

PEMBINA COUNTY EMS ASSESSMENT

May 2011

*Presented by the
2010 North Dakota
Rural EMS
Improvement Project
Team*

Table of Contents

Acknowledgements.....	2
Executive Summary.....	3
Background	6
Goal of the Assessment	6
Methodology.....	6
Limitations.....	7
The Report	7
Rural EMS — Common Issues and Challenges.....	8
Pembina County.....	9
Pembina County EMS — 2010	10
Organizations, Organizational Structures and Leadership	12
Pembina County EMS Council.....	12
Quick Response Units	13
Ambulance Services	14
Walhalla Ambulance Service.....	16
Drayton Volunteer Ambulance Association, Inc.	18
Pembina Ambulance Service, Inc.	19
Cavalier Ambulance Service, Inc.	20
System Finance	22
EMS System Funding Sources	23
EMS Medical Director	24
EMS Education	24
Public Access, Communications and Dispatch	25
Pembina County Recommendations & Discussion	26
Assumptions.....	30
Recommendations	30
Conclusion.....	34

Acknowledgements

SafeTech Solutions, LLP, acknowledges the contributions and invaluable help of Liz Beck, Pembina County 9-1-1 Coordinator, Jim DeMell, Pembina County EMS Education Coordinator and Tom Fennell, SafeTech Solutions Consultant.

Executive Summary

Like many rural areas in the United States, changes in socioeconomic conditions, demographics and healthcare resources are presenting significant challenges to the Emergency Medical Services (EMS) system in Pembina County. This report is an assessment of EMS in Pembina County that sought to provide a description and analysis of the EMS system in Pembina County as it appeared in 2010, along with recommendations for improvement. The assessment focused on the out-of-hospital components of the EMS system, which includes emergency call taking, dispatching, responding, medical transportation and their supporting services.

Today, EMS in Pembina County serves a population of 7,392 within 1,118 square miles with four independent state licensed ambulance services (one advanced life support and three basic life support) and four independent licensed Quick-Response Units (QRUs). These services respond to 550 requests for emergency medical response and transportation annually, with the QRUs responding to 9% of the total calls. Forty percent of the calls are for interfacility transports between hospitals and nursing homes.

The ambulance services and QRUs list 99 members on rosters, but only 71% are active, and greater than 90% of these members are volunteers. The services have 12 vehicles housed in eight separate facilities and are dispatched by a single Public Safety Answering Point (PSAP). They are supported by a single local EMS Medical Director and local EMS education services. There are no fixed wing and rotor wing services located within the County.

The ambulance services and QRUs currently report expenses of \$800,000 annually (excluding any accounting for the value of donated volunteer hours). The value of the volunteer staffing subsidy exceeds \$1 million. When totaled, the value of providing EMS to Pembina County approached \$2 million in 2010.

EMS in Pembina County is currently meeting needs, and the assessment found no significant response, clinical care or customer service issues. However, Pembina County EMS does faces significant challenges related to changes in socioeconomic conditions, demographics and healthcare. As volunteerism declines, the homegrown, independent community-centered EMS system that has been successful for 40 years is becoming more difficult to maintain and unlikely to be sustainable in the future.

The overarching challenge facing EMS in Pembina County is one of creating, leading and maintaining a reliable, sustainable, effective and efficient Countywide EMS system while acknowledging and transcending the barriers related to local loyalties and distrust between communities.

Specifically, these challenges are as follows:

1. Meeting the EMS demands of a declining and aging population and its need for access to a healthcare system and specialization that is increasingly more regionalized.
2. Ensuring the reliability, sustainability and quality of EMS in Pembina County without coordinated leadership, planning and direction.
3. Recognizing that the changes in demographics, socioeconomic conditions, and attitudes about community involvement have resulted in a decline in volunteerism that is not transient.
4. Ensuring individual ambulance service response reliability and promptness and preparing for and addressing staffing issues.

5. Funding and staffing four independent ambulance services and four quick-response units, along with the need to fund system development.
6. Measurably ensuring the quality of disparate system components without data, quality planning or dedicated quality resources.
7. Ensuring the continuance of prepared and available Medical Direction.
8. Ensuring the PSAP: provides a high level of quality dispatching; meets the needs of the EMS responders; collects appropriate system performance data; and reports on necessary EMS system quality indicators.
9. Developing and retaining prepared, knowledgeable and effective leadership at both the system and service level.
10. Overcoming distrust between communities and distrust between local response services.
11. Ensuring Advanced Life Support (ALS) is provided to patients who need it.
12. Meeting the growing demand for interfacility transports (transfers).
13. Integrating Drayton Ambulance Services into a Pembina County EMS system when its orientation is toward Walsh County.
14. Addressing the public's perceptions of EMS as it relates to funding, staffing and the efficiency of eight separate services.

Recommendations for addressing these challenges are based on the following assumptions:

- Reliance on out-of-hospital emergency medical resources will continue to increase as population age and healthcare resources continue to regionalize.
- The pool of potential volunteers will continue to shrink, suggesting that volunteerism alone is not a viable long-term strategy for ambulance staffing.
- The costs of recruiting and retraining a quality EMS workforce will continue to rise.
- Significant increases in EMS-related funding from federal sources in the near future are highly unlikely.
- Future state funding for EMS agencies will favor areas and systems that have plans and embrace a regional approach to EMS.
- There will be increasing competition for local funding resources (including tax subsidies, hospital or organizational subsidies, donations and fundraising).

In the future Pembina County will be served best by out-of-hospital EMS resources that work together to create a true EMS system that is reliable, prompt, sustainable and cost effective. Such a system can be created through increased collaboration, leadership, planning, measurement and resource sharing through the following recommendations:

1. Broadening the mission of the Pembina County EMS Council to one of overseeing and coordinating Countywide EMS planning, direction, education and quality.
2. Creating and funding a Pembina County EMS Coordinator position to consistently oversee planning and plan execution and system quality. The Coordinator should be hired by the Council, be accountable to the Council, and ensure the mission of the Council is successfully carried out.
3. Exploring ways to maximize funding for EMS in Pembina County (i.e., increasing mill levy, examining other sources of County and community funding, and positioning itself to maximize eligibility for state and federal monies and grants).
4. Creating a Countywide EMS plan that addresses resource deployment, mutual aid, staffing, service failures, recruitment, and quality and education.

5. Collecting data on the total and individual service costs of providing EMS in Pembina County and telling an accurate funding story to potential funding sources.
6. Exploring the possibilities, barriers and opportunities of the ambulance services working more closely together in terms of leadership and staffing.
7. Exploring the possibilities of Cavalier Ambulance Service (CAS) creating a single paramedic ALS QRU to supplement its current ALS ambulance.
8. Creating a Countywide quality program with a part-time paid Quality Coordinator.
9. Strengthening the role and involvement of the Medical Director.
10. Strengthening PSAP dispatch quality and capabilities.
11. Improving EMS storytelling and public education.
12. Creating a Countywide recruitment program.
13. Clarifying and establishing CAS as primary back up to Pembina Ambulance Service (PAS).
14. Creating a Countywide approach to handling interfacility transports without compromising emergency response capabilities.

Background

Reliable, competent and affordable out-of-hospital EMS are an important ingredient to the health, safety and security of the residents and visitors of Pembina County, North Dakota. Like many rural areas in the United States, changes in socioeconomic conditions, demographics and healthcare resources are presenting significant challenges to the EMS system in Pembina County.

Awareness of these challenges prompted the Pembina County EMS Council to seek outside help in July 2009. Of particular concern was the challenge of ensuring Pembina County has enough ambulance personnel to meet local 9-1-1 emergency response needs going forward. Specifically, the EMS Council sought to retain a consultant to conduct an assessment and analysis of EMS in the County and provide informed recommendations for future growth and development of the system. However, instead of issuing a contract at that time, the EMS Council chose to seek funding and consulting help through the North Dakota Rural EMS Improvement Project — a state-funded project to assess EMS in North Dakota, strengthen local leadership, improve the quality of EMS, and address issues of recruitment and retention.

SafeTech Solutions, LLP (STS), the contractor for the North Dakota Rural EMS Improvement Project, chose Pembina County as one of its local assessments because of its expressed desire for an assessment and as a representative county in North Dakota that is facing significant EMS challenges.

Goal of the Assessment

The goal of the assessment is to provide a description and analysis of the EMS system in Pembina County as it appeared in 2010, along with recommendations for improvement. The assessment focused only on the out-of-hospital components of the EMS system, which includes emergency call taking, dispatching, responding, medical transportation and their supporting services. Specifically, the assessment looked at:

- The design of the EMS system;
- The system's organizational structures;
- System and agency leadership, administration and management;
- The EMS system's response reliability and operations;
- Financing of the system;
- Staffing and personnel;
- Clinical care (including medical oversight and direction);
- Quality processes;
- EMS education; and
- The perception of EMS by community leaders and non-EMS persons.

Methodology

Assessment data was collected through: a survey of the four ambulance services; a site visit; a review of significant documents; a review of state-collected data; a review of available local operational and response data; and more than 40 in-person and telephone interviews with key local informants.

Informant interviews included: EMS providers; organizational leaders; local governmental officials; residents; public safety, fire and emergency management officials; school officials; business and farm owners; medical and hospital staff; nursing home staff; clergy; regional health and EMS officials; and local users of EMS.

Because quantitative data was limited and because many of the issues involved in the Pembina County EMS system are rooted in local practices, opinions, beliefs and traditions, the assessment sought to go beyond gross measurements and understand the subtleties of the issues and challenges. To that end, the assessment and report draw generously on qualitative data, including the observations, experiences, reflections and opinions of the key informants.

Data was reviewed and evaluated by the STS team looking for themes and trends with an eye toward local challenges and opportunities. Specific recommendations were formed from the data and evaluation.

No two EMS systems are identical. Each is influenced by its own particular local issues, personalities, needs, resources and leadership. In evaluating the data and considering recommendations, particular attention was paid to the unique history, personalities and system characteristics of Pembina County.

Limitations

The project was limited by several factors, including the EMS system design, availability of quantitative data, trust issues, and limited time and resources. The assessment did not include a broad survey of residents and EMS system users. Because EMS in Pembina County involves a variety of entities and organizations, quantitative data is scattered and there is no single source for quantitative data gathering for EMS in the county.

Some data was not easily accessible, nor is data always collected in the same manner. Some data was not available or had to be pulled from a variety of sources. For example, obtaining clear data on system response and reliability and the total EMS system costs was difficult because of the number of entities involved and the various bookkeeping methodologies. Some informants were reluctant to share information because of trust issues related to conflicts between some of the entities and personalities involved. The project team spent limited time with the QRUs and did not perform an in-depth assessment of these organizations.

The Report

This report seeks to present the findings and conclusions in a readable and practical format. In an effort to communicate clearly and make this assessment useful to all, the report defines terms, explains concepts and utilizes conversational language. The report seeks to honor people's participation and encourage further regional collaboration by respectfully presenting what some might consider sensitive information without identifying individuals.

Rural EMS — Common Issues and Challenges

EMS in general, and especially EMS in rural and small-town America, continues to be influenced by the unique manner in which it developed over the past 50 years. Modern EMS has roots in the 1960s, when concerns about soaring highway traffic deaths led the federal government to fund a study on accidental death in America. The resulting report, published in 1966, highlighted the need for improved prehospital emergency medical services, especially in rural areas where trauma injuries and deaths were (and remain) most prevalentⁱ. Congress responded and began funding EMS development through a variety of projects and funding mechanisms.

In 1973, Congress passed the Emergency Medical Services Systems Act, which eventually led to the formation of a plan for the development of geographic EMS Regions across the United States. The framers of the plan wanted to ensure that EMS everywhere met certain standards and envisioned the development of 304 EMS regions that each conformed to 15 “essential EMS components”ⁱⁱ. In the early 1980s, before these regions could be established and become self-sufficient, federal funding for regional EMS development was eliminated, leaving local communities to develop EMS with little or no regional planning and funding. EMS did not develop according to any large-scale planning, but simply developed locally and organically where there was need, desire, resources and leadership.

Over the past four decades, most rural communities have been heavily subsidized by volunteers who donate their time to respond to emergencies and provide care and transportation. In the last decade, EMS volunteerism in many communities has declined. At the same time, in many communities, the demand for EMS has increased. With more regionalization of specialized medical services — such as cardiac, trauma, stroke and burn care — EMS is performing more transfers. In some areas, rural health clinics and hospitals have closed, creating more reliance on local EMS as a healthcare safety net in medical emergencies. In addition, in many rural areas the percentage of people over age 65 continues to increase.

In 2004, the National Rural Health Association published a vision for the future of rural EMS in the United States and predicted increasing reliance on rural EMS because “rural and frontier settings have limited and shrinking local healthcare resources.”ⁱⁱⁱ In 2005, a report from the International City/County Management Association described EMS systems as “Bending — and in some cases breaking — under the strain of rising costs, reduced subsidies, and increasing services expectations.”^{iv} In 2006, the federally funded Institute of Medicine’s comprehensive report, *Future of Emergency Care: Emergency Medical Services at the Crossroads*, described rural EMS in America as facing a multitude of challenges. That report stated that “providing adequate access to care presents a daunting challenge given the distances required to provide care and the limited assets available.”^v In 2008, a nationwide assessment of the EMS workforce funded by the federal government and conducted by the University of California San Francisco Center for the Health Professions described the recruitment and retention of EMS providers as one of the greatest challenges facing rural EMS.^{vi}

In North Dakota, as in most states, out-of-hospital EMS is not a service whose provision by local government is mandated by law. The relative amount of EMS (availability and reliability) and the level of care provided is a local issue that is often a product of historical precedent and local initiative. The North Dakota Department of Health’s Division of EMS and Trauma (DEMST) has the statutory obligation to assure minimum standards are developed and regulated for providers and personnel, where they exist. In that function, DEMST licenses EMT Basics, EMT Intermediates and EMT Paramedics, as well as the ambulance services that employ them. In addition, EMS education is overseen at the state level.

Pembina County

Pembina County is located in extreme northeastern North Dakota. The word “Pembina” is derived from the Chippewa Indian term for high bush cranberry that grew in abundance along the Pembina River. First settled by Sioux, and then later by fur traders of the Hudson Bay Company, the area is often referred to as the Rendezvous Region because of the large rendezvous that took place there during the fur trade era. This region is one of the most scenic in the state and is steeped in history. The County was created by the territorial legislature and was organized on August 12, 1867. The city of Pembina was the county seat from 1867 to 1911 when it was moved to Cavalier.

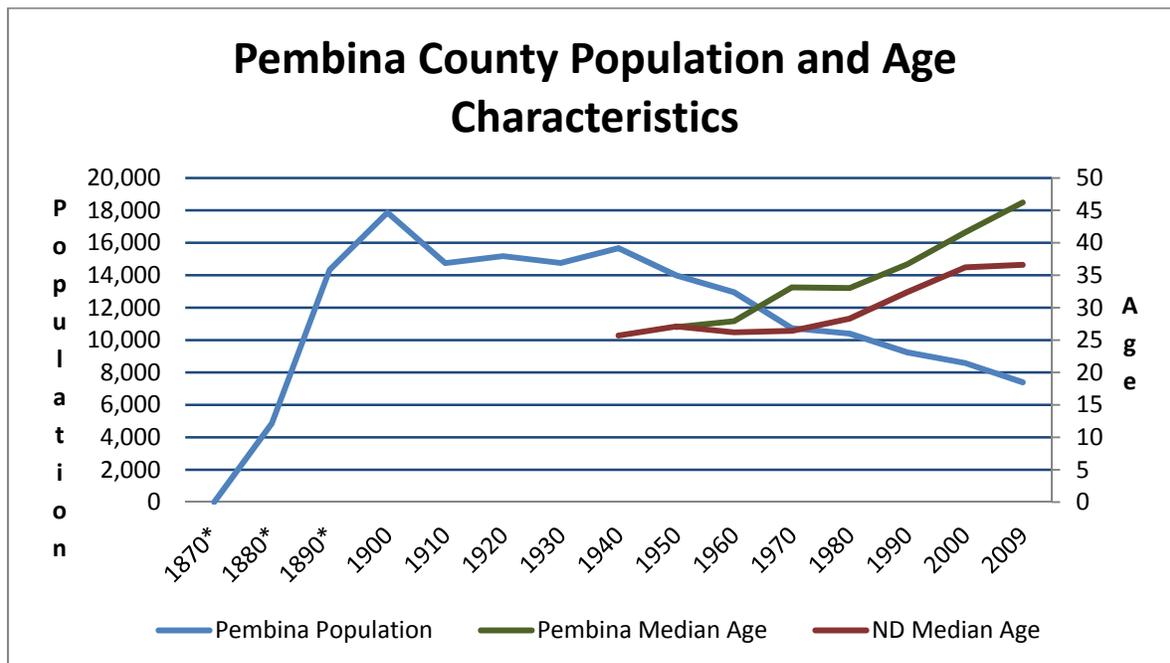
Pembina County covers 1,118 square miles and currently has a population of 7,392, with a median household income of \$47,188 (2.6% higher than the North Dakota median) and 8.4% of its population living below the poverty level (compared to 11.5% statewide). Pembina County is ranked 25 of the 42 counties for health outcomes and ranked 34 for health factors by the County Health Rankings project.

Present day Cavalier Air Force Station and Icelandic State Park are both located in Pembina County.

Informants described declining and aging populations as one of the County’s biggest challenges. The concern with a declining and aging population is substantiated in US Census reports for Pembina County as shown below. In the last decade, the population per square mile decreased from 7.7 to 6.6.

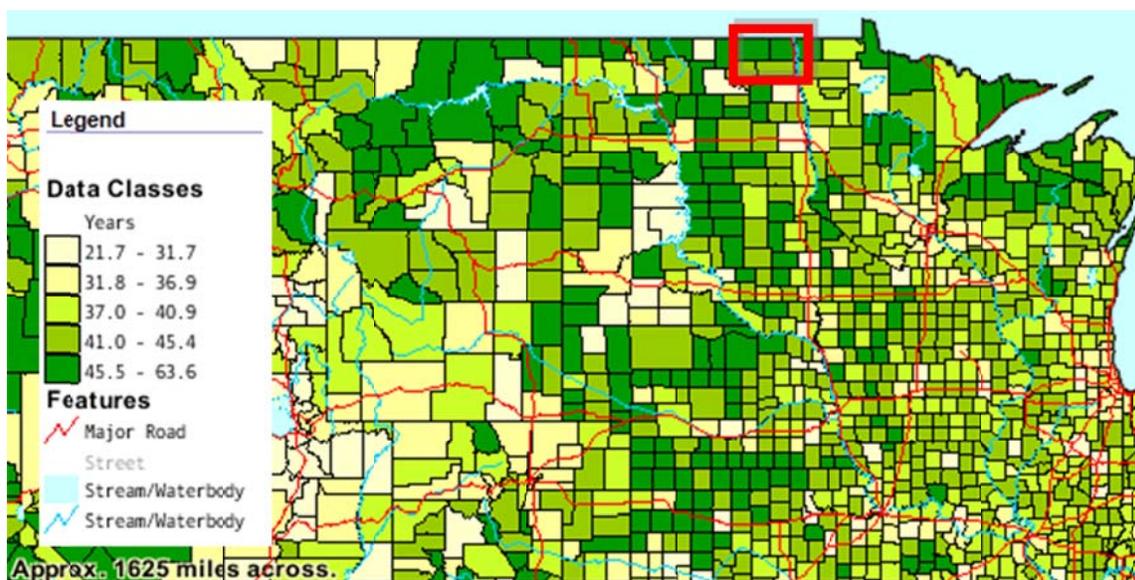
Pembina County and North Dakota Median Age and Pembina County Population

(Source: US Census Bureau)



The following map from the US Census Bureau illustrates the 2009 median ages for the region. Pembina County, along with many other rural counties, is in the oldest population bracket. The issues facing an aging population will become more and more evident in Pembina County, and as this map illustrates, the entire region in the coming years.

2009 Median Ages by County (Source: US Census Bureau)



Pembina County EMS — 2010

Out-of-hospital emergency medical services are provided to residents and visitors of Pembina County by four independent state licensed ambulance services, four independent unlicensed QRUs, a PSAP, several EMS educational services, a local EMS Medical Director, and fixed wing and rotor wing services located outside of the County.

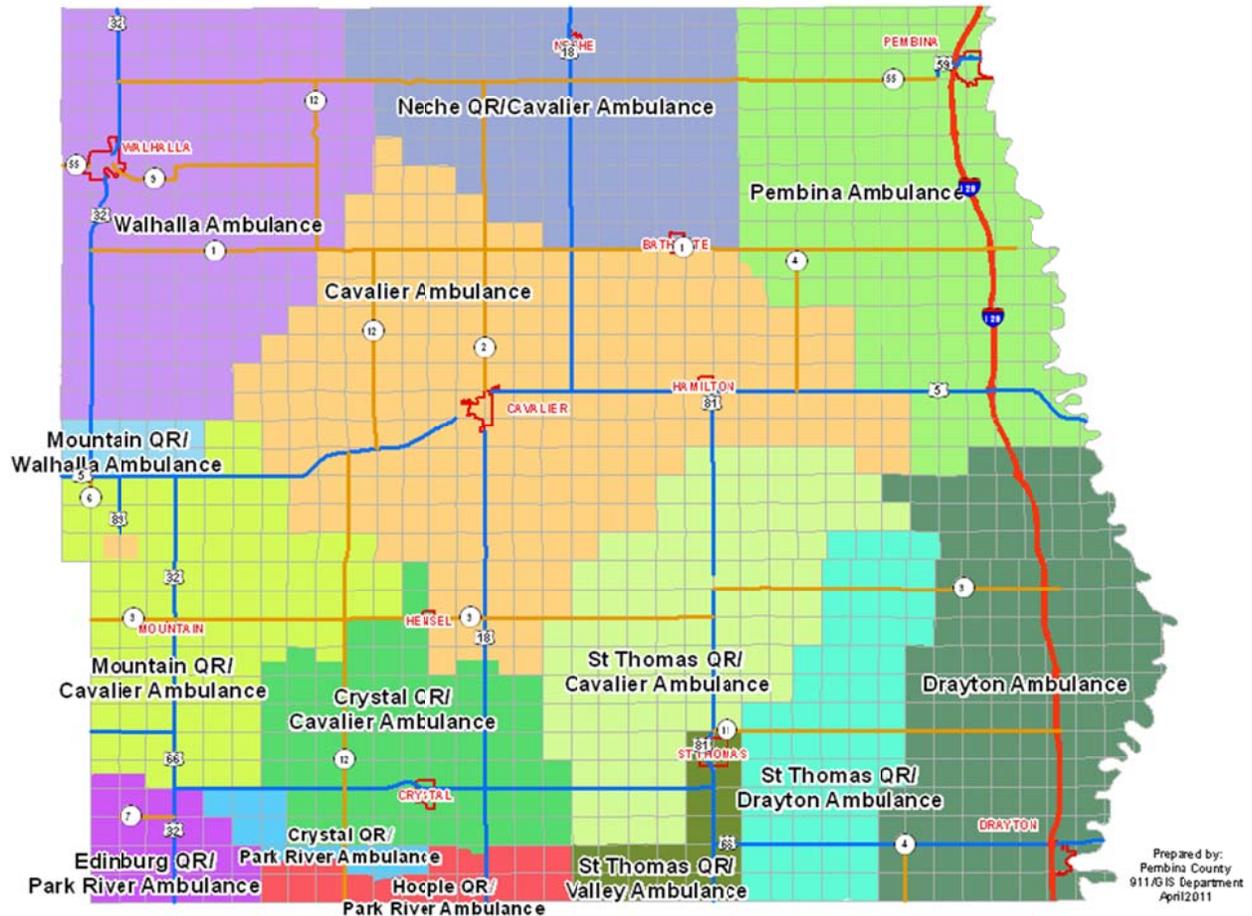
EMS in Pembina County developed over the past 50 years as communities saw needs and found local leadership, volunteers and resources. During the early years of EMS development, there was some consideration and attempts at having a single countywide ambulance service, but communities opted to develop their own independent ambulance services. The first formal licensed ambulance services with trained EMS providers emerged in the 1970s and 1980s and have offered varying levels of service (Basic, Intermediate, and Advanced Life Support) over the years, although there has never been a county wide EMS plan.

Currently there are approximately 550 requests for EMS annually in Pembina County. More than 40 percent of these calls are for interfacility transfers between hospitals and/or nursing homes. Public access to EMS is obtained through an e911 call system that is answered by dispatchers trained in emergency medical dispatch (EMD) procedures at the PSAP operated by the Pembina County Sheriff's Office in Cavalier. Dispatchers at the PSAP dispatch QRUs and ambulance services to distinct designated response areas that are set by the County's 911 Coordinator in accordance with North Dakota Century Code (N.D.C.C. 57-40.6-10) to ensure that the closest ambulance responds to an emergency.

The County uses a partially tiered response structure in which QRUs are utilized in the areas most distant from ambulance services to provide an initial quick response and patient stabilization. QRUs do not transport, nor do they respond to all areas in the County. On most responses, the ambulance service is the only agency responding to the call for help. The Sheriff's Office and Fire Departments do not routinely respond to EMS calls. The Sheriff's Office will respond to calls where criminal activity is suspected, traffic control is needed, or ambulance services or QRUs specifically request help. Fire

Departments in Pembina County are routinely dispatched to all motor vehicle accidents and provide extrication, search and rescue, and hazardous materials services as needed and as requested by ambulance services, QRUs and the Sheriff's Office. Ambulances are routinely dispatched to fire calls.

Pembina County Emergency Medical Response Areas



Currently, QRUs provide basic levels of care, and three of the four ambulance services provide basic and intermediate levels of care, with one ambulance service providing advanced levels of care. Ambulance services providing basic levels of care are required to call for an ALS ambulance to intercept with them if the patient presents with certain defined clinical conditions.

Most emergency transports from emergency scenes are taken to Pembina County Memorial Hospital (PCMH) in Cavalier. However, patients are also transported to hospitals in Grand Forks, Grafton, Park River, Langdon and Hallock, Minnesota.

The clinical care of the EMS system is overseen by a local internal medicine physician, who serves as Medical Director to all four ambulance services. Online medical control is obtained through PCMH and is most often accessed through a cell phone.

Transfers of critical patients from PCMH to higher level care centers are most often performed by CAS with ALS staff and without nursing or physician assistance.

There are no air medical resources located in Pembina County. These sources are located outside the county and are rarely used because of time and weather factors. Helicopter scene responses are thought to be impractical for most situations.

The largest numbers of emergency medical calls occur in the central and northwest regions of the County and are managed by CAS and the Walhalla Ambulance service. CAS is centrally located and has the largest service area. Walhalla may respond into Cavalier County (to the west) and transport patients to Langdon. PAS and Drayton Volunteer Ambulance Service (DVAS) are both located near Interstate 29 and the eastern border of the County and may respond into Minnesota and transport patients to Minnesota destinations.

Common Hospital destinations

- Pembina County Memorial Hospital, Cavalier, ND
- Altru Health System Hospital, Grand Forks, ND
- Kittson Memorial Health Care Center, Hallock, MN
- Cavalier County Memorial Hospital, Langdon, ND
- First Care Health Center, Park River, ND
- Unity Medical Center, Grafton, ND

Organizations, Organizational Structures and Leadership

There is no central leadership, authority or organizational structure between the ambulance services, QRUs, and the PSAP in Pembina County. Each entity operates independently, and an EMS council made up of the various entities oversees the distribution of county EMS funds and coordinates education.

Pembina County EMS Council

In the mid 1980's EMS providers from several ambulance services (along with the County Sheriff) recognized the need for more EMS funding and began a door-to-door petition campaign to put an EMS mill levy measure on the local ballot. The petition drive and subsequent ballot measure were successful with 1.5 mills being dedicated to EMS organizations in the County. The group oversaw the distribution of funds and continued to work together and report to the County Commissioners on the status of ambulance services and QRUs. In time, another successful campaign raised the mill levy to 4 mills and again to the current level of 5 mills. Over the years the group became more organized and known as the Pembina County EMS Council (the Council) and continues to oversee distribution of mill levy funds in compliance with state law (N.D.C.C. 23-27-04.7). The Council collects an annual budget from each service and also coordinates Countywide EMS education through a coordinator hired by the Council.

Currently, the Council has no real authority and reports only to the County Commissioners in an advisory role. Its membership includes representatives from each ambulance service and QRU, a hospital representative, the 9-1-1 Coordinator and one layperson. The Council meets quarterly and is led by a President who is elected by the membership. The County-employed 9-1-1 Coordinator provides significant amounts of coordination and support to the Council.

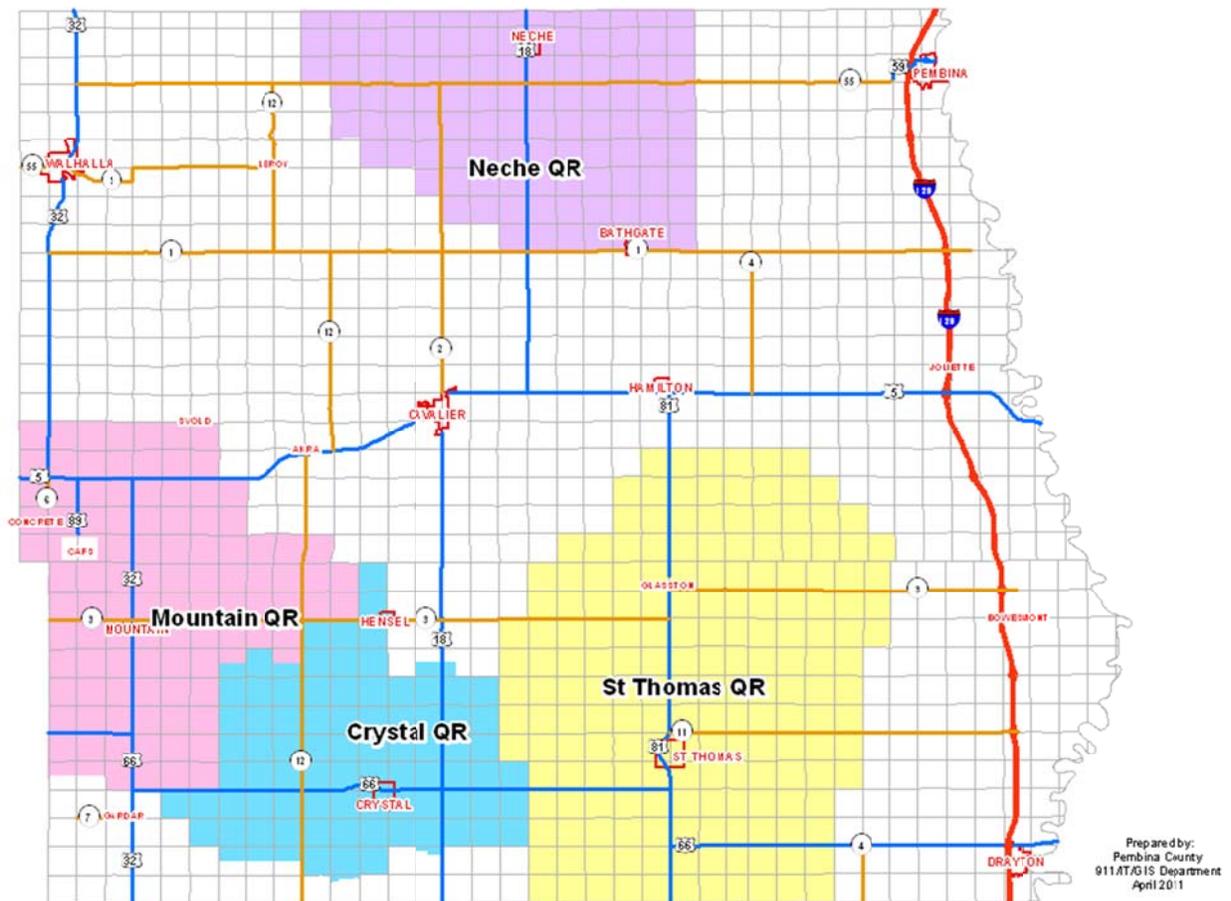
During the past several years, the EMS Council has explored expanding its role as EMS needs in the County suggest a more regional approach to EMS. The Council has evolved into providing a forum for discussing County EMS challenges, and the Council has begun to move toward more concrete planning including the seeking of this assessment.

Quick Response Units

QRUs are located in the communities of Neche, St. Thomas, Crystal and Mountain. According to the State of North Dakota's Division of EMS and Trauma (DEMST), QRUs are organizations that provide care to patients while an ambulance is en route to the scene of an emergency. They may be organized as part of a law enforcement agency, a fire department, or a standalone agency whose primary purpose is to provide quick-response services. QRUs do not transport patients. Historically, QRUs were not licensed. However, in recent years the DEMST began a voluntary QRU certification program to establish minimum standards for organizations that hold themselves out to provide emergency medical care. That voluntary certification process has expired, and QRUs must now be licensed by DEMST in the same manner as an ambulance service (N.D.C.C 23-27-04.6). All QRUs in Pembina County are appropriately licensed.

In Pembina County, the QRUs are independent organizations made up of volunteer personnel who respond to the scene of an emergency in either an ambulance style response vehicle or their own personal vehicles and provide care, support and stabilization until the ambulance arrives. Collectively, these units responded to 45 calls in 2010 and have 32 active members. Informants report that these services are generally reliable but occasionally have difficulty finding responders during daytime hours. QRUs are not required to respond if no personnel are available. The organizations are led by membership-elected presidents. They receive funds from local governments, donations and mill levy monies that are passed on by CAS.

Pembina County Quick Response Areas



One QRU leader reported having difficulty recruiting new members and difficulty in pulling current members together for meetings and planning. Ambulance services reported QRUs to be an essential part of the EMS System as they are generally able to reach emergency scenes more rapidly than ambulance services, especially in winter weather.

Education for QRUs is obtained through the EMS Council and the County’s EMS Education Coordinator. Funding for this education comes from 1 mill of funding that has been designated for EMS education and is for initial and continuing EMS education of ambulance services, QURs and the public. Beginning in 2010, QRUs no longer received any direct funding from the County through the mill levy. This change was a result of North Dakota Century Code changes that defined how Counties would distribute mill levy monies to EMS Services.

The following table provides basic organizational call volume data for each of the QRUs within the county for the past three years where available.

Call Volumes Quick-Response Units (Source: 9-1-1 coordinator)

Year	Crystal	Mountain	Neché	St. Thomas	Total
2008	11	8	10	26	55
2009	Not available				
2010	8	17	8	12	45

The following table provides basic organizational active membership data for each of the QRUs within the county.

EMS Personnel Quick-Response Units (Source: EMS Council Documents)

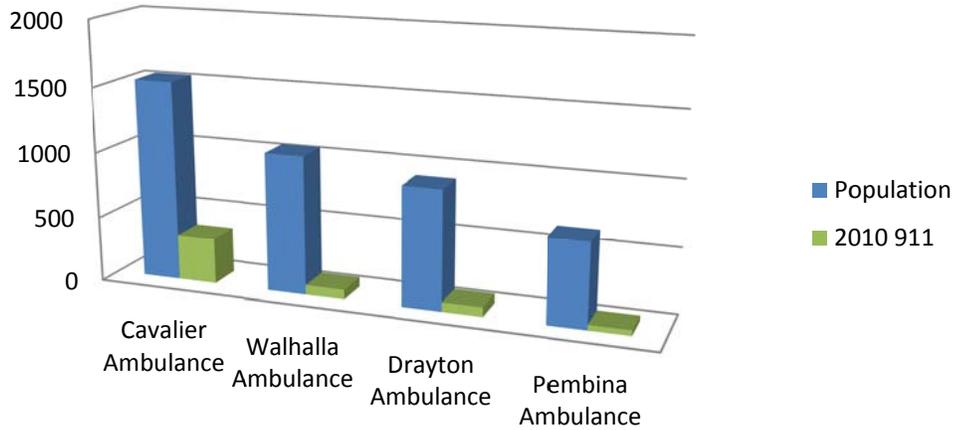
	Crystal	Mountain	Neché	St. Thomas
Active Members	8	5	8	11

Ambulance Services

This section describes the four Pembina County ambulance services, their unique characteristics and challenges. The ambulance services collectively respond to approximately 550 calls per year from four locations with 39 active members. Three of the services are licensed as BLS services and one as ALS.

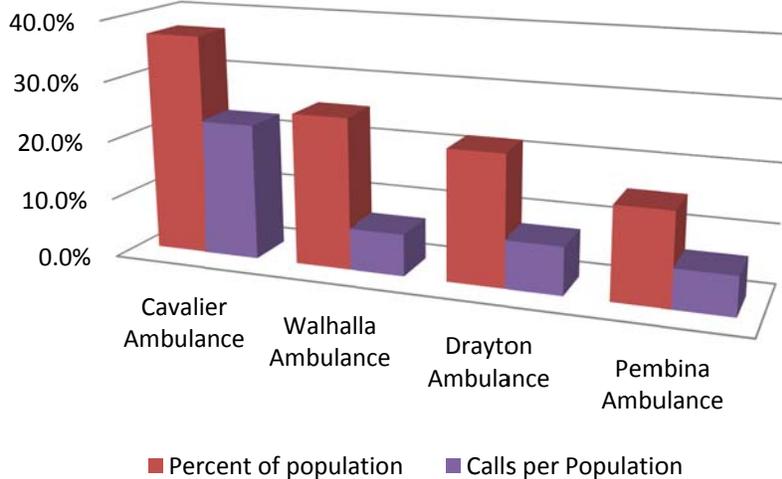
There is a disproportionate distribution of ambulance calls among the towns of Pembina County. The following graph illustrates the approximate population of the major towns and their respective ambulance call volumes.

Pembina County Town Population & Count of 2010 Ambulance Calls



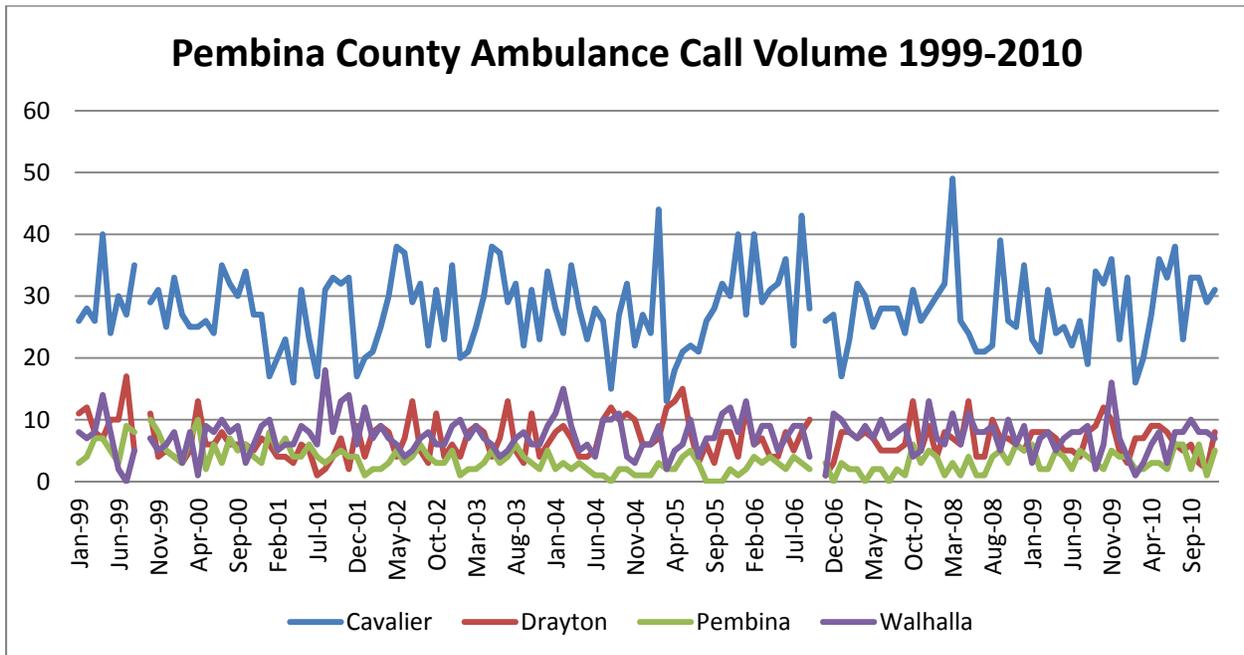
The following graph illustrates the same data by the contribution of each town's ambulance service by its percent of the county population. If all services had an equal demand, the purple "calls per population" data would be equal for each town. As is evident here, Cavalier Ambulance has a much higher demand than Walhalla when their populations are considered.

2010 Distribution of Population vs. Ambulance Calls



The following graph illustrates the call volume for each ambulance service in Pembina County between 1999 and 2010 where the data was available. Slight variations in call volume are expected from one year to the next. One can clearly see that, in general, the call volumes for each service have remained

consistent with average monthly call volumes for Cavalier (28), Drayton (7), Pembina (3), and Walhalla (7).



The following table provides basic ambulance service membership information provided by each service in 2010.

EMS Personnel Ambulance Services (Source: NDREMSIP 2010 Survey)

	Cavalier	Drayton	Pembina	Walhalla
Total Roster	25	12	15	15
Active	17	8	7	7

Walhalla Ambulance Service

Located in northwest Pembina County in the community of Walhalla, Walhalla Ambulance Service (WAS), is an independent not-for-profit North Dakota Corporation (currently seeking 501(C)(3) status with the IRS). Responding to approximately 85 calls per years with EMT-B and EMT-Intermediate levels of care, WAS has a service area of 225 sq. miles and serves a population of 1,610.

The town of Walhalla (pop. 900) is a picturesque community located on the Pembina River east of the Pembina Gorge. As one of the oldest community in the state, Walhalla is known for its beauty and history. Its ambulance service area includes the wilderness area of Pembina Hills, a fast-moving river noted for its many small rapids and canoeing and the Frost Fire alpine ski area (which leads to some seasonal variation in ambulance call volume). The town has a skilled nursing home with 37 beds. The major employers in Walhalla are the schools, the nursing home, and an ethanol manufacturing plant.

WAS has seven active members on a roster of 15. All of its members are considered volunteer. WAS operates from a single station and owns a facility that includes a garage, a meeting and training space. It currently has two ambulance vehicles, a 2006 type III Ford, and a 1997 type III Ford. Call shifts are scheduled and members are paid \$1 per hour to be on call and \$6.50 per hour (for drivers) or \$8.50 per hour (for EMTs) while on ambulance calls.

In the past five years, WAS has experienced significant challenges in finding enough staff to fill call shifts and has had to request waivers from the DEMST to exempt it from having to provide coverage 24/7. Currently, it is not on waiver status but continues to experience challenges filling call shifts for every time period. Although a large local employer recently stopped allowing employees to respond to ambulance calls while working, it has not had any response failures in the past year.

More than half of the WAS calls are to the local nursing home to transport nursing home patients to hospitals. Most of its transports are to either PCMH in Cavalier or to Cavalier County Memorial Hospital in Langdon. WAS may call for intercepts for ALS services from either the CAS or Langdon Ambulance Service.

Because of the surrounding geography, WAS is occasionally called upon to engage in wilderness style rescue activities. In past years, it has transported a number of patients from the Frostfire ski area into Canada, but recently such activity has declined due to border restrictions.

EMS transport distances from Walhalla town center:

- 26 miles to PCMH, Cavalier.
- 31 miles to Cavalier County Memorial Hospital, Langdon.
- 101 miles to a Level II trauma center and a cardiac catheter laboratory (Altru Health System Hospital, Grand Forks).

In 2009, WAS reported revenues of \$146,956 and expenses of \$145,815. Its revenues are a combination of transport reimbursements, the County mill levy, donations and memorials. It uses a billing company for its transport revenues and has experienced some Medicare and Medicaid claim denials. Patient Care Reports are completed on paper forms by crews and then later entered electronically into the State's data collection system.

Its active members are passionate about keeping the service running as long as possible but acknowledge significant challenges with staffing, scheduling, training demands, funding and community awareness. One of its most significant challenges is the aging of its population and the challenges that presents for recruiting volunteer members and the potential for increased call volume.

While WAS struggles to recruit members, the Walhalla Fire Department (all volunteer) has a waiting list of people wanting to join. Informants speculated that EMS training requirements and the large difference in the number of calls between EMS and fire account for this difference. One informant stated, "The fire department has fun, while the ambulance service works all the time."

WAS is led by a director elected by the membership for a two-year term. The position remains unpaid, although it has increasing responsibilities. WAS does not have a formal quality plan or have a dedicated Quality Coordinator.

Drayton Volunteer Ambulance Association, Inc.

Located in extreme Southeast Pembina County, DVAA is an independent not-for-profit North Dakota Corporation with 501(C)(3) status with the IRS. Responding to approximately 75 calls per years with EMT-B and EMT-Intermediate levels of care, DVAA has a service area of 232 sq. miles and serves a population of 1,132.

The town of Drayton (pop. 778) is located on the flood plain of the Red River 30 miles south of the Canadian border. It is located at the crossroads of Interstate 29 and North Dakota Route 66. Settled as a river town and organized in 1878, Drayton continues to be a crossroad for transportation and agriculture. It is known for its fertile farmlands and large farms. Its largest business entity is American Crystal Sugar, which operates a large refinery just outside of Drayton and employs approximately 250 people. In the past 10 years, Drayton's population has declined 14 percent.

Annual flooding on the Red River has had a big impact on the community, prompting significant changes in its downtown landscape and continuing to be a major spring-time concern for its residents. Drayton has a small community clinic staffed by a mid-level provider affiliated with Altru Health Center in Grand Forks. Both DVAA members and community informants report that Drayton often feels more a part of Walsh County than Pembina County because so much of its orientation is to the south.

DVAA has a long and rich EMS history date back to 1972, when a modern ambulance service was launched with broad community support. In 1988, it became home to the first volunteer paramedic in North Dakota. Currently, DVAA has eight active members out of a roster of 12. All of its members are considered volunteers. It operates from a single station in a facility that is shared with the local volunteer fire department. The facility includes a large apparatus area, offices, and meeting and training space. DVAA currently has two ambulance vehicles, a 2006 type III Ford, and a 1997 type III Ford.

Call shifts are covered by three crews, who take call time on a rotating fixed schedule. Members receive no pay for being on call but are paid per hour when on ambulance calls (driver \$8, EMT \$10, and EMT-I \$12).

In the past five years, DVAA has experienced some challenges attracting and keeping staff. In 2008, it lost three EMTs, which had a big impact on its schedule. Currently, call shifts are being adequately covered, and DVAA has had no recent failures to respond, although the State-funded staffing grant is not utilized. Local resident informants expressed great appreciation and admiration for the DVAA volunteers but also questioned the long-term sustainability of the ambulance service. They also expressed concerns about members becoming burnt out without significant increases in the number of active volunteers.

A portion of DVAA's service area and calls are in Walsh County. Many of its patients are transported to Unity Medical Center in Grafton or to Altru Health System Hospital in Grand Forks. Occasionally, DVAA takes patients to PCMH in Cavalier and to First Care Health Center in Park River. If an ALS intercept is needed, it is usually obtained from Walsh County EMS from Grafton and occasionally from CAS from Cavalier.

During beet harvest, traffic in the surrounding area increases and may cause some slight increase in call volume. During the spring, if flooding occurs, DVAA may be called upon to engage in evacuations or other flood-related activities. During winter months, traffic accidents on I-29 can present significant trauma.

EMS transport distances from Drayton town center:

- 21 miles to Unity Medical Center, Grafton.
- 35 miles to PCMH, Cavalier.
- 37 miles to First Care Health Center, Park River.
- 51 miles to a Level II trauma center and a cardiac cath lab (Altru Health System Hospital, Grand Forks).

In 2009, DVAA reported revenues of \$79,950 and expenses of \$56,520. Its revenues are a combination of transport reimbursements, a County mill levy, donations and memorials, and a \$15 per year community membership/subscriber program that entitles participants to vote on ambulance service leadership and business. It currently has about 40 community members. DVAA utilizes an EMS billing company to process its transport bills. PCRs are completed electronically and uploaded to State's data collection system.

Its active members report being positive about their service and its future, and report being in "good shape" financially while having some challenges with getting and keeping new people. One member was added in the last year, but current members reported having to "twist arms" to ensure that people take calls. As the age of the active membership is increasing, so is the age of Drayton.

A large concern of DVAA is the potential failure of PAS. Technically, Drayton is the next closest ambulance service to Pembina (in terms of miles), and according to state rules would be the ambulance to respond if Pembina is not available. Members believe this would be a critical challenge for them and do not want to cover PAS' area.

DVAA is passionate about EMS education and has deep experience in training new EMS providers. However, it reports experiencing challenges with new EMS students being resistant to the computer based testing. DVAA does not have a formal quality plan, conduct routine reviews of PCRs or have a dedicated quality coordinator.

The leadership of DVAA is elected by the membership for a two-year term. The position is unpaid.

Pembina Ambulance Service, Inc.

Located in the extreme northeast corner of Pembina County is PAS, an independent not-for-profit North Dakota Corporation with 501(C)(3) status with the IRS. Responding to approximately 40 calls per year with EMT-B and EMT-Intermediate levels of care, PAS has a service area of 136 sq. miles and serves a population of 837.

Just south of the Canadian border and at the confluence of the Pembina and Red Rivers, the community of Pembina (pop. 642) is home to a Motor Coach Industries plant, which manufactures large inter-city buses for customers such as Greyhound Bus Lines. With its proximity to Interstate 29 and the busiest border crossing in North Dakota, the community is a stopping point on a busy north south transportation route. As one of the oldest communities in North Dakota, Pembina has a rich history of commerce, trading and transportation. Pembina was the county seat from 1867 to 1911 and is just across the river from Vincent, Minnesota.

PAS has the lowest ambulance call volume of the four services in Pembina County. It currently has seven active members on a roster of 15. One of its members is an EMT who works full time for the service, while the remaining members are volunteers. PAS operates from an office and building shared with city offices, some businesses, and a nearby ambulance garage. Currently, PAS has one ambulance vehicle: a 2008 type III Ford.

In recent years, PAS has experienced significant challenges in finding enough staff to fill call shifts and has had to request waivers from the DEMST to exempt it from having to provide coverage 24/7. Currently, it is not on waiver status but continues to have challenges filling call shifts. Part of the challenge has been the loss of five EMT members from a nearby religious community (the members resigned for reasons related to their religious practices and beliefs).

In the midst of recent staffing challenges, Pembina explored becoming a substation of either DVAA or CAS but rejected the substation option after learning that state rules would not allow PAS to operate independently with their own budget. Instead, in 2009-2010, PAS obtained additional local funding and a state staffing grant and hired a full-time director paramedic and a full-time EMT to cover a significant portion of its daytime staffing. The director/paramedic has since left, and while the leadership reports hoping to hire another full-time person, the future is currently uncertain. Attracting a full-time experienced EMS professional with such a low call volume may be difficult.

A majority of PAS patients are taken to PCMH in Cavalier. A few are transported to Kittson Memorial Health Care Center in Hallock, Minnesota, while patients are occasionally transported to Altru Health System Hospital, Grand Forks. Intercepts for ALS services are obtained from CAS.

EMS transport distances from Pembina town center:

- 32 miles to PCMH, Cavalier.
- 31 miles to Kittson Memorial Health Care Center in Hallock, Minnesota.
- 79 miles to a Level II trauma center and a cardiac cath lab (Altru Health System Hospital, Grand Forks).

In 2009, PAS reported revenues of \$83,117 and expenses of \$54,655. Revenues for 2010 were reported to be higher (tax reports were not available at this writing) as PAS received a state-funded staffing grant of \$45,000.00 and \$21,000.00 from a ½-cent sales tax assessed by the City of Pembina. Revenues are a combination of transport reimbursements, a county mill levy, a local sales tax, grants, donations and memorials. PAS uses a billing company to bill for its transports, and PCR are completed electronically and uploaded into the State's data collection system. Members report that a recent change in County mill levy distribution resulted in a significant reduction of funds received from the County.

PAS members are deeply concerned about the consequences of not having an ambulance service in their community and having to wait for ambulances from Cavalier or Drayton. The most significant challenge is ensuring daytime and weekend staffing and finding and keeping new volunteers.

The leadership of the ambulance service has changed over the past 12 months with the coming and going of the full-time director/paramedic. Currently, the service is being led by the elected organizational president. The ambulance service is governed by a Board of Directors. The Board is made up of seven members, four of which are members of the ambulance service, and three are members of the community. The Service Director serves as the Secretary of the Board. PAS reports having a quality plan, although it does not have a dedicated Quality Coordinator.

Cavalier Ambulance Service, Inc.

Located in central Pembina County, CAS is an independent not-for-profit North Dakota Corporation with 501(C)(3) status with the IRS. Responding to approximately 350 calls per year with advanced life support/paramedic levels of care, CAS has a service area of 587 sq. miles and serves a population of 4,474. Established in 1878, the town of Cavalier (pop. 1,302) is located along the banks of the Tongue River and has served as the county seat since 1911.

Cavalier is home to the county's only hospital, PCMH. The hospital is a general medical and surgical hospital with 25 beds and is designated a Critical Access Hospital. According to the American Hospital Association, 2,002 patients visit the hospital's emergency room annually; a total of 341 patients are admitted; and its physicians perform 62 inpatient and 291 outpatient surgeries. Cavalier is also home to two medical clinics and Wedgewood Manor, a 50-bed skilled nursing home.

West of the Cavalier is the Cavalier Air Force Station — home to the 10th Space Warning Squadron of the 21st Space Wing of Peterson Air Force Base in Colorado. The station monitors and tracks potential missile launches against North America.

CAS has 17 active members on a roster of 25, with three full-time paramedics, five flex-time paramedics, one EMT-Intermediate and 8 EMT-Basics. All EMS Basics serve as volunteers. CAS operates from a single station and owns a facility that includes a garage, meeting and training space, crew quarters, and various offices. It currently has three ambulance vehicles — a 2010 type III Chevrolet, a 2005 type III Ford and a 1999 type III Ford. Three personnel are scheduled for each shift, and three typically respond on calls. Call shifts are scheduled, and volunteer members are paid \$.50 per hour to be on call and \$7.50 per hour when on ambulance calls. Volunteers are paid a \$25 shift bonus on weekends.

Like other County ambulance services, CAS has experienced significant challenges in finding enough staff to fill call shifts and especially in finding staff for a second ambulance if the primary ambulance is on a transfer. Because of the area's connection to agriculture, spring planting and fall harvest are challenging times for scheduling. While CAS has the largest active roster in Pembina County, members state that if they were to lose one or two of their EMT-Basics, it would constitute a crisis for them.

CAS provides ALS intercept services to the county's other ambulance services, and more than half of CAS calls are interfacility transports from hospitals or area nursing homes. Most of its transports are to either PCMH in Cavalier or to Altru Health System Hospital, Grand Forks. However, it also occasionally transports to Cavalier County Memorial Hospital in Langdon and other hospitals in Walsh County.

As the busiest Pembina County ambulance service, providing advanced levels of care and with the largest active staff, CAS members feel an obligation to ensure that they are available to respond and back up the county's other ambulance services and field a second ambulance when the primary unit is on a call or transfer.

EMS response distances:

- 31 miles to Pembina.
- 25 miles to Walhalla.
- 35 miles to Drayton.

EMS transport distances from Cavalier town center to:

- 0 miles to PCMH, Cavalier.
- 79 miles to a Level II trauma center and a cardiac catheter laboratory (Altru Health System Hospital, Grand Forks).
- 35 miles to Cavalier County Memorial Hospital, Langdon.
- 35 miles to Unity Medical Center, Grafton.
- 33 miles to First Care Health Center, Park River.

In 2009, CAS reported revenues of \$445,096 and expenses of \$349,038. Its revenues are a combination of transport reimbursements, a County mill levy, and donations and memorials and some grants, although the service does not qualify for the state staffing grant. It has paid off 70% of a \$400,000 mortgage on its facility, and in 2010 it gifted \$5,000 to each of the four county QRUs. Members describe their financial status as healthy. CAS has a staff member who is proficient at billing and does all the billing for the service.

CAS members are clearly proud of their service and have a great desire to ensure that CAS remains strong and able to be a leader in EMS in Pembina County. CAS is led by a president who is elected by the membership a year at a time. It also has a separate Chief Paramedic overseeing clinical care.

CAS is also active in conducting prevention activities in the community, including gun safety graining, EMS week visits to schools, CPR in schools, prom night activities, assisting public health with shots, seat belt and child safety seat promotions.

System Finance

Overall, EMS in Pembina County is financially made possible through a combination of:

- Contributions of time by volunteers;
- Reimbursements for patient transports from Medicare, Medicaid, private insurance and private payers;
- A County mill levy;
- A sales tax (in the city of Pembina);
- Local governmental support;
- Membership dues (Drayton);
- Donations, memorials; and
- Fundraising.

North Dakota law (N.D.C.C. 11-28.3 Rural Ambulance Service Districts and N.D.C.C. 57-15-26.5, 57-15-50, and 57-15-51 Tax Levies and Limitations) allows counties to assess up to 10.00 mills with majority vote to form or dissolve an ambulance district or to increase a mill levy. Pembina County currently only assesses five mills. Four mills are distributed according to service areas service, and the fifth mill is designated specifically for education. The 2011 mill value is \$39,564 (Source County Auditor), which will generate \$197,820 for the EMS services, leaving another \$197,820 not assessed.

Prior to 2010, mills were distributed equally throughout the ambulance services, with a portion going to the QRU. In 2010, the mills were redistributed according to areas served, resulting in Cavalier receiving a larger portion of the mill levy funds while others received less than in prior years.

The following tables provide the revenues and expenses for each ambulance service and QRU for 2008 and 2009. Data for 2010 is not available.

Ambulance Services Revenues/Expenses (Source EMS Council)

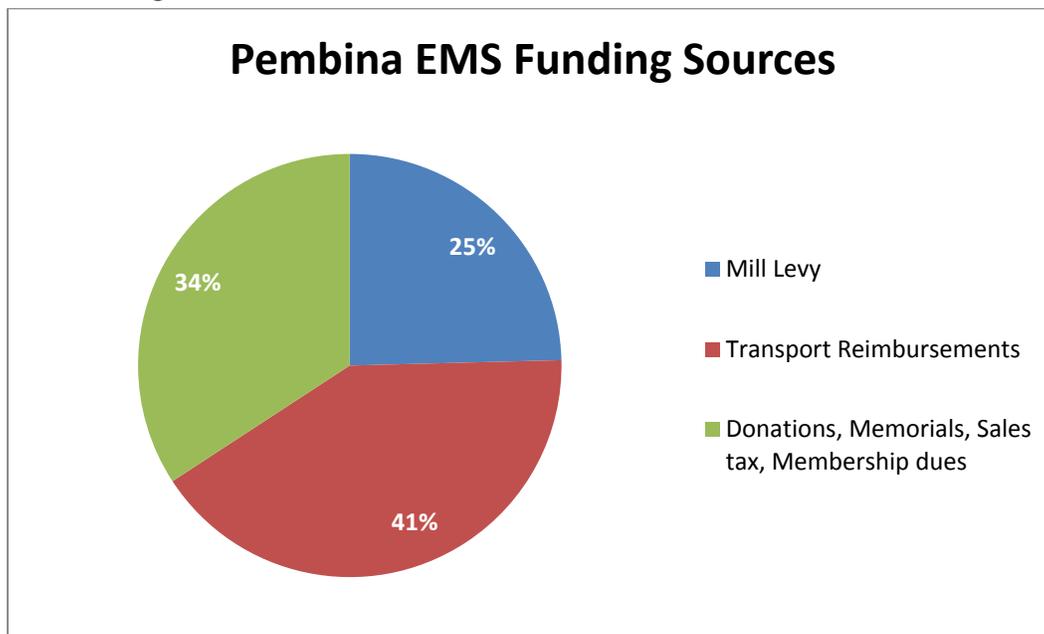
Year	Cavalier	Drayton	Pembina	Walhalla
2008 expenses	517,826	70,316	73,675	118,916
2008 revenues	503,680	70,021	75,811	106,632
2009 expenses	349,096	56,520	58,791	145,815
2009 revenues	445,096	79,950	71,092	146,956

Quick-Response Units Revenues/Expenses (Source EMS Council)

Year	Crystal	Mountain	Nече	St. Thomas
2008 expenses	4,706	5,586	6,290	4,590
2008 revenues	6,705	1,860	8,357	4,080
2009 expenses	4,706	10,349	8,248	2,553
2009 revenues	6,705	5,519	8,867	6,610

Excluding an accounting for the subsidy of volunteer hours, the ambulance services and QRUs currently report expenses of \$801,000 (based on 2008 statistics). According to available data and estimates, these expenses are met as follows: \$197,000 in mill levy; \$330,000 of transport revenues; and \$274,000 in donations, memorials, local governmental support, sales tax and membership dues.

EMS System Funding Sources



The largest subsidy of EMS in Pembina County is volunteer labor. Drawing on Bureau of Labor statistics, the Independent Sector (a leadership forum for volunteer organization and charities) values a volunteer hour in North Dakota at \$16.48 per hour based on cost of providing that labor at local wage and benefit scales.^{vii}

A North Dakota ambulance service is required to schedule at least two qualified staff members 24 hours a day, seven days a week. As a result, staffing four ambulances in Pembina County demands 70,080 hours of staffing per year. Currently, Cavalier pays wages for one staff member 24/7 (8,760 hours

annually), leaving 61,320 hours of volunteer staffing valued at \$1,010,554 annually. To put this another way, the Pembina County EMS volunteers donate over \$1 million dollars per year to the County!

Currently, all ambulance services report being financially stable and having positive cash flow. With the recent changes in the distribution of the mill levy, CAS is giving \$5,000 annually to each of the QRUs.

EMS Medical Director

All ambulance services in North Dakota are required to have a physician Medical Director. The four ambulance services in Pembina County share the same Medical Director, an internal medicine physician affiliated with the Altru Health System Clinic in Cavalier. Like many rural physicians, the Medical Director reports being very busy and short staffed, as well as also being the County Coroner (for which a small stipend is paid by the County).

The Medical Director demonstrates a clear understanding of EMS clinical care and is concerned about the quality of care delivered by ambulance services. Currently, the Medical Director reports a high level of confidence in the skills and care provided by all ambulance services and reports believing the Pembina County EMS providers are “in it for the right reasons.” According to the Medical Director, the County hospital only sees 6-10 major trauma patients per year, and most EMS calls are for medical conditions with a significant number of obesity-related conditions. Aside from attending an educational session on EMS Medical Direction several years ago, the Medical Director has not attended a formal EMS Medical Direction course.

The Medical Director has agreements with each individual ambulance service. Two services report having a written contract with the Medical Director, but none report having a formal job description and the Medical Director receives no compensation for services.

Having worked in Pembina County for a number of years, the Medical Director reported knowing many of the providers personally and interacting with them when they delivered patients to PCMH in Cavalier. Two ambulance services reported having frequent contact with the Medical Director (at least monthly), and two reported only having contact for annual paperwork signing.

There is no formal quality processes in place for the review of clinical care or Patient Care Reports. Two of the ambulance services report informally directing Patient Care Reports to the Medical Director for review. None of the ambulance services have a formal quality plan or a person specifically assigned to quality assurance. None of the services have a formal annual skills review with the Medical Director or involve the Medical Director in verifying the skills and credentials of new hires.

EMS Education

Pembina County has an active, robust and diverse EMS Education program. Education is offered to both EMS personnel and the general public. EMS education is conducted at both a County and local ambulance level. One of the five mill levy mills is dedicated to EMS education in the County, coordinated at the County level by the EMS Council and overseen by a part-time County EMS Education Coordinator. The EMS Council allows individual ambulance services to receive one-fifth of the education dollars to conduct their own education. In 2010, PAS and DVAA opted to conduct their own local EMS education.

None of the ambulance services reported challenges with finding educational opportunities for continuing education or for those interested in EMS training. Informants reported the quality of education to be high. Instructors interviewed for the assessment all had significant educational experience and displayed a passion of teaching.

Currently the County's instructor capability is as follows:

- 9 Certified ND EMS Instructors
- 17 CPR/First Aid Instructors
- 3 Emergency Vehicle Operator Course Instructors

In 2010, the following courses were conducted (does not include courses held by PAS or DVAA):

- 27 CPR Courses (14 Healthcare Provider & 13 Heart Saver)
- 7 First Aid
- 2 EMT Initials (1 started in Sep 2009 and completed Mar 2010 & 1 started in Nov 2009 completed in Mar 2010)
- 5 EMT-B Refreshers
- 2 EMR Initials
- 3 EPI-Pen (EMR) Enhanced Skills Courses
- 5 EMR Refreshers
- EMT-I Refresher
- D-50 % Administration
- 6 EVO Courses
- EVO Instructor Course
- CPR Instructor Courses
- Enhanced Skills Courses (IV Maintenance, Nebulizer Administration & Multi-Lumen Administration)
- Water Rescue
- Alzheimer & Dementia Emergency Course
- Prehospital Education for the Pediatric Patient.

Public Access, Communications and Dispatch

Access to EMS in Pembina County is gained through an enhanced 9-1-1 system, which is answered at a PSAP run by the Pembina County Sheriff's Office. Calls are electronically plotted on a response area map and appropriate responders are paged through a simulcast system.

Calls are answered and dispatched by dispatchers who also serve clerical and jailor functions in the Sheriff's Office. During a site visit to the PSAP, a dispatcher was preparing meals for jail inmates. Dispatchers receive Emergency Medical Dispatch training and have flip card system available to provide pre-arrival medical instructions to calls. The call center received 1,296 calls in 2010 for law enforcement, fire and EMS combined, of which approximately 45% involve EMS in some way. 2010 was the first full year of utilizing a computer radio log that allowed for collecting statistics on types of calls.

EMS personnel carry pagers and cellular telephones to receive notification of calls. Ambulances and QRUs are equipped with vehicle radios and handheld radios. Radio reception around the County is reported to be good, with some dead spots in the Walhalla area due to land formations.

The PSAP keeps paper records of ambulance times, including call, chute, response, scene, transport and return to availability times.

Pembina County Recommendations & Discussion

According to physicians, hospital staff, public safety, nursing home administrators, business owners, school officials, County Commissioners, local residents and former EMS patients, EMS in Pembina County is currently meeting local needs. Our assessment found no significant response, clinical care or customer service issues. Residents of Pembina County report high satisfaction with EMS and profess great admiration for the dedication, commitment and service provided by the mostly volunteer staff. The Sheriff reported that response reliability has actually improved during the past two years, meaning that QRUs and ambulance services are reliably responding when paged for service.

However, Pembina County EMS faces significant challenges related to changes in socioeconomic conditions, demographics and healthcare.

The overarching challenge facing EMS in Pembina County is one of creating, leading and maintaining a reliable, sustainable, effective and efficient Countywide EMS system while acknowledging and transcending the barriers related to local loyalties and distrust between communities.

Specifically, Pembina County faces the following challenges:

1. Meeting the EMS demands of a declining and aging population and its need for access to a healthcare system and specialization that is increasingly more regionalized.

As the average age of the population of Pembina County continues to rise, the need for healthcare resources and EMS will continue to grow. In addition, the regionalization of healthcare resources and specialties will likely continue calling for more EMS transportation to tertiary healthcare centers in places like Grand Forks, Fargo and the Twin Cities.

2) Ensuring the reliability, sustainability and quality of EMS in Pembina County without coordinated leadership, planning and direction.

Currently, Pembina County does not have a formal EMS system with central leadership, coordination, planning and direction. While each of the ambulance services and QRUs are dependent upon each other for back up, each operates independently and without any central coordination and planning. This necessitates an expensive and time-consuming duplication of leadership and resources and requires extensive meeting and coordination of the various stakeholders to address problems. Such a system is cumbersome and inefficient, especially for the busy leaders of the local ambulance service.

3) Recognizing that the changes in demographics, socioeconomic conditions, and attitudes about community involvement have resulted in a decline in volunteerism that is not transient.

There is no evidence that the trend of declining volunteers can be reversed. This is a national phenomenon related to continuing changes in rural communities and attitudes. While volunteers can and will continue to be recruited, the pool of willing and available volunteers will likely continue to decrease. This means that the recruitment and retention of volunteers and filling daily schedules will continue to be difficult and occupy more and more of the local ambulance and QRU leader's time.

Despite meeting current EMS needs, many informants (inside and outside the EMS community) reported being concerned about the future of volunteer staffing in Pembina County. One informant said, "I don't know of any horror stories about non-response yet, but it's in the back of people's minds." In

the last decade, the ambulance services and QRUs report experiencing increasing difficulty recruiting and retraining volunteers. These shortages have, at times, led to significant staffing and response challenges for the ambulance services in Walhalla and Pembina. At times, Drayton has had difficulty filling its schedule with available people, and Cavalier reports having only a small number of individuals available for daytime staffing.

The small numbers of active members in three of the four ambulance services strongly suggest that these services may not be sustainable in their same form. As ambulance service members age, retire and become inactive, they are not being replaced by adequate numbers of new members.

To safely, humanely and sustainably operate one ambulance unit 24/7 with a volunteer staff, SafeTech Solutions recommends ambulance services have at least 14 active members evenly divided between the needed training levels (i.e., driver, EMT). Such numbers allow for members to have adequate time off from call and maintain other obligations and interests.

Currently, there is no coordinated volunteer recruitment plan in the County. Individual services engage in various recruitment efforts when they have time, but none have a comprehensive recruitment plan, nor is there any Countywide recruitment activities.

4) Ensuring individual ambulance service response reliability and promptness and preparing for and addressing staffing issues.

An important measure of EMS quality is the reliability and promptness of response. As volunteer staffing issues continue — especially during certain times of the day and week — and fewer people take more and more of the call time, the possibility of a service not being able to respond to a call grows. Informants expressed concerns about the future reliability of the Pembina, Walhalla and Drayton ambulance services and the absence of planning to ensure that back-up response plans are in place.

5) Funding and staffing four independent ambulance services and four quick-response units, along with the need to fund system development.

The current challenges of staffing and funding EMS in Pembina County invites a consideration of the costs in terms of human hours, dollars, physical resources, leadership time, facilities, vehicles and education for eight independent EMS agencies. The current lack of a true EMS system does not invite or reward efficiencies. Volunteerism, especially at the level of leadership, is increasingly becoming untenable. As it becomes more necessary to pay staff wages (as two ambulance services are now doing) and the role of leading EMS agencies demands more time and know-how, the costs of this system are likely to grow faster than available resources.

6) Measurably ensuring the quality of disparate system components without data, quality planning or dedicated quality resources.

Currently, EMS in Pembina County has very limited processes in place to ensure the quality of EMS in the County. None of the ambulance services have designated Quality Coordinators. The PSAP does not routinely provide response reliability and response time reports for evaluation. Patient Care Reports are not routinely reviewed for all services to ensure there is match between recorded clinical care and protocols. There is no formal process in place to ensure that all Patient Care Reports that involved cardiac arrest, traumatic arrest, severe respirator distress or arrest, major trauma, and/or challenging clinical care management have been submitted to the Medical Director for review and feedback.

The DEMST suggests a quality assurance protocol that calls for the review of every PCR by an ambulance service's quality coordinator and the review of PCRs describing certain clinical conditions to by the service's Medical Director.

7) Ensuring the continuance of prepared and available Medical Direction.

North Dakota EMS Code requires that all licensed EMTs and paramedics may only function under the supervision of a physician. The physician is required to credential the provider and provide protocols for patient care. The physician Medical Director is charged with participating in a quality assurance program. Increasingly, the role of Medical Director is key to the quality of an EMS system and must be defined and compensated.

The Medical Director's role in Pembina County is not clearly defined with a job description, nor is the Medical Director compensated for services. No funds have been designated to provide the Medical Director with education for the role.

8) Ensuring the Public Safety Answering Point (PSAP): provides a high level of quality dispatching; meets the needs of the EMS responders; collects appropriate system performance data; and reports on necessary EMS system quality indicators.

As an integral part of an EMS system, the PSAP in Pembina County provides key functions on every call and key data for over all system performance.

All ambulance services reported concerns with the uneven quality of dispatching. Particular concerns included:

- Inconsistency in the length of time it takes the dispatcher to re-page a call when an ambulance service does not immediately report as being in service.
- Verbal navigational directions provided to the ambulances services by a dispatcher when more than an e911 address is needed to navigate to the emergency scene. Some informants reported that some dispatchers are not familiar with key landmarks and/or roads and intersections.
- A lack of radio professionalism, meaning the dispatchers do not utilize common radio terminology and become flustered and "unprofessional" in their responses when asked for more information by responding crews.
- A lack of confidence in some dispatcher's assessment of the nature of the call, meaning some dispatchers are not utilizing commonly understood description of patient problems.
- The frequent inconsistency in dispatch practices and quality. One informant described it as "never knowing what to expect from dispatch."

Three of four ambulance services do not routinely call into the PSAP following calls to obtain call times for their Patient Care Report.

While the PSAP keeps paper records of ambulance times, including call, chute, response, scene, transport and return to availability times, these data are not routinely reported electronically, and chute time and other response time reports are not easily obtained. Currently, the PSAP does not have a policy on the exact time interval for starting a second ambulance should the first paged ambulance not respond.

9) Developing and retaining prepared, knowledgeable and effective leadership at both the system and service level.

Currently, EMS in Pembina County does not have overall coordinating leadership. Because of the limitations of the mission of the EMS Council, the elected Council leader does not function as a leader of EMS in the County.

The leadership roles in the four ambulance services are elected roles and historical change as leaders serve their designated terms. Typically, the ambulance services' leader has little formal preparation of the role in terms of specific instruction on leading and managing an EMS organization.

In working with rural EMS organizations across the nation, SafeTech Solutions has found that the role of leading the rural ambulance service has become increasingly more complicated and more demanding. Staffing, funding and reporting challenges have made the job one that demands special knowledge and skill. EMT and paramedic training do not adequately prepare one for this job, and it is not a role that is typically performed well when rotated among service members. In addition, the time demands of the role have increasingly moved it beyond the ability of volunteer hours.

10) Overcoming distrust between communities and distrust between local response services.

Through the work of the EMS Council, the various representatives of the ambulance services and QRUs are beginning to forge a commitment to working together. However, in private interviews, various informants spoke frequently and passionately about distrust between communities and ambulance services. Because of long-standing rivalries between communities (an informant spoke of the rivalry between Pembina and Cavalier over the 1911 move of the County Seat from Pembina to Cavalier as if it were a current issue), there appears to be an expected and accepted distrust of working together.

11) Ensuring Advanced Life Support (ALS) is provided to patients who need it.

Since 2008, North Dakota Century Code (33-11-01.2-15) requires that BLS ambulance services call for an intercept with ALS ambulances (when it will not delay care) for patients with major trauma, cardiac chest pain or acute myocardial infarction, cardiac arrest, or severe respiratory distress or respiratory arrest. Intercepts often present challenges for both BLS services and ALS services in terms of working together, financial compensation and follow up. Currently, Pembina County does not have a system in place whereby the PSAP automatically starts an ALS ambulance to calls in BLS areas based on the criteria above.

12) Meeting the growing demand for interfacility transports (transfers).

With the ongoing regionalization of healthcare specialties in larger tertiary care centers and two large nursing homes in Pembina County, transfers will continue to increase and be a challenge for ambulance services in Pembina County. Currently, transfers account for more than 40% of the calls in the County. When ambulances are on transfers, additional staffing resources are needed to ensure there are adequate back-up resources for emergency response and transport. Furthermore, volunteer informants report that long transports that take them out of the County and away from home and work for extended hours make volunteering more difficult. Currently, the ambulance services have no countywide collaborative strategy for handling transfers and back-up staffing.

13) Integrating Drayton Ambulance Services into a Pembina County EMS system when its orientation is toward Walsh County.

Located on the extreme southeast corner of Pembina County, the DVAA's orientation is southerly. With a significant portion of its service area in Walsh County, and being closer to the ALS resources in Grafton and transporting most of its patients to destinations outside of Pembina County, DVAA is part of two systems. Currently, DVAA does not want to be the primary back up for Pembina Ambulance and believes Cavalier is better situated for that role. However, because Drayton receives Pembina County funding and shares a Medical Director with the other services, it has a stake in the Pembina County EMS system. The challenge will be one of recognizing that certain operational collaborations between DAS, CAS and PAS may not be practical for DVAA and yet still recognizing DVAA as an important system partner. In addition, it is important that DVAA recognize its involvement in the Walsh County EMS system and continue to be a recognized partner in that system in terms of collaboration, back-up and future planning.

14) Addressing the public's perceptions of EMS as it relates to funding, staffing and the efficiency of eight separate services. Sending a clear and unified message to County citizens, County leaders and County taxpayers about the cost of providing EMS.

County citizens, County and community leaders, and County taxpayers have a limited and incomplete understanding of EMS in Pembina County. Informants outside the EMS community do not see EMS in the County as a system. They see separate and distinct ambulance services and QRUs that sometimes quarrel. They do not understand the costs of EMS and especially have no sense of the dollar value of volunteer hours donated. Currently, there is not a unified story being told about EMS in the County.

Assumptions

In approaching recommendations, it is important that certain key assumptions be reflected. Based on SafeTech Solutions ongoing work with rural EMS systems in North Dakota and around the nation, recommendations are given for local systems on some important big-picture assumptions. These assumptions include:

1. Reliance on out-of-hospital emergency medical resources will continue to increase as population age and healthcare resources continue to regionalize.
2. The pool of potential volunteers will continue to shrink, suggesting that volunteerism alone is not a viable long-term strategy for ambulance staffing.
3. The costs of recruiting and retraining a quality EMS workforce will continue to rise.
4. Significant increases in EMS-related funding from federal sources in the near future are highly unlikely.
5. Future state funding for EMS agencies will favor areas and systems that have plans and embrace a regional approach to EMS.
6. There will be increasing competition for local funding resources (including tax subsidies, hospital or organizational subsidies, donations, and fundraising).

Recommendations

The citizens and emergency medical patients of Pembina County will be served best by out-of-hospital EMS resources that work together to create a true EMS system that is reliable, prompt, sustainable and cost effective. Such a system can be created through increased collaboration, leadership, planning, measurement and resource sharing. Such a system will demand the sacrifice of old feuds, intercommunity distrust, and the desire for all aspects of EMS to be local and independent.

Specifically, SafeTech Solutions recommends:

1) Broadening the mission of the Pembina County EMS Council to one of overseeing and coordinating Countywide EMS planning, direction, education and quality.

The Pembina County EMS Council, as non-profit corporation made up of representatives of EMS, government and community members, is properly positioned to take a leadership role in developing a true, integrated EMS system in Pembina County. Having sought this assessment, it has made the first step in moving toward the creation of an integrated EMS system. This broadening of mission requires the support of the eight EMS organizations in the County, the County Commissioners, and community leaders and can be accomplished through a series of facilitated stakeholder meetings.

2) Creating and funding a Pembina County EMS Coordinator position to consistently oversee planning and plan execution and system quality. The Coordinator should be hired by the Council, be accountable to the Council, and ensure the mission of the Council is successfully carried out.

It will be difficult for EMS in Pembina County to move forward without dedicated and competent leadership. The development and leadership of an EMS system is time intensive and calls for a leader who is respected, sensitive to the challenges of bringing together vital stakeholders, and committed to patiently working through fears and suspicions. The Council should begin by creating a job description, creating a budget to fund the position, seeking funding (see next recommendation), and choosing an individual who is trusted to lead the process forward.

3) Exploring ways to maximize funding for EMS in Pembina County (i.e., increasing mill levy, examining other sources of County and community funding, and positioning itself to maximize eligibility for state and federal monies and grants).

Beyond distributing mill levy funds to ambulance services in accordance to state laws, the EMS Council should seek additional funds for the County EMS Coordinator position — for planning purposes, quality, and Medical Direction. The Council should create a clear rationale and budget for these monies and then consider a variety of sources, including the State, County, local communities and grants. In addition, with planning (see recommendation 4 and 5) the EMS Council should help individual ambulance services plan budgets for reflecting the value of donated volunteer hours and preparing for paid staffing as needed.

4) Creating a Countywide EMS plan that addresses resource deployment, mutual aid, staffing, service failures, recruitment, and quality and education.

The EMS Council should create a Countywide EMS plan that includes the following 10 elements:

1. System Organization and Leadership
2. Staffing
3. Public Access and Communications
4. Response and Transportation
5. Financial
6. EMS Education
7. Medical Direction
8. Data Collection and System Evaluation
9. Public Information, Education, Storytelling
10. Disaster Medical Response

5) Collecting data on the total and individual service costs of providing EMS in Pembina County and telling an accurate funding story to potential funding sources.

As the need for additional funding grows, it is imperative that the EMS services and the EMS system understand the costs of providing EMS. This is particularly true as it relates to staffing. A value should be placed on volunteer hours that reflect the true cost of replacing volunteer staffing with paid staff. The services should agree on uniform reporting and budgeting mechanisms that will allow the system to clearly tell an accurate story about expenses, revenues and need.

6) Exploring the possibilities, barriers and opportunities of the ambulance services working more closely together in terms of leadership and staffing.

Because CAS, PAS and WAS depend on each other for mutual aid and back up and are together the backbone of EMS in most of Pembina County, they should explore efficiencies in working more closely together in terms of leadership and staffing.

The time demands of leading and managing an ambulance service are quickly becoming more than a volunteer position. This is especially true if the leader is taking a significant amount of call time. In addition, the job of leading and managing an ambulance services demands preparation, experience and skill. The role is no longer best served by rotating it among elected service members. CAS, PAS and WAS should consider seeking efficiencies by exploring a shared leadership arrangement.

CAS should explore the costs and logistics of providing paid daytime EMT, EMT-I or paramedic staffing for WAS, PAS and DVAA. This would allow for these services to have coverage without developing and maintaining the infrastructure of having paid employees (an infrastructure CAS currently has in place).

WAS and PAS should explore the possibilities, barriers, risks, opportunities and criteria of making PAS and WAS substations of CAS. While this possibility has been discussed and rejected in the past, it should be re-visited with the goal of clearly identifying opportunities and barriers. If the substation model as defined by the state is unacceptable, identify what would be acceptable and begin to look at ways to make an efficient collaborative arrangement workable.

DVAA should explore the possibilities of working more collaboratively with Walsh County EMS and explore and prepare future staffing options other than with volunteers.

7) Exploring the possibilities of CAS creating a single paramedic ALS quick-response unit to supplement its current ALS ambulance.

From the operational perspective of efficiently providing a high level of patient care along with the current staffing challenges, CAS should explore the opportunities and costs of deploying a quick-response vehicle staffed by a paramedic. This unit could be deployed in Cavalier or elsewhere in the County and could simultaneously be started on all calls in Walhalla and Pembina. If WAS or PAS do not have enough staff, the paramedic would respond to the scene jointly with the WAS or PAS driver and provide patient care in the WAS or PAS ambulance. This unit could be staffed during periods when WAS and PAS are having the most difficulty with staffing (i.e., weekdays).

8) Creating a Countywide quality program with a part-time paid Quality Coordinator.

Quality assurance is an important part of an EMS system. The EMS Council should create a Quality Coordinator position to service all of ambulance services and QRUs in Pembina County. This individual will collect data and report on response times, service reliability, PCR/protocol compliance, and, from a

positive perspective, encourage improvement, while working with the Medical Director on run reviews and clinical issues. As an aid to the Medical Director, this position would ensure the Medical Director is informed of important clinical issues and provide the necessary review and follow-up on clinical issues (see next recommendation).

9) Strengthening the role and involvement of the Medical Director.

The role of Medical Director should be clarified and strengthened by creating a single unified job description for medical direction for all services in Pembina County; paying an annual stipend to the Medical Director; ensuring the Medical Director reviews challenging clinical calls and provides feedback to system and providers; providing Medical Director with Quality Coordinator support to collect data and review PCRs; and providing a stipend and expenses for the Medical Director to attend appropriate EMS Medical Director educational opportunities.

10) Strengthening PSAP dispatch quality and capabilities.

PSAP dispatch quality and capabilities should be strengthened by exploring specific concerns of ambulance services (serial surveys); creating a simple system for provider and dispatcher feedback; requiring monthly data reports that measure chute times, response times, scene times, total task times and service response failures; and creating policies for prompt ambulance service back-up notification, EMS crew status checks and ALS auto launch.

11) Improving EMS storytelling and public education.

The story told about EMS Pembina County will have a powerful influence on support and funding. The message needs to be unified, accurate and supported with reliable data. The EMS Council should coordinate storytelling and messaging about EMS in Pembina County that reflects its planning and current needs. This can be done in presentations to local government and public groups, through electronic media, such as a Website, and through local media sources (such as newspapers).

12) Creating a Countywide recruitment program.

While volunteerism is waning, the need for volunteer staffing in Pembina County continues. The EMS Council should lead the coordination of a Countywide recruitment program. This program should include:

- Appointing a person or committee to lead recruitment activities;
- Clarifying recruitment needs (the specific levels needed and characteristics of persons needed);
- Identifying specific recruitment strategies and activities;
- Developing recruitment materials;
- Conducting recruitment activities; and
- Evaluating successes and failures and making modifications.

13) Clarifying and establishing Cavalier Ambulance Service as primary back up to Pembina Ambulance Service.

The leadership of DVAA has requested that DVAA not be the primary back-up to PAS. While CAS is one mile further from Pembina than DVAA, DVAA does not want the responsibility of responding to the northeastern corner of the County and believes CAS is better staffed and has a faster chute time than DVAA.

14) Creating a Countywide approach to handling interfacility transports without compromising emergency response capabilities.

As interfacility transports are a significant and growing portion of the call volume for CAS and WAS, the EMS Council should lead the creation a Countywide approach and plan for managing Interfacility Transports (IFTs) that ensure emergency response capabilities remain strong. This effort should begin by evaluating multi-year data that includes number, location, and time of day of IFTs; level of care needed (BLS or ALS) for the specific IFT; locations and destinations; amount of time crews spend on IFTs; and need for emergency services during an IFTs. This data should guide the creation of a plan that examines, needs, resource deployment and potential efficiencies.

Conclusion

The residents of Pembina County are fortunate to be served by a dedicated and concerned group of EMS services and providers who are forward-thinking and eager to ensure that EMS in the County continues to promptly and reliably meet the needs of all who call for help. Moving the current system of homegrown local independent EMS agencies toward a more regional system will take time and considerable work. This is a multi-year endeavor and should be approached in a series of steps. Some of the recommendations will take time. As the system becomes integrated, it will take on its own characteristics with its own unique set of challenges and opportunities. SafeTech Solutions is confident that EMS in Pembina County is headed in the right direction and stands ready to assist as needed.

ⁱ Division of Medical Sciences, Committee on Trauma and Committee on Shock (September 1966), *Accidental Death and Disability: The Neglected Disease of Modern Society*, Washington, D.C.: National Academy of Sciences-National Research Council.

ⁱⁱ "History" by Post, C. and Treiber, M. in *Prehospital Systems and Medical Oversight*. A. Kuehl, Ed. National Association of EMS Physicians. Dubuque, IA: Kendall/Hunt Publishing Co. 2002. pgs. 3-19.

ⁱⁱⁱ *Rural and Frontier Emergency Medical Services: Agenda for the Future*. National Rural Health Association. 2004. p.5.

^{iv} *EMS in Critical Condition: Meeting the Challenge*. International City/County Management Association IQ Report. Volume 37/ Number 5, 2005.

^v *Future of Emergency Care: Emergency Medical Services at the Crossroads*. Institutes of Medicine of the National Academies. 2006. p. 48.

^{vi} *EMS Workforce for the 21st Century: A National Assessment*. National Highway Traffic Safety Administration: Office of Emergency Medical Services. 2008. p. 59.

^{vii} http://www.independentsector.org/volunteer_time