteer Fire Department, Mount Jackson Rescue and Fire Department, New Market Volunteer Rescue Squad, Orkney Springs Fire and Rescue, Shenandoah County Fire and Rescue, Strasburg Volunteer Rescue Squad, and the Woodstock Volunteer Rescue Squad are licensed by OEMS as EMS transport services. Fort Valley Volunteer Fire Department and Toms Brook Volunteer Fire Department are licensed as non-transport services. Shenandoah County Fire & Rescue employs EMS providers to augment volunteer staffing at the Mount Jackson Rescue and Fire Department, New Market Volunteer Rescue Squad, Strasburg Volunteer Fire Department, Toms Brook Volunteer Fire Department, and the Woodstock Volunteer Rescue Squad. The remainder of EMS coverage is provided by volunteer providers on a 24 hour day/ 7 day week basis.

The only career EMS services are: Shenandoah County Fire and Rescue (SCFR), which has 28 career providers, with another 21 providers who volunteer for SCFR. SCFR career providers staff the Strasburg Fire Department and New Market Rescue Squad 24 hours a day, 7 days a week. SCFR staffs the Toms Brook Fire Department, Woodstock Volunteer Rescue Squad, and Mount Jackson Fire and Rescue for 10 hour daytime hour shifts, and staffs Advanced Life Support First Response Vehicles at the Strasburg Fire Department, and Mount Jackson Fire and Rescue for 10 hour weekday daytime (6:00 am to 4:00pm) shifts. Valley Medical Transport (VMT) has an agreement with SMH to provide interfacility transport service, and has a mutual aid agreement with Shenandoah County for 911 responses, but is rarely needed for 911 responses. VMT staffs one ambulance from 7:00 am to 7:00pm 7 days a week. The remaining agencies in Shenandoah County are staffed by volunteer providers.

The table below outlines the coverage of Shenandoah County by each agency:

Table 2 – EMS Coverage in Shenandoah County by Agency

Agency	24/7 Service	In-house	Standby (Pager)
Conicville VFD	Unknown	Unknown	Unknown
Fort Valley VFD	Unknown	Unknown	Unknown
Mount Jackson Rescue & FD	Yes	Daytime paid staff, night time and weekend volunteers	Occasionally overnight hours
New Market VRS	Yes	Career staff, with volunteer augmentation.	Rarely
Orkney Springs Fire and Rescue	Yes	Rare	Primary coverage, especially during day hours.
Strasburg VRS	Yes	Rare	Primary coverage
Toms Brook VFD	Unknown	Daytime paid staff, night time and weekend volunteers	Unknown
Woodstock VRS	Yes	Daytime paid staff, night time and weekend volunteers	Coverage during night/weekend hours

Source: OEMS interviews with Shenandoah County EMS Agency representatives

Shenandoah County differs from other CAH counties, in that SCFR has had a dedicated Public Information and Education staff position for quite some time. This position has done several things to improve the recruitment and retention of EMS Providers in Shenandoah County, including: hosting a Leadership Training Series for EMS leaders and managers, making training and continuing education (CE) available for all agencies and providers in the county, providing criminal background checks for all prospective EMS providers free of charge, utilizing local media outlets for recruitment purposes, including a recruitment and retention section on the SCFR website, working with local businesses to offer discount opportunities to volunteers, providing signage and banners for agency open houses, holding an annual appreciation picnic for volunteers, and streamlining the orientation process for new providers and employees.

In addition to the efforts of SCFR, other agencies also provide uniforms and turnout gear, reimbursement for attendance at the Virginia EMS Symposium, and public information at events throughout the county.

During interviews with both SMH administration and with agency representatives, there was no evidence of involvement by SMH in recruitment and/or retention initiatives.

### **Response Times and Strategic Placement of EMS Units**

For the purposes of this evaluation, response time is defined as dispatch (call processing time) time (time from initial receipt of call by PSAP until EMS unit is alerted) plus reaction time (time from initial receipt of call by EMS unit until wheels are rolling) plus travel time (time from wheels rolling on EMS unit until arrive on scene.).

Countywide, the average response times for EMS agencies were 9 minutes in both 2006 and 2007, based on the review of PPCR data submitted by those agencies. Individually, response times ranged from 7 minutes to 20 minutes for both 2006 and 2007. Some of the agencies utilize strategic placement of vehicles based on call volume, but on occasion will move vehicles to different areas of their response territory if a neighboring agency transports a patient out of the county, or will have a long transport to the hospital. All of the agencies that have utilized strategic placement have seen improvements in response times, but did not produce supporting documentation.

### **EMS Training Initiatives**

The EMS training and continuing education (CE) opportunities for agencies and providers in Shenandoah County are relatively plentiful. EMS providers in the county are fortunate in the fact that many course offerings are available in county, and do not require significant travel outside of the county, which providers in similarly rural counties often have to do in order to receive the training that they need.

Much of the training and CE is provided by Shenandoah County EMS itself, and involves both BLS training and CE. EMT-Intermediate and EMT-Enhanced courses are offered through Lord Fairfax Community College in Middletown, VA, which is roughly 30 minutes in travel time.

During interviews, SMH administration stated that SMH does allow EMS providers to participate in “Merit Badge” courses (ACLS, PALS, etc), and provides for EMT students to do clinical hours in the ED of the hospital.

Additionally, many of the agencies in Shenandoah County report obtaining CE through the use of the Emergency Medical Services Satellite Training (EMSAT) Program which is a training and information program developed and produced by the Virginia OEMS for Virginia EMS and Fire personnel, giving category III continuing education credit for viewing EMSAT DVDs.

## **Communications**

Shenandoah County has had Enhanced – 911 (E-911) since approximately 1999. EMS dispatch is provided through cross trained dispatchers employed by Shenandoah County, and utilize Emergency Medical Dispatch (EMD) pre arrival instructions when receiving 911 medical calls to the dispatch center. All of the EMS agencies in Shenandoah County utilize radio and/or cellular phone communication to communicate with the CAH; however, certain areas of Shenandoah County have “dead areas” where radio and cell phone communication are difficult. These agencies provide patient report information prior to their arrival to the hospital 75 to 100% of the time. Additionally, Shenandoah County agencies do not own cardiac monitors with the ability to transmit telemetry information to SMH, but SMH does have telemetry receiving capability.

## **Resource Management**

There are 33 permitted EMS vehicles among the nine licensed agencies in Shenandoah County. This includes 19 Ambulances, eight ALS first response/non-transport vehicles, and five BLS non transport vehicles.

As of the last inspections of each agency in Shenandoah County by OEMS field representatives conducted between February of 2007 and October of 2008, all vehicles were in good working condition, without any mechanical failures noted in inspection reports. The vehicles range in age from less than one to 25 years of age at the time of inspection. Conicville VFD, Orkney Springs Fire and Rescue, and Strasburg VRS are due for vehicle inspections in 2009.

In terms of aeromedical service, Shenandoah County is primarily served by UVA Pegasus Flight Operations out of the University of Virginia Medical Center in Charlottesville, and PHI AirCare IV, based out of Winchester, VA. Based on review of PPCR data from 2006 and 2007, medevac services responded to calls in Shenandoah County 11 times, and 54 times, respectively, with no explanation available for the increase in volume.

## **Fiscal Support**

For Fiscal Year 2006 and 2007, Shenandoah County received \$70,191.00 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. Shenandoah County uses these funds to assist in matching funds for equipment purchases by the EMS agencies within Shenandoah County.

The funding distribution for both 2006 and 2007 are reflected in the tables below:

Table 3 – RTL Funding Distribution - Shenandoah County

<b>Shenandoah County – Return to Locality – Fiscal Year 2006</b>				
<b>Agency Receiving Funds</b>	<b>Summary of Use of Funds</b>			
	Training	Equipment	Supplies	Total
Mount Jackson VRS	\$0.00	\$1,973.00	\$4,820.00	\$6,973.00
New Market VRS	\$3,800.00	\$0.00	\$2,993.00	\$6,973.00
Orkney Springs Fire & Rescue	\$524.00	\$6,269.00	\$0.00	\$6,973.00
Strasburg VRS	\$0.00	\$6,973.00	\$0.00	\$6,973.00
Woodstock VRS	\$1,748.80	\$3,915.17	\$1,129.03	\$6,973.00
Carryover (Funds Not Expended)				\$0.00
<b>Totals</b>	<b>\$6,072.80</b>	<b>\$18,950.17</b>	<b>\$8,942.03</b>	<b>\$33,965.00</b>

<b>Shenandoah County – Return to Locality – Fiscal Year 2007</b>				
<b>Agency Receiving Funds</b>	<b>Summary of Use of Funds</b>			
	Training	Equipment	Supplies	Total
Mount Jackson VRS	\$0.00	\$5,464.20	\$1,779.00	\$7,243.20
New Market VRS	\$7,243.20	\$0.00	\$0.00	\$7,243.20
Orkney Springs Fire & Rescue	\$0.00	\$2,433.00	\$4,810.20	\$7,243.20
Strasburg VRS	\$0.00	\$7,243.20	\$0.00	\$7,243.20
Woodstock VRS	\$3,180.32	\$2,573.28	\$1,489.60	\$7,243.20
Carryover (Funds Not Expended)				\$0.00
<b>Totals</b>	<b>\$10,423.32</b>	<b>\$17,713.68</b>	<b>\$8,078.88</b>	<b>\$36,216.00</b>

Source: OEMS RTL Reports from Shenandoah County

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

None of the EMS agencies in Shenandoah County have fee for service programs in place. SCFR representatives interviewed reported that a task force has been created to evaluate the impact of implementation of a fee for service program would have on the EMS system in the county. Orkney Springs Fire and Rescue is also currently looking into a fee for service program.

### **Rescue Squad Assistance Fund – Recent History**

Shenandoah County agencies have participated in RSAF grant process in reviewing RSAF records from 1998 to 2008.

In that time, all of the EMS agencies in Shenandoah County have been awarded funds for vehicle and equipment purchases at a total of \$438,535.93.

Items of note include the fact that the New Market Volunteer Rescue Squad and Orkney Springs Fire and Rescue have never applied for any RSAF funding, and the Strasburg Volunteer Rescue Squad and Toms Brook Volunteer Fire Department have not applied for RSAF funding since 2005.

Table 4 - RSAF Awards for Shenandoah County – June 1998 to June 2008:

<b>Conicville Volunteer Fire Department</b>			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
06/2004	7 Radio Pagers	\$1,575.00	50%
	<b>Total Award Amounts</b>	<b>\$1,575.00</b>	

<b>Fort Valley Volunteer Fire Department</b>			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
09/2000	1 Computer System	\$1,000.00	0%
06/2004	1 First Response Vehicle	\$13,843.00	50%
06/2004	1 Defibrillator	\$1,792.00	20%
06/2008	1 Ambulance	\$81,391.20	20%
06/2008	1 Ambulance Stretcher	\$3,564.00	20%
12/2008	1 12 Lead Monitor/Defibrillator	\$9,241.50	50%
12/2008	1 Stair Chair	\$1,173.50	50%
	<b>Total Award Amounts</b>	<b>\$112,005.20</b>	

<b>Mount Jackson Rescue &amp; Fire Department</b>			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
12/2008	1 Ambulance	\$124,224.80	20%
	<b>Total Award Amounts</b>	<b>\$124,224.80</b>	

<b>Shenandoah County Fire &amp; Rescue</b>			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
06/2000	1 Computer File Server	\$1,500.00	50%
06/2000	1 Computer System	\$1,250.00	50%
06/2000	Professional Development Trng.	\$5,000.00	50%
12/2002	2 Pediatric Training Manikins	\$3,470.00	50%
12/2005	1 EMS Recruitment Program	\$3,000.00	50%
12/2007	1 12 Lead Monitor/Defibrillator	\$36,843.10	50%
12/2007	1 Automatic Defibrillator	\$1,467.44	50%
	<b>Total Award Amounts</b>	<b>\$74,655.54</b>	

<b>Strasburg Volunteer Rescue Squad</b>			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
12/2000	2 Portable Radios	\$726.00	50%
12/2000	1 Computer System	\$499.50	50%
06/2001	2 Cardiac Monitor/Defibrillators	\$11,000.00	50%
12/2001	1 Cardiac Monitor/Defibrillator	\$5,000.00	50%
12/2002	EMT Practical Test Equipment	\$3,000.00	50%
06/2003	Extrication Equipment	\$4,000.00	50%
06/2003	EMS Recruitment Campaign	\$2,400.00	50%
06/2003	5 Radio Pagers	\$842.50	50%
06/2003	1 Automatic Defibrillator	\$1,792.00	50%
06/2004	MCI Equipment	\$2,990.00	50%
12/2004	Camp Rescue Equipment	\$500.00	50%
	<b>Total Award Amounts</b>	<b>\$32,750.00</b>	

<b>Toms Brook Volunteer Fire Department</b>			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
06/2001	1 Quick Response Vehicle	\$13,843.00	50%
06/2002	1 Cardiac Monitor/Defibrillator	\$6,500.00	50%
	<b>Total Award Amounts</b>	<b>\$20,343.00</b>	

<b>Woodstock Volunteer Rescue Squad</b>			
Grant Cycle	Item	Amount	Percent of Fund Match By Agency
09/2000	1 Automatic Defibrillator	\$3,000.00	0%
06/2005	1 Ambulance	\$43,335.50	50%
06/2007	1 12 Lead Monitor/Defibrillator	\$6,150.00	50%
06/2008	3 12 Lead Monitor/Defibrillators	\$20,496.89	50%
	<b>Total Award Amounts</b>	<b>\$72,982.39</b>	

Source: Virginia OEMS RSAF Grant Awards Database

## Medical Direction

There is one Operational Medical Director (OMD) affiliated with all of the agencies in Shenandoah County, Dr. Nazir Adam. Dr. Adam is affiliated with Rockingham Memorial Hospital in Harrisonburg, Rockingham County, Virginia. As a member of the Lord Fairfax EMS Council's (LFEMS) Medical Direction Committee, Dr. Adam has been intimately involved in the development, review, and revision of all treatment and transport protocols utilized by EMS agencies and providers in Shenandoah County.

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

## Quality Assurance

In calendar years 2006 and 2007, a total of 5,303 and 5,449 PPCR reports were submitted by agencies in Shenandoah County to arm. This number is based on EMS responses based in Shenandoah County only. Out of the total number of EMS call for 2006, 82% of those calls were BLS, and 80% of the calls in 2007 were BLS.

Based on PPCR data, SMH received 48% and 46% of patients transported by Shenandoah County agencies in 2006 and 2007, respectively. Of note is the fact that the New Market VRS only transports between 21-24% of its patients to SMH, with the majority of their patients going to Rockingham Memorial Hospital (hereinafter mentioned as “RMH”), in Harrisonburg, in Rockingham County. This figure seems relatively consistent compared to other agencies in counties served by CAH hospitals whose primary response areas are on the edge of that county, and are closer to other hospitals. Also of note is the fact that agencies had “no hospital listed” as a disposition in 30% and 26% of calls for 2006 and 2007, respectively. It is unknown if this number is representative of entry errors, or if it is representative of patient refusals, cancelled calls, and other non-transports, but it would seem that it may be a combination of both.

In terms of response data, agencies in Shenandoah County have varied response times, and transport times from scenes to hospitals. Based on data from 2006 and 2007, agencies average 10 and 9 minutes, respectively. Response time is defined as dispatch (call processing time) time (time from initial receipt of call by PSAP until EMS unit is alerted) plus reaction time (time from initial receipt of call by EMS unit until wheels are rolling) plus travel time (time from wheels rolling on EMS unit until arrive on scene.).

For transfers from SMH to other hospitals, a variety of factors come into play each of which affect the amount of time it takes to transfer a patient to another facility. Transfers are typically dependent on patient diagnosis, available beds at receiving hospitals, and patient preference. For 2006, 541 patients were transferred from SMH to other facilities in reviewing data submitted by SMH Transport Service, for 2007, 384 patients were transferred. The majority of all transfers were for services that were not available at SMH, the highest percentage of those being cardiology, neurology, and orthopedic services that are not offered at SMH, or at a capability to best treat the patient’s particular injury or illness. Being that SMH is part of the Valley Health system, the majority (67% in 2006, and 84% in 2007) of the patients that are transferred out of SMH are transferred to Winchester Medical Center (WMC), which is 34 miles away, with a 36 minute travel time. Smaller percentages of patients are transferred to Rockingham Memorial Hospital in Harrisonburg, which is 34 miles away, University of Virginia Medical Center (UVA) in Charlottesville, 110 miles away, and Inova Fairfax Hospital, which is 80 miles away. Both UVA and Inova Fairfax are over two hours away by ground. It should be noted that that SMH provides many services in-house that most of the other CAH facilities in Virginia don’t provide, such as cardiac diagnostic services, radiology and medical imaging services, and obstetrical/gynecological services. Provision of these services decreases the number of patients that need to be transferred elsewhere.

The overwhelming majority of patient transfers out of SMH are done by Valley Medical Transport Service. On extremely rare occasions, other agencies in Shenandoah County have done transfers, but are not compensated for doing so. In addition, SMH administration reports that SMH has roughly 10% of its patients transferred by air annually, with the majority transferred to WMC.

As was stated previously, all agencies in Shenandoah County have established PI programs, but have varying degrees of activity. These programs usually involve regular reviews of PPCR reports completed by the respective agency, but seem to have limited OMD participation. SMH does have representation on the Regional PI and Trauma PI committees by Paula Sheetz, the Director of the Emergency Department.

Additionally, in reviewing PPCR submission compliance information for 12 quarters for calendar years 2006-2007, all agencies were compliant with their submissions.

### **Mass Casualty Preparedness**

Agencies in Shenandoah County utilize the LFEMS Regional MCI Plan, which is reviewed and revised on an annual basis by the Lord Fairfax Emergency Planning Committee (LEPC). It is unclear if representatives from Shenandoah County or SMH are involved on that committee. There is also no evidence of disaster planning or training that involves SMH and the EMS agencies in Shenandoah County.

### **System Partnerships**

All of the EMS Agencies within Shenandoah County have mutual aid agreements in place, both with each other, and with agencies in counties that adjoin Shenandoah. There is also a fair working relationship that exists between the county EMS agencies.

Based on interviews conducted and review of survey information, it does seem to be that EMS has a pretty clear understanding of their role as it pertains to the CAH. The relationship has been reported by both SMH and EMS agency representatives to have been strained at times, with agencies reporting issues ranging from agencies having to call SMH prior to transport to determine if SMH can effectively treat that particular patient, to issues with restocking of medications and supplies, with SMH not carrying the equipment (specifically nebulizers) that EMS is able to use.

### **Hospital Capabilities**

SMH employs a total of five full-time physicians, and has at least one physician on staff in the ED 24 hours a day, 7 days a week. 2-3 nurses and a nursing supervisor are on staff 24 hours a day, and also have a unit secretary on staff, and an ED technician who works a 2p-2a shift, and performs vital signs, phlebotomy, and transfers of patients within the facility. SMH does not employ EMS personnel to staff the ED.

The annual volume of patients in the ED at SMH is roughly 18,000. SMH does not track information about the number of hospital users that “walk in” to the ED versus arrival via EMS transport or specific agency, nor do they track those patients that arrive via EMS for specific information, such as arrival by ALS versus BLS, or their disposition.

SMH has a Performance Improvement Council, which performs a global review of all clinical measures within the facility. The council meets on a monthly basis. This is a voluntary effort of the facility to perform self evaluations of performance.

As mentioned previously in this report, in 2006, 541 patients were transferred from SMH to other facilities in reviewing data submitted by SMH Transport Service, and in 2007, 384 patients were transferred. The majority of patients are transported because they are in need of services that are not offered at SMH. A network agreement exists between SMH and WMC, which belongs to the same health system. Transfer agreements exist with other hospitals in the area, which were listed previously in this report.

SMH does have representation on the Lord Fairfax Regional EMS Council Board of Directors, as Floyd Heater, the President of SMH, has a seat on the Board, and is an active participant on several subcommittees of the board.

SMH administration has stated that many of their challenges, both as a hospital, and as a CAH, stem from the dynamic nature of Shenandoah County, especially in terms of the population of the county. Many Shenandoah County residents have relocated from urban areas, and expect the same level of medical care that they have been accustomed to in those urban areas. The facility’s ability to maintain, and even grow in the face of population changes is a large obstacle to face.

Staffing is also a challenge, due to census fluctuations, and providing proper staffing within the facility to effectively deal with those fluctuations, the recruitment and retention of hospital staff, especially physicians are major concerns to hospital administration. Valley Health is taking proactive approaches to recruitment and retention by providing tuition reimbursement to staff members, providing a residency program to help keep physicians in the area, and sponsoring students in specialty programs. These efforts have helped to keep staffing levels at acceptable levels. SMH is also aiming to assist a fellow CAH, Page Memorial Hospital, as they become part of the Valley Health system in 2009. It is anticipated that collaborative efforts between the two facilities will assist both as they move to the future of the provision of health care in the Shenandoah Valley.

## **V. Key Findings and Recommendations**

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

### **Staffing/Placement of EMS Units:**

#### **Key Findings:**

In Shenandoah County, there are 208 certified EMTs for the population size of 35,075 people, or 1 EMT for every 168 people in the county. This is significantly higher than the total number of EMTs versus people in the Commonwealth of 1 to 204, and is a great deal higher than other counties that CAH facilities are located in.

The number of volunteer versus career providers seems to be comparable to most rural counties in Virginia, with a majority of providers being affiliated with volunteer agencies. Many of the agencies that participated in interviews mentioned the recruitment or retention of EMS providers as issues that their respective agencies are currently facing, but the dedicated staff member that SCFR uses for recruitment and retention, as well as the RSAF grant funds that have been used for recruitment and retention initiatives are noteworthy. Recruitment and retention initiatives are varied, from the efforts of SCFR, to letter drives to area residents, informational sessions at the local high school, open houses held at the station, and community awareness initiatives. It was worth noting that not all the agencies in the county have recruitment and retention initiatives in place. Additionally, SMH is not involved in any collaborative efforts for the recruitment and retention of EMS providers. The age, gender, and race of EMS providers in Shenandoah 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 well as response times, the efforts by SCFR to staff EMS agencies during daytime hours seems to be a positive step in ensuring adequate staffing and prompt responses. Some staffing shortages remain that may be remedied through increased recruitment and retention efforts. The use of strategic placement of units based on call volume, or long transports by neighboring agencies have been helpful in reducing response times in the county.

**Recommendations:**

Although the number of EMS providers per person in Shenandoah County is higher than those of other counties that CAH facilities are located in, OEMS believes there still exists a need to increase the number of providers in the county. Shenandoah County is “ahead of the curve” in employing full-time EMS providers, and employing a dedicated position for Public Information & Education, which puts them ahead of many other systems that CAH facilities are located in.

OEMS recommends that all the EMS agencies in Shenandoah County collaborate, and continue to work toward increasing the number of EMS providers in the county, and retaining existing providers. Shenandoah County agencies should 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.

Maintaining an emphasis on the recruitment of high-school age students may continue to be valuable to the agencies in the county. Additionally, agencies should share best practices, to streamline recruitment and retention practices in the county.

**EMS Training Initiatives****Key findings:**

EMS Training opportunities seem to be relatively plentiful, with SCFR taking the lead in EMT courses offered in the county, as well as providing EMS CE to providers on a routine basis. It is also beneficial that EMS providers have shorter distances to drive to obtain advanced level EMT training, which many other counties that CAH facilities are located in do not have. It is also noteworthy that SMH has taken an active role in providing some training and CE to EMS providers in the county.

**Recommendations:**

EMS System stakeholders, including SMH, LFEMS, and the individual agencies in Shenandoah County, should continue to work collaboratively to ensure that opportunities for providers to obtain or maintain EMS certification remain available. Additionally, each agency should be utilizing Virginia OEMS EMSAT DVDs, as well as the Virginia TRAIN online training portal to augment their CE requirements.

**Communications****Key Findings:**

Like many other rural areas, Shenandoah struggles to achieve reliable radio and cellular coverage over 100% of the county, as it is located in a valley between mountain ranges that are obstacles to effective communication. As with other “CAH counties” areas of little to no radio or cellular communication ability are quite common.

It is also worth noting the fact that high numbers of agencies provide patient report information to the CAH, and that there is little ability to transmit or receive 12 lead EKG telemetry by both the EMS agencies, and SMH itself.

### **Recommendations:**

Shenandoah County governmental administration should work collaboratively with internal and external entities and resources to upgrade radio communications systems in Shenandoah County, utilizing the regional hospital preparedness system to apply for state and federal grant funds for communications augmentation. Additionally, SMH should work collaboratively with transport agencies to promote the use of 12 Lead EKG telemetry information from the field. This could have a significant impact on patients who are experiencing myocardial infarction who may be candidates for balloon angioplasty.

### **Fiscal Support**

#### **Key findings:**

During the evaluation process, none of the agencies that participated were utilizing fee for services programs for revenue recovery, though some, if not all, stated that funding is an issue. It is noteworthy that some agencies in Shenandoah County are looking into implementing revenue recovery programs.

Additionally, it is alarming that agencies in Shenandoah County do not apply for RSAF grant funds on a consistent basis, and that some agencies have not applied for grant funds at all.

It was also reported by several agencies in Shenandoah County that they are outgrowing facilities that they are currently in, or are in facilities that are in need of repair, and would benefit from some type of funding stream for expansion or relocation projects.

#### **Recommendations:**

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

Additionally, all EMS agencies in the county should, at the very least, be evaluating implementation of fee for service programs, and may be best served by utilizing one program for the entire county to utilize. OEMS does have guidance documents, presentations, and contacts to assist those agencies who bill for service, or wish to bill for service, which may be helpful to these agencies.

Finally, Shenandoah County EMS agencies may qualify for federal funds earmarked for capitol improvement projects. These funds may be helpful in making renovations to existing EMS agency space, or to construct new buildings.

## **Medical Direction**

### **Key findings:**

The agencies of Shenandoah County are fortunate to have Dr. Adam serving as an OMD for the EMS agencies in the county. His involvement on the regional Medical Direction committee is important in giving Shenandoah County a voice and an opinion as it pertains to system development, as well as protocol development.

It is concerning that Dr. Adam seems to not have any affiliation with SMH, and there is not clear evidence of Dr. Adam's involvement in the Performance Improvement activities of all of the agencies that operate under his license.

### **Recommendations:**

Dr. Adam should strive to increase his level of involvement in the operations of the agencies that are functioning under his medical license. Dr. Adam's role as the OMD for Shenandoah County EMS agencies should be utilized to ensure that the relationship between the CAH and the EMS system is robust, and is functioning for the betterment of patient care and delivery in the county.

## **Quality Assurance**

### **Key Findings:**

In reviewing PPCR records for the agencies of Shenandoah County, it was apparent that there seems to be a lack of proper completion of PPCR reports. The number of transports listed to have gone to SMH is remarkably lower than those of many of the other counties that CAH facilities are located in, and interviews with agency representatives all stated that the majority of their patients are transported to SMH, which seems contradictory to the data. Response times are comparable to other agencies in counties that CAH facilities are located in.

Additionally, all agencies have some type of call review/PI program in place, which is essential for productive quality assurance, but there are variations in how those programs are conducted, with little to no involvement from the OMD, and the CAH facility.

In terms of CAH interfacility transports, SMH seems to be relatively comparable to lower than 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 SMH has the means to provide specialty service for types of medical conditions that other CAH facilities cannot provide, which accounts for the lower number of transferred patients. SMH does have network and transfer agreements in place with many other hospitals that patients are most commonly transferred to.

**Recommendations:**

Shenandoah County agencies should continue to strive to provide PPCR information to OEMS in the proper format, on a consistent basis. They should also strive to fully and properly complete reports for the patients that are transported.

Dr. Adam should ensure that there is active participation in agency PI programs, in order to promote improvements to patient care delivery.

SMH should continue to maintain formal agreements between itself and facilities that patients are transferred to. The Lord Fairfax EMS Council may also be a valuable resource to assist the agencies with PI program improvements.

**Mass Casualty Preparedness/System Partnerships****Key Findings:**

While the agencies in Shenandoah County are familiar with the Regional MCI Plan, and are able to utilize if needed, it is concerning that there seems to be no involvement by any representative of Shenandoah in the development of the MCI Plan, nor is there any evidence of any planning, training, or preparedness exercises involving the CAH and the EMS agencies in Shenandoah County.

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

**Recommendations:**

Both representatives of the CAH, and the EMS stakeholders should strive to take a more active role in the development of Mass Casualty Incident plans, as well as routine training, and mock disaster exercises. Additionally, EMS agencies in Shenandoah should review, revise, and update mutual aid agreements on an annual basis.

**Hospital Capabilities****Key Findings:**

SMH certainly is different than most of the other CAH facilities in Virginia, both in its size, as well as the services that it can provide. As with many other CAH facilities, SMH has challenges to overcome, most notably in an ever changing county population, where many residents have relocated from urban areas, and expect high levels of healthcare, as they had in those urban areas. SMH also struggles with the recruitment and retention of hospital staff, especially physicians. The fact that SMH is part of a larger healthcare system is a benefit in

maintaining the viability of the facility, as well as allowing for enhanced services to be available to the residents of their catchment area.

The relationship between SMH and the EMS agencies in Shenandoah County has its own struggles, with both sides admitting there is room for improvement. The involvement of SMH administration on EMS committees on a regional level is both noteworthy and positive.

### **Recommendations:**

Both SMH and the EMS agencies in Shenandoah County should strive to, at a minimum, increase communication, and also increase collaboration, as they move forward. It is vital to the patient care delivery in Shenandoah County that strong and positive relationships exist between all entities involved.

SMH should also commit itself to assisting other CAH facilities as they go through their own challenges, as SMH seems to have a strong infrastructure, which may be of benefit to other CAH facilities that may not be on the same secure footing that SMH is on.

### **Conclusion:**

The Virginia OEMS believes that between continuing efforts to improve the EMS System in Shenandoah, the possibilities that the system currently has to grow, with consideration of implementation of the recommendations made in this report, that the EMS system in Shenandoah County will be better than ever as it moves into the future. The Virginia OEMS remains committed to provide whatever resources and materials are necessary to meet that goal.

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P. Scott Winston, Assistant Director

Dennis Molnar, Business Manager

Amanda Davis

Jodi Kuhn

Warren Short

**Study Participants:**

*Shenandoah Memorial Hospital:*

Floyd Heater, President

Lisa H. Stokes, Vice-President, Patient Care Services

Paula Sheetz, Emergency Department Director

*Shenandoah County EMS Agencies:*

Gary Dalton –Valley Medical Transport and Strasburg Volunteer Rescue Squad

Gary Yew, Chief – Shenandoah County Fire and Rescue

Tim Williams – Operation Sections Chief – Shenandoah County Fire and Rescue

William Streett, Training Section Chief – Shenandoah County Fire and Rescue

Mike Chimento – Shenandoah County Fire and Rescue

Mike Selby – Shenandoah County Fire and Rescue

John Carney – Mount Jackson Rescue and Fire Department

Aaron Miller – Orkney Springs Fire and Rescue

**Appendices:**

Appendix 1 – Responses to survey questions by study participants.

**CAH Facility Survey Questions – Shenandoah Memorial Hospital**

Floyd Heater – President

Lisa Stokes – Vice-President, Patient Care Services

Paula Sheetz – Emergency Department Director

Answers appear in ***Bold Italics***

1. What changes have occurred in your Emergency Department due to your hospital's conversion to a CAH? ***SMH received CAH designation in August of 2004. There has been an increase in specialty services offered at SMH. Changes that have occurred are mainly related to patient census, as SMH closely monitors census, as well as length of stay. Peak census may lead to diversion of patients to neighboring facilities.***
2. How do you evaluate your role as a CAH? ***SMH has an in-house Performance Improvement (PI) council, which performs a global review of all clinical measures on a monthly basis. This is not required as part of the CAH designation process.***
3. Volume of patients arriving in ED. ***Approximately 17,500 patients/year.***
  - a. Numbers arriving via specific EMS agency ***The ED doesn't track patients by specific agency, but SCFR does track this information.***
  - b. ALS versus BLS – ***Unknown (Doesn't track)***
  - c. Types of calls - ***Unknown***
  - d. Patient Disposition - ***Unknown***
4. How many beds do you have in your Emergency Department? ***12 ED Beds.***
5. In the past 12 months has your facility been unable to admit patients from the ED due to lack of available beds? ***Yes, approximately 5 times.***
  - a. If yes, were those patients transferred another hospital? ***Yes, Rockingham Memorial Hospital (RMH) in Harrisonburg, and Winchester Medical Center (WMC) in Winchester.***
6. Number and qualifications of staff in your facility's ED (i.e. doctors, nurses, technicians, etc.) ***5 full time physicians, who work 7a-6p and 6p to 7a, 18 nurses who work 12 hour shifts: 2 nurses 7a-7p, 2 from 7p-7a and 1 nurse from 9a-9p. SMH also has a unit secretary and several ED technicians that work 2pm-2am, and perform phlebotomy, vitals signs, and in-hospital transports of patients. The ED technicians are trained in-house.***
  - a. Do you employ EMS personnel in your ED? ***No.***
7. What supporting hospital do you have a Network Agreement with? ***WMC in Winchester***
  - a. What is your relationship with the supporting hospital? ***Both facilities are part of same health system.***
  - b. What is the distance in miles and time to this hospital? ***33 miles, 40 minutes by ground transport.***

8. What other facilities do you transfer patients to? **RMH in Harrisonburg (34 miles away), University of Virginia in Charlottesville (110 miles), and Inova Fairfax Hospital (80 miles)**
9. How are patients transported to supporting and other hospitals? **Agreement with Valley Medical Transport (VMT) for interfacility transfer of patients.**
  - a. Do you have a hospital patient transport services? **Yes, through VMT.**
  - b. Do you compensate for transfers? **No, the service bills the patient for the transfer independent of SMH.**
10. Patient Demographics for Patient Transfers
  - a. Number – **Approximately 40/month**
  - b. Types- **Mainly cardiac (over 50%), neurology, orthopedic, psychiatric, and stroke patients.**
  - c. Equipment used- **Number of transports requiring specialized equipment is decreasing. VMT has portable ventilators on their units.**
  - d. Ground versus air transport – **Approximately 90% of transfers go by ground. SMH primarily uses PHI AirCare in Winchester, or UVA Pegasus for air transfers**
    - i. Does your hospital have a helipad to accommodate air transport? **Yes.**
11. Number of patients transported inside the catchment area, but outside county your facility is located in. **Majority of patients are located within Shenandoah County.**

**Additional information:**

**SMH does offer “merit badge” courses to area EMS providers, as well as provides ED clinical experiences to EMT students. SMH has a significant involvement with the Lord Fairfax EMS Council, and it’s Board of Directors and subcommittees.**

**Challenges:**

**Maintaining the facility and services versus expansion. Shenandoah is a growing community, with an influx of residents from higher populated areas that expect the same level of services be provided to them.**

**Hospital staffing is a continual issue, due to hospital census fluctuations, recruitment and retention of providers (especially physicians), and tuition reimbursement. SMH is working with other facilities in the health system on physician residency and hospital specialty programs designed to keep more providers in the area.**

**EMS Agency Survey Questions – Strasburg Volunteer Rescue Squad (SVRS) – Gary Dalton**  
Answers provided appear in ***Bold Italics***.

1. Does your county utilize centralized dispatch? ***Yes, through Shenandoah County Emergency Operations Center.***
2. If you are an EMS transport agency, which Emergency Department(s) does your agency transport patients to? ***Shenandoah Memorial Hospital (SMH), Winchester Medical Center (WMC), as well as Warren Memorial Hospital (WMH) in Front Royal, are the facilities that are most frequently transported to.***
  - a. How many patients have you transported within the last 12 months? ***Over 900 patients.***
  - b. How many patients were ALS vs. BLS? ***60% ALS***
3. Has your agency provided patient reports to the Emergency Department within the past twelve months? ***Yes***
  - a. If yes, how often?
    - i.  0-25% of the time
    - ii.  26-50% of the time
    - iii.  51-75% of the time
    - iv.  76-100% of the time
  - b. What form of communication do you use?
    - i. Radio - ***Secondary***
    - ii. Cell phone - ***Primary***
    - iii. Other?
  - c. Do you face any challenges communicating with the Emergency Department? ***No***
4. Does your agency have a fee-for-service arrangement for patient transports? ***Not at present.***
5. Do you have telemetry or other telemedicine equipment on your vehicle? ***Yes, but they do not have transmitting capability.***
6. What hospitals do you transport patients to? ***Primarily SMH, WMC, and WMH.***
7. Have you been told by the critical access hospital within the past 12 months that you must redirect your patient transport because the hospital is at capacity? ***Yes.***
  - a. If so, how many occurrences? ***Approximately 4-5 times in the past 12 months.***
  - b. How was this communicated to your agency? ***This was usually communicated through 911 center alerts to agencies.***
8. Within the past 12 months, has the critical access hospital called your agency to transport patients to a supporting hospital or facility outside the county? ***No.***

9. Does your agency participate in any quality assurance/performance improvement programs with the critical access hospital? **No.**
10. What is the total number of personnel in your agency? **44**
  - a. What is the average age (**44**); race (**Caucasian**); gender (**60% male**) of these personnel?
  - b. How many are volunteer personnel? **100%**
  - c. How many are career personnel? **None.**
11. What is the number of hours of dedicated coverage (ie. station and/or vehicle are staffed) your agency provides each day? **Roughly 16 hours**
  - a. What are the total hours of on-call coverage provided each day? **8**
  - b. What percent of each day does your county have EMS coverage? **100%**
12. Does your agency participate in any recruitment or retention initiatives? **Yes – quarterly recruitment initiatives, annual recognition banquet, training reimbursement, providing uniforms to volunteers, reimbursement for costs related to Virginia EMS Symposium attendance.**
13. What is the average response time for your agency in the past twelve months? **Approximately 4-5 minutes.**
14. Is your agency utilizing strategic placement of units based on call volume and/or location? **No.**
15. Is ALS or BLS training or continuing education available in your area? **Yes, an EMT class is held at SVRS each year from September to March, and a refresher held in the summer months. ALS continuing education is provided by Lord Fairfax EMS Council, and SCFR provides monthly skills continuing education.**
  - a. If yes, has the critical access hospital in your area provided any training or continuing education to your agency's providers? **No**
16. Does your agency have formal cooperative agreements with other EMS agencies? **Yes – county wide agreement.**
  - a. If yes, are they honored? **Yes.**

**EMS Agency Survey Information – Valley Medical Transport (VMT) – Gary Dalton**

Valley Medical Transport has an agreement with SMH to provide transport for the facility. VMT houses a vehicle at SMH during daytime hours, and Woodstock Volunteer Rescue Squad allows for the vehicle to be stored at their station at night. VMT crews also perform skills in the SMH ED to their certification level.

VMT provides service from 7am-7pm, 7 days a week, with an ALS equipped ambulance. VMT is a participant in the Shenandoah County Mutual Aid Agreement for 911 service, but is called upon for emergency transports less than 10 times per year. 80% of all patients transferred from SMH by VMY are transferred to Winchester Medical Center.

**EMS Agency Survey Questions – Shenandoah County Fire & Rescue (SCFR) – W. J. Streett**  
Answers provided appear in ***Bold Italics***.

1. Does your county utilize centralized dispatch? ***Yes, through Shenandoah County.***
2. If you are an EMS transport agency, which Emergency Department(s) does your agency transport patients to? ***Shenandoah Memorial Hospital (SMH), Rockingham Memorial Hospital (RMH), as well as Winchester Medical Center (WMC) are the facilities that are most frequently transported to.***
  - a. How many patients have you transported within the last 12 months?  
***Approximately 9,200 transports per year.***
  - b. How many patients were ALS vs. BLS?  
***Unknown***
3. Has your agency provided patient reports to the Emergency Department within the past twelve months? ***Yes***
  - a. If yes, how often?
    - i.  0-25% of the time
    - ii.  26-50% of the time
    - iii.  51-75% of the time
    - iv.  76-100% of the time
  - b. What form of communication do you use?
    - i. Radio - ***Primary***
    - ii. Cell phone - ***Secondary***
    - iii. Other?
  - c. Do you face any challenges communicating with the Emergency Department?  
***Yes***
    - i. If yes, what are these challenges?  
***The med radio at SMH has been out of service for at least 2 months. Additionally, there are several dead areas of no cell or radio service in the county; most EMS providers know where they are located.***
4. Does your agency have a fee-for-service arrangement for patient transports? ***Not at present, but a task force is tasked with evaluating this on a county-wide basis.***
5. Do you have telemetry or other telemedicine equipment on your vehicle? ***Yes, most vehicles in the county are 12 lead capable, but do not currently transmit telemetry to receiving facilities. Valley Health is understood to be piloting an EKG transmission pilot project, but the status of that project is uncertain.***
6. What hospitals do you transport patients to?  
***Primarily SMH, RMH, and WMC, secondarily Warren Memorial Hospital (WMH) in Front Royal, and Page Memorial Hospital in Luray.***
7. Have you been told by the critical access hospital within the past 12 months that you must redirect your patient transport because the hospital is at capacity? ***Yes.***
  - a. If so, how many occurrences?  
***Six occurrences in one calendar year.***

- b. How was this communicated to your agency?  
***This was communicated to the 911 center via med radio. Agencies were asked to call in to SMH prior to transport to determine whether or not SMH could take the patient.***
8. Within the past 12 months, has the critical access hospital called your agency to transport patients to a supporting hospital or facility outside the county? **No**
9. Does your agency participate in any quality assurance/performance improvement programs with the critical access hospital? **No**
10. What is the total number of personnel in your agency? **28 career field providers, 21 volunteer providers affiliated with agency.**
- a. What is the average age (**unknown**); race (**Caucasian**); gender **80% male** of these personnel?
- b. How many are volunteer personnel? **42%**
- c. How many are career personnel? **58%**
11. What is the number of hours of dedicated coverage (ie. station and/or vehicle are staffed) your agency provides each day? **24/7 – there is 24 hour coverage at the Strasburg FD and New Market Rescue Squad. 10 hour daytime shifts at Toms Brook, Woodstock. Mount Jackson.**
- a. What are the total hours of on-call coverage provided each day? **SCFR does not utilize paging, unless there is an significant incident (MCI), then career staff may be recalled into service.**
- b. What percent of each day does your county have EMS coverage? **100%**
12. Does your agency participate in any recruitment or retention initiatives? **Yes – SCFR has had a Public Information & Education position in place for several years. During that time, several initiatives, including leadership training, shared training, criminal background checks, recruitment via local media, local merchant discounts for volunteers, banners for agency open houses, streamlined orientation for new providers, and an annual appreciation picnic.**
13. What is the average response time for your agency in the past twelve months? **Approximately 5-7 minutes.**
14. Is your agency utilizing strategic placement of units based on call volume and/or location? **Yes, there is frequent movement of units based on volume and location for timely responses.**
15. Is ALS or BLS training or continuing education available in your area? **Yes, primarily done in-house. Some is done during daytime hours, and rotates throughout the county. Basic EMT classes are offered through SCFR, and EMT-Enhanced courses are offered at Lord Fairfax Community College in Middletown, which is less than 25 miles away.**

- a. If yes, has the critical access hospital in your area provided any training or continuing education to your agency's providers? **SMH has had little involvement in EMS training, mostly offering ACLS, as well as CPEP training.**

16. Does your agency have formal cooperative agreements with other EMS agencies? **Yes**

- a. If yes, are they honored? **Yes, to the best of their ability.**

**Challenges:**

***There is often difficulty in the supply and restocking of consumable items at SMH. SCFR has had issues specifically related to nebulizer equipment and medication that is incompatible with what SCFR currently carries.***

***SCFR began a "stat box" program, due to issues with drug box exchange that has occurred between SCFR and SMH.***

**EMS Agency Survey Questions – Orkney Springs Fire & Rescue (OSFR) – Aaron Miller**  
Answers provided appear in ***Bold Italics***.

1. Does your county utilize centralized dispatch? ***Yes, through Shenandoah County.***
2. If you are an EMS transport agency, which Emergency Department(s) does your agency transport patients to? ***Shenandoah Memorial Hospital (SMH), Rockingham Memorial Hospital (RMH), as well as Winchester Medical Center (WMC) are the facilities that are most frequently transported to.***
  - a. How many patients have you transported within the last 12 months?  
***Approximately 200 transports per year.***
  - b. How many patients were ALS vs. BLS?  
***98% BLS***
3. Has your agency provided patient reports to the Emergency Department within the past twelve months? ***Yes***
  - a. If yes, how often?
    - i.  0-25% of the time
    - ii.  26-50% of the time
    - iii.  51-75% of the time
    - iv.  76-100% of the time
  - b. What form of communication do you use?
    - i. Radio - ***Primary***
    - ii. Cell phone - ***Secondary***
    - iii. Other?
  - c. Do you face any challenges communicating with the Emergency Department?  
***Yes***
    - i. If yes, what are these challenges?  
***There are several dead areas of no cell or radio service in the county. Quite often, the unit needs to be within 10-15 minutes of the hospital for effective communication.***
4. Does your agency have a fee-for-service arrangement for patient transports? ***Not at present, but a task force is tasked with evaluating this on a county-wide basis.***
5. Do you have telemetry or other telemedicine equipment on your vehicle? ***No.***
6. What hospitals do you transport patients to?  
***Primarily SMH, RMH, and WMC.***
7. Have you been told by the critical access hospital within the past 12 months that you must redirect your patient transport because the hospital is at capacity? ***Yes.***
  - a. If so, how many occurrences?  
***Approximately six occurrences in one calendar year. This also happened due to SMH not having neurology or surgery services, or a CT unit being out of service.***

- b. How was this communicated to your agency?  
***This was communicated to the 911 center.***
8. Within the past 12 months, has the critical access hospital called your agency to transport patients to a supporting hospital or facility outside the county? ***Yes, once, to a skilled nursing facility in Woodstock. OSFR was not compensated by SMH for the transport.***
9. Does your agency participate in any quality assurance/performance improvement programs with the critical access hospital? ***Not currently, but in the past similar programs existed with SMH involvement.***
10. What is the total number of personnel in your agency? ***12 field providers.***
- a. What is the average age (***35-40***); race (***Caucasian***); gender ***50/50*** of these personnel?
- b. How many are volunteer personnel? ***100%***
- c. How many are career personnel?
11. What is the number of hours of dedicated coverage (ie. station and/or vehicle are staffed) your agency provides each day? ***12 hours – 6am to 6pm. Agency officers work in the area, and are allowed to leave work to respond to calls.***
- a. What are the total hours of on-call coverage provided each day? ***24/7***
- b. What percent of each day does your county have EMS coverage? ***100%***
12. Does your agency participate in any recruitment or retention initiatives? ***Yes – OCFR does annual recruitment drives during events at the Bryce Ski Resort, which is in the OSFR primary coverage area.***
13. What is the average response time for your agency in the past twelve months? ***Unknown.***
14. Is your agency utilizing strategic placement of units based on call volume and/or location? ***Yes, there is movement to cover primary response territory, with marked improvements in response time.***
15. Is ALS or BLS training or continuing education available in your area? ***Yes, primarily done in-house. We also work with SCFR in their battalion training program, participate in training offered through the Lord Fairfax EMS Council, and utilize OEMS EMSAT on occasion.***
- a. If yes, has the critical access hospital in your area provided any training or continuing education to your agency's providers? ***SMH has had little to no involvement in EMS training of OSFR Providers.***
16. Does your agency have formal cooperative agreements with other EMS agencies? ***Yes – county wide agreement.***
- b. If yes, are they honored? ***Yes.***

***Challenges:***

***The majority of our area contains a retirement age population, and the requests for service seem to be on the rise. There is little employment opportunity to draw people to the area to build on staffing for the service.***

**EMS Agency Survey Questions –****Mount Jackson Fire & Rescue (MJFR) – Mike Selby and Jon Carney**Answers provided appear in ***Bold Italics***.

1. Does your county utilize centralized dispatch? ***Yes, through Shenandoah County.***
  
2. If you are an EMS transport agency, which Emergency Department(s) does your agency transport patients to? ***Shenandoah Memorial Hospital (SMH), Winchester Medical Center (WMC), as well as Rockingham Memorial Hospital (RMH), are the facilities that are most frequently transported to.***
  - a. How many patients have you transported within the last 12 months? ***Unknown.***
  - b. How many patients were ALS vs. BLS?  
***Unknown.***
  
3. Has your agency provided patient reports to the Emergency Department within the past twelve months? ***Yes***
  - a. If yes, how often?
    - i.  0-25% of the time
    - ii.  26-50% of the time
    - iii.  51-75% of the time
    - iv.  76-100% of the time
  - b. What form of communication do you use?
    - i. Radio
    - ii. Cell phone - ***Primary***
    - iii. Other?
  - c. Do you face any challenges communicating with the Emergency Department?  
***Yes***
    - i. If yes, what are these challenges?  
***There are several dead areas of no cell or radio service in the county. There have also been several instances that the med radio at SMH has been out of service.***
  
4. Does your agency have a fee-for-service arrangement for patient transports? ***Not at present.***
  
5. Do you have telemetry or other telemedicine equipment on your vehicle? ***No.***
  
6. What hospitals do you transport patients to?  
***Primarily SMH, WMC, and RMH.***
  
7. Have you been told by the critical access hospital within the past 12 months that you must redirect your patient transport because the hospital is at capacity? ***Yes.***
  - a. If so, how many occurrences?  
***Usually 2-3 times a month, either due to capacity, or CT scanner being out of service.***

- b. How was this communicated to your agency?  
***This was usually communicated to the 911 center.***
8. Within the past 12 months, has the critical access hospital called your agency to transport patients to a supporting hospital or facility outside the county? **No.**
9. Does your agency participate in any quality assurance/performance improvement programs with the critical access hospital? **No.**
10. What is the total number of personnel in your agency? **30-35 field providers.**
- What is the average age (**Unknown**); race (**Unknown**); gender (**Unknown**) of these personnel?
  - How many are volunteer personnel? **100%**
  - How many are career personnel? **4 - county employees – 4 providers in house from 6am-4pm on weekdays, the remainder is filled with volunteer staff.**
11. What is the number of hours of dedicated coverage (ie. station and/or vehicle are staffed) your agency provides each day? **Roughly 22 hours, 4pm to 6pm is challenging.**
- What are the total hours of on-call coverage provided each day? **24/7**
  - What percent of each day does your county have EMS coverage? **100%**
12. Does your agency participate in any recruitment or retention initiatives? **Yes – MJFR has in-house R&R program.**
13. What is the average response time for your agency in the past twelve months? **Unknown.**
14. Is your agency utilizing strategic placement of units based on call volume and/or location? **Yes, MJFR units will move to different parts of response area if neighboring agency goes on long transport.**
15. Is ALS or BLS training or continuing education available in your area? **Yes, MJFR has in-house training officer.**
- If yes, has the critical access hospital in your area provided any training or continuing education to your agency's providers? **Unknown.**
16. Does your agency have formal cooperative agreements with other EMS agencies? **Yes – county wide agreement.**
- If yes, are they honored? **Yes.**

**EMS Agency Survey Questions –  
Woodstock Volunteer Rescue Squad (WVRS) – Mike Chimento**  
Answers provided appear in ***Bold Italics***.

1. Does your county utilize centralized dispatch? ***Yes, through Shenandoah County.***
2. If you are an EMS transport agency, which Emergency Department(s) does your agency transport patients to? ***Shenandoah Memorial Hospital (SMH), Winchester Medical Center (WMC), as well as Rockingham Memorial Hospital (RMH), are the facilities that are most frequently transported to.***
  - a. How many patients have you transported within the last 12 months? ***Unknown.***
  - b. How many patients were ALS vs. BLS?  
***Unknown.***
3. Has your agency provided patient reports to the Emergency Department within the past twelve months? ***Yes***
  - a. If yes, how often?
    - i.  0-25% of the time
    - ii.  26-50% of the time
    - iii.  51-75% of the time
    - iv.  76-100% of the time
  - b. What form of communication do you use?
    - i. Radio
    - ii. Cell phone - ***Primary***
    - iii. Other?
  - c. Do you face any challenges communicating with the Emergency Department?  
***Yes***
    - i. If yes, what are these challenges?  
***There are several dead areas of no cell or radio service in the county.***
4. Does your agency have a fee-for-service arrangement for patient transports? ***Not at present. Agency does do fund raising through sales of apple butter.***
5. Do you have telemetry or other telemedicine equipment on your vehicle? ***No.***
6. What hospitals do you transport patients to?  
***Primarily SMH, WMC, and RMH.***
7. Have you been told by the critical access hospital within the past 12 months that you must redirect your patient transport because the hospital is at capacity? ***Yes.***
  - a. If so, how many occurrences?  
***Unsure of specific numbers, but seems to be higher in winter months.***
  - b. How was this communicated to your agency?  
***This was communicated directly by SMH, or to the 911 center.***

8. Within the past 12 months, has the critical access hospital called your agency to transport patients to a supporting hospital or facility outside the county? **On very rare occasions. WVRS is not compensated by SMH for these transfers.**
9. Does your agency participate in any quality assurance/performance improvement programs with the critical access hospital? **No.**
10. What is the total number of personnel in your agency? **36 field providers.**
  - a. What is the average age (**Unknown**); race (**Unknown**); gender (**Unknown**) of these personnel?
  - b. How many are volunteer personnel? **80%**
  - c. How many are career personnel? **20% - county employees – 2 providers in house from 7am-5pm on weekdays, the remainder is filled with volunteer staff.**
11. What is the number of hours of dedicated coverage (ie. station and/or vehicle are staffed) your agency provides each day? **Approximately 12 hours**
  - a. What are the total hours of on-call coverage provided each day? **24/7**
  - b. What percent of each day does your county have EMS coverage? **100%**
12. Does your agency participate in any recruitment or retention initiatives? **Yes – WVRS participates in the county R&R program.**
13. What is the average response time for your agency in the past twelve months? **Unknown.**
14. Is your agency utilizing strategic placement of units based on call volume and/or location? **No.**
15. Is ALS or BLS training or continuing education available in your area? **Yes, ALS skills drills and protocol classes are primarily held in-house. WVRS also works with SCFR in their battalion training program, which is held at WVRS monthly.**
  - a. If yes, has the critical access hospital in your area provided any training or continuing education to your agency's providers? **SMH has had little to no involvement in EMS training of WVRS Providers.**
16. Does your agency have formal cooperative agreements with other EMS agencies? **Yes – county wide agreement.**
  - a. If yes, are they honored? **Yes.**

**Challenges:****Recruitment and retention of volunteers.**