RFP 5947 Z1 – Technical Proposal

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Cover Letter

Annette Walton
State Purchasing Bureau
1526 K St. Suite 130
Lincoln, NE 68508

November 25, 2018

Dear Ms. Walton:
We are pleased to submit this proposal in response to your Request for Proposal (RFP) Number 5947 Z1 for the purpose of selecting a qualified bidder to provide Emergency Medical Services consulting.

The Paramedic Foundation (TPF) is a Minnesota corporation registered with the IRS as a 501c3 non-profit charity organization. The Federal tax ID number is: 46-3271401. The Paramedic Foundation's principal place of business is 2800 7th St N, St. Cloud, MN 56303. Nick Nudell has the authority to answer questions regarding the proposal and may be reached at nnudell@paramedicfoundation.org or phone (760) 405-6869.

The Paramedic Foundation's proposed solution for the project meets all the requirements of the RFP. TPF has not taken any exception to the Terms and Conditions. TPF will comply with all Federal and Nebraska Administrative Statute as those law and rules are currently enacted and promulgated, and as they may subsequently be amended and adopted.

The Paramedic Foundation will not substitute, at project start-up, different personnel from those evaluated by the State except when a candidate's unavailability is no fault of The Paramedic Foundation and after State approval.

The Paramedic Foundation will use the following individuals when selected to do the work: Nick Nudell, Gary Wingrove, Paul Anderson, Robert McNally, and Cindy Sobania.

The Paramedic Foundation is a foreign corporation, not incorporated under the laws of the state of Nebraska, but has been registered with the Nebraska Secretary of State. We look forward to your favorable consideration.

Respectfully submitted,

Nick Nudell
Chief Data Officer
The Paramedic Foundation

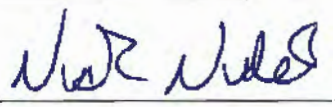
REQUEST FOR PROPOSAL FOR CONTRACTUAL SERVICES FORM

By signing this Request for Proposal for Contractual Services form, the bidder guarantees compliance with the procedures stated in this Request for Proposal, and agrees to the terms and conditions unless otherwise indicated in writing and certifies that bidder maintains a drug free work place.

Nebraska's Transparency in Government Procurement Act, Neb. Rev Stat § 73-603 DAS is required to ect statistical information regarding the number of contracts awarded to Nebraska Contractors. This rmation is for statistical purposes only and will not be considered for contract award purposes.

__ NEBRASKA CONTRACTOR AFFIDAVIT: Bidder hereby attests that bidder is a Nebraska Contractor. braska Contractor" shall mean any bidder who has maintained a bona fide place of business and at t one employee within this state for at least the six (6) months immediately preceding the posting date

FORM MUST BE SIGNED USING AN INDELIBLE METHOD (NOT ELECTRONICALLY)

FIRM:	The Paramedic Foundation
FAX NUMBER:	320-251-8154
SIGNATURE:	

Bidder Contact Sheet

Request for Proposal Number 5947 Z1

Form A should be completed and submitted with each response to this RFP. This is intended to provide the State with information on the bidder's name and address, and the specific person(s) who are responsible for preparation of the bidder's response.

Preparation of Response Contact Information	
Bidder Name:	The Paramedic Foundation
Bidder Address:	2800 7th St N St. Cloud, MN 56303
Contact Person & Title:	Nick Nudell, Chief Data Officer
E-mail Address:	nnudell@paramedicfoundation.org
Telephone Number (Office):	760-405-6869
Telephone Number (Cellular):	760-405-6869
Fax Number:	320-251-8154

Each bidder should also designate a specific contact person who will be responsible for responding to the State if any clarifications of the bidder's response should become necessary. This will also be the person who the State contacts to set up a presentation/demonstration, if required.

Communication with the State Contact Information	
Bidder Name:	The Paramedic Foundation
Bidder Address:	2800 7th St N St. Cloud, MN 56303
Contact Person & Title:	Nick Nudell, Chief Data Officer
E-mail Address:	nnudell@paramedicfoundation.org
Telephone Number (Office):	760-405-6869
Telephone Number (Cellular):	760-405-6869
Fax Number:	320-251-8154

TERMS AND CONDITIONS

We accept all incorporated Terms and Conditions.

If a conflict or ambiguity arises after the Addendum to Contract Award have been negotiated and agreed to, the Addendum to Contract Award shall be interpreted as follows:

1. If only one Party has a particular clause then that clause shall control;
2. If both Parties have a similar clause, but the clauses do not conflict, the clauses shall be read together;
3. If both Parties have a similar clause, but the clauses conflict, the State's clause shall control.

GENERAL

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The contract resulting from this RFP shall incorporate the following documents:

1. Request for Proposal and Addenda;
2. Amendments to the RFP;
3. Questions and Answers;
4. Contractor's proposal (RFP and properly submitted documents);
5. The executed Contract and Addendum One to Contract, if applicable ; and,
6. Amendments/Addendums to the Contract.

These documents constitute the entirety of the contract.

Unless otherwise specifically stated in a future contract amendment, in case of any conflict between the incorporated documents, the documents shall govern in the following order of preference with number one (1) receiving preference over all other documents and with each lower numbered document having preference over any higher numbered document: 1) Amendment to the executed Contract with the most recent dated amendment having the highest priority, 2) executed Contract and any attached Addenda, 3) Amendments to RFP and any Questions and Answers, 4) the original RFP document and any Addenda, and 5) the Contractor's submitted Proposal.

Any ambiguity or conflict in the contract discovered after its execution, not otherwise addressed herein, shall be resolved in accordance with the rules of contract interpretation as established in the State of Nebraska.

NOTIFICATION

Contractor and State shall identify the contract manager who shall serve as the point of contact for the executed contract.

Communications regarding the executed contract shall be in writing and shall be deemed to have been given if delivered personally or mailed, by U.S. Mail, postage prepaid, return receipt requested, to the parties at their respective addresses set forth below, or at such other addresses as may be specified in writing by either of the parties. All notices, requests, or communications shall be deemed effective upon personal delivery or three (3) calendar days following deposit in the mail.

GOVERNING LAW (Statutory)

Notwithstanding any other provision of this contract, or any amendment or addendum(s) entered into contemporaneously or at a later time, the parties understand and agree that, (1) the State of Nebraska is a sovereign state and its authority to contract is therefore subject to limitation by the State's Constitution, statutes, common law, and regulation; (2) this contract will be interpreted and enforced under the laws of the State of Nebraska; (3) any action to enforce the provisions of this agreement must be brought in the State of Nebraska per state law; (4) the person signing this contract on behalf of the State of Nebraska does not have the authority to waive the State's sovereign immunity, statutes, common law, or regulations; (5) the indemnity, limitation of liability, remedy, and other similar provisions of the final contract, if any, are entered into subject to the State's Constitution, statutes, common law, regulations, and sovereign immunity; and, (6) all terms and conditions of the final contract, including but not limited to the clauses concerning third party use, licenses, warranties, limitations of liability, governing law and venue, usage verification, indemnity, liability, remedy or other similar provisions of the final contract are entered into specifically subject to the State's Constitution, statutes, common law, regulations, and sovereign immunity.

The Parties must comply with all applicable local, state and federal laws, ordinances, rules, orders, and regulations.

BEGINNING OF WORK

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

The bidder shall not commence any billable work until a valid contract has been fully executed by the State and the successful Contractor. The Contractor will be notified in writing when work may begin.

CHANGE ORDERS

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

The State and the Contractor, upon the written agreement, may make changes to the contract within the general scope of the RFP. Changes may involve specifications, the quantity of work, or such other items as the State may find necessary or desirable. Corrections of any deliverable, service, or work required pursuant to the contract shall not be deemed a change. The Contractor may not claim forfeiture of the contract by reasons of such changes.

The Contractor shall prepare a written description of the work required due to the change and an itemized cost sheet for the change. Changes in work and the amount of compensation to be paid to the Contractor shall be determined in accordance with applicable unit prices if any, a pro-rated value, or through negotiations. The State shall not incur a price increase for changes that should have been included in the Contractor's proposal, were foreseeable, or result from difficulties with or failure of the Contractor's proposal or performance.

No change shall be implemented by the Contractor until approved by the State, and the contract is amended to reflect the change and associated costs, if any. If there is a dispute regarding the cost, but both parties agree that immediate implementation is necessary, the change may be implemented, and cost negotiations may continue with both Parties retaining all remedies under the contract and law.

NOTICE OF POTENTIAL CONTRACTOR BREACH

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

If Contractor breaches the contract or anticipates breaching the contract, the Contractor shall immediately give written notice to the State. The notice shall explain the breach or potential breach, a proposed cure, and may include a request for a waiver of the breach if so desired. The State may, in its discretion, temporarily or permanently waive the breach. By granting a waiver, the State does not forfeit any rights or remedies to which the State is entitled by law or equity, or pursuant to the provisions of the contract. Failure to give immediate notice, however, may be grounds for denial of any request for a waiver of a breach.

BREACH

Accept (Initial)	ject nitial)	& Provide Al- ve within RFP se (Initial)	NOTES/COMMENTS:

Either Party may terminate the contract, in whole or in part, if the other Party breaches its duty to perform its obligations under the contract in a timely and proper manner. Termination requires written notice of default and a thirty (30) calendar day (or longer at the non-breaching Party's discretion considering the gravity and nature of the default) cure period. Said notice shall be delivered by Certified Mail, Return Receipt Requested, or in person with proof of delivery. Allowing time to cure a failure or breach of contract does not waive the right to immediately terminate the contract for the same or different contract breach which may occur at a different time. In case of default of the Contractor, the State may contract the service from other sources and hold the Contractor responsible for any excess cost occasioned thereby.

The State's failure to make payment shall not be a breach, and the Contractor shall retain all available statutory remedies and protections.

NON-WAIVER OF BREACH

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The acceptance of late performance with or without objection or reservation by a Party shall not waive any rights of the Party nor constitute a waiver of the requirement of timely performance of any obligations remaining to be performed.

SEVERABILITY

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If any term or condition of the contract is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and conditions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the contract did not contain the provision held to be invalid or illegal.

INDEMNIFICATION

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

1. **GENERAL**
The Contractor agrees to defend, indemnify, and hold harmless the State and its employees, volunteers, agents, and its elected and appointed officials ("the indemnified parties") from and against any and all third party claims, liens, demands, damages, liability, actions, causes of action, losses, judgments, costs, and expenses of every nature, including investigation costs and expenses, settlement costs, and attorney fees and expenses ("the claims"), sustained or asserted against the State for personal injury, death, or property loss or damage, arising out of, resulting from, or attributable to the willful misconduct, negligence, error, or omission of the Contractor, its employees, subcontractors, consultants, representatives, and agents, resulting from this contract, except to the extent such Contractor liability is attenuated by any action of the State which directly and proximately contributed to the claims.

2. **INTELLECTUAL PROPERTY**
The Contractor agrees it will, at its sole cost and expense, defend, indemnify, and hold harmless the indemnified parties from and against any and all claims, to the extent such claims arise out of, result from, or are attributable to, the actual or alleged infringement or misappropriation of any patent, copyright, trade secret, trademark, or confidential information of any third party by the Contractor or its employees, subcontractors, consultants, representatives, and agents; provided, however, the State gives the Contractor prompt notice in writing of the claim. The Contractor may not settle any infringement claim that will affect the State's use of the Licensed Software without the State's prior written consent, which consent may be withheld for any reason.

   If a judgment or settlement is obtained or reasonably anticipated against the State's use of any intellectual property for which the Contractor has indemnified the State, the Contractor shall, at the Contractor's sole cost and expense, promptly modify the item or items which were determined to be infringing, acquire a license or licenses on the State's behalf to provide the necessary rights to the State to eliminate the infringement, or provide the State with a non-infringing substitute that provides the State the same functionality. At the State's election, the actual or anticipated judgment may be treated as a breach of warranty by the Contractor, and the State may receive the remedies provided under this RFP.

3. **PERSONNEL**
The Contractor shall, at its expense, indemnify and hold harmless the indemnified parties from and against any claim with respect to withholding taxes, worker's compensation, employee benefits, or any other claim, demand, liability, damage, or loss of any nature relating to any of the personnel, including subcontractor's and their employees, provided by the Contractor.

4. **SELF-INSURANCE**
The State of Nebraska is self-insured for any loss and purchases excess insurance coverage pursuant to Neb. Rev. Stat. § 81-8,239.01 (Reissue 2008). If there is a presumed loss under the provisions of this agreement, Contractor may file a claim with the Office of Risk Management pursuant to Neb. Rev. Stat. §§ 81-8,829 – 81-8,306 for review by the State Claims Board. The State retains all rights and immunities under the State Miscellaneous (Section 81-8,294), Tort (Section 81-8,209), and Contract Claim Acts (Section 81-8,302), as outlined in Neb. Rev. Stat. § 81-8,209 et seq. and under any other provisions of law and accepts liability under this agreement to the extent provided by law.

5. The Parties acknowledge that Attorney General for the State of Nebraska is required by statute to represent the legal interests of the State, and that any provision of this indemnity clause is subject to the statutory authority of the Attorney General.

ATTORNEY'S FEES

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In the event of any litigation, appeal, or other legal action to enforce any provision of the contract, the Parties agree to pay all expenses of such action, as permitted by law and if order by the court, including attorney's fees and costs, if the other Party prevails.

ASSIGNMENT, SALE, OR MERGER

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

Either Party may assign the contract upon mutual written agreement of the other Party. Such agreement shall not be unreasonably withheld.

The Contractor retains the right to enter into a sale, merger, acquisition, internal reorganization, or similar transaction involving Contractor's business. Contractor agrees to cooperate with the State in executing amendments to the contract to allow for the transaction. If a third party or entity is involved in the transaction, the Contractor will remain responsible for performance of the contract until such time as the person or entity involved in the transaction agrees in writing to be contractually bound by this contract and perform all obligations of the contract.

CONTRACTING WITH OTHER NEBRASKA POLITICAL SUB-DIVISIONS

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

The Contractor may, but shall not be required to, allow agencies, as defined in Neb. Rev. Stat. §81-145, to use this contract. The terms and conditions, including price, of the contract may not be amended. The State shall not be contractually obligated or liable for any contract entered into pursuant to this clause. A listing of Nebraska political subdivisions may be found at the website of the Nebraska Auditor of Public Accounts.

FORCE MAJEURE

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

Neither Party shall be liable for any costs or damages, or for default resulting from its inability to perform any of its obligations under the contract due to a natural or manmade event outside the control and not the fault of the affected Party ("Force Majeure Event"). The Party so affected shall immediately make a written request for relief to the other Party, and shall have the burden of proof to justify the request. The other Party may grant the relief requested; relief may not be unreasonably withheld. Labor disputes with the impacted Party's own employees will not be considered a Force Majeure Event.

CONFIDENTIALITY

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

All materials and information provided by the Parties or acquired by a Party on behalf of the other Party shall be regarded as confidential information. All materials and information provided or acquired shall be handled in accordance with federal and state law, and ethical standards. Should said confidentiality be breached by a Party, the Party shall notify the other Party immediately of said breach and take immediate corrective action.

It is incumbent upon the Parties to inform their officers and employees of the penalties for improper disclosure imposed by the Privacy Act of 1974, 5 U.S.C. 552a. Specifically, 5 U.S.C. 552a (i)(1), which is made applicable by 5 U.S.C. 552a (m)(1), provides that any officer or employee, who by virtue of his/her employment or official position has possession of or access to agency records which contain individually identifiable information, the disclosure of which is prohibited by the Privacy Act or regulations established thereunder, and who knowing that disclosure of the specific material is prohibited, willfully discloses the material in any manner to any person or agency not entitled to receive it, shall be guilty of a misdemeanor and fined not more than $5,000.

OFFICE OF PUBLIC COUNSEL (Statutory)

If it provides, under the terms of this contract and on behalf of the State of Nebraska, health and human services to individuals; service delivery; service coordination; or case management, Contractor shall submit to the jurisdiction of the Office of Public Counsel, pursuant to Neb. Rev. Stat. §§ 81-8,240 et seq. This section shall survive the termination of this contract.

LONG-TERM CARE OMBUDSMAN (Statutory)

Contractor must comply with the Long-Term Care Ombudsman Act, Neb. Rev. Stat. §§ 81-2237 et seq. This section shall survive the termination of this contract.

EARLY TERMINATION

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The contract may be terminated as follows:

1. The State and the Contractor, by mutual written agreement, may terminate the contract at any time.
2. The State, in its sole discretion, may terminate the contract for any reason upon thirty (30) calendar day's written notice to the Contractor. Such termination shall not relieve the Contractor of warranty or other service obligations incurred under the terms of the contract. In the event of termination the Contractor shall be entitled to payment, determined on a pro rata basis, for products or services satisfactorily performed or provided.
3. The State may terminate the contract immediately for the following reasons:
   a. if directed to do so by statute;
   b. Contractor has made an assignment for the benefit of creditors, has admitted in writing its inability to pay debts as they mature, or has ceased operating in the normal course of business;
   c. a trustee or receiver of the Contractor or of any substantial part of the Contractor's assets has been appointed by a court;
   d. fraud, misappropriation, embezzlement, malfeasance, misfeasance, or illegal conduct pertaining to performance under the contract by its Contractor, its employees, officers, directors, or shareholders;

e. an involuntary proceeding has been commenced by any Party against the Contractor under any one of the chapters of Title 11 of the United States Code and (i) the proceeding has been pending for at least sixty (60) calendar days; or (ii) the Contractor has consented, either expressly or by operation of law, to the entry of an order for relief; or (iii) the Contractor has been decreed or adjudged a debtor;
f. a voluntary petition has been filed by the Contractor under any of the chapters of Title 11 of the United States Code;
g. Contractor intentionally discloses confidential information;
h. Contractor has or announces it will discontinue support of the deliverable; and,
i. In the event funding is no longer available.

CONTRACT CLOSEOUT

Accept (Initial)	ject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

Upon contract closeout for any reason the Contractor shall within 30 days, unless stated otherwise herein:

1. Transfer all completed or partially completed deliverables to the State;
2. Transfer ownership and title to all completed or partially completed deliverables to the State;
3. Return to the State all information and data, unless the Contractor is permitted to keep the information or data by contract or rule of law. Contractor may retain one copy of any information or data as required to comply with applicable work product documentation standards or as are automatically retained in the course of Contractor's routine back up procedures;
4. Cooperate with any successor Contactor, person or entity in the assumption of any or all of the obligations of this contract;
5. Cooperate with any successor Contactor, person or entity with the transfer of information or data related to this contract;
6. Return or vacate any state owned real or personal property; and,
7. Return all data in a mutually acceptable format and manner.

Nothing in this Section should be construed to require the Contractor to surrender intellectual property, real or personal property, or information or data owned by the Contractor for which the State has no legal claim.

CONTRACTOR DUTIES

INDEPENDENT CONTRACTOR / OBLIGATIONS

It is agreed that the Contractor is an independent contractor and that nothing contained herein is intended or should be construed as creating or establishing a relationship of employment, agency, or a partnership.

The Contractor is solely responsible for fulfilling the contract. The Contractor or the Contractor's representative shall be the sole point of contact regarding all contractual matters.

The Contractor shall secure, at its own expense, all personnel required to perform the services under the contract. The personnel the Contractor uses to fulfill the contract shall have no contractual or other legal relationship with the State; they shall not be considered employees of the State and shall not be entitled to any compensation, rights or benefits

from the State, including but not limited to, tenure rights, medical and hospital care, sick and vacation leave, severance pay, or retirement benefits.

By-name personnel commitments made in the Contractor's proposal shall not be changed without the prior written approval of the State. Replacement of these personnel, if approved by the State, shall be with personnel of equal or greater ability and qualifications.

All personnel assigned by the Contractor to the contract shall be employees of the Contractor or a subcontractor, and shall be fully qualified to perform the work required herein. Personnel employed by the Contractor or a subcontractor to fulfill the terms of the contract shall remain under the sole direction and control of the Contractor or the subcontractor respectively.

With respect to its employees, the Contractor agrees to be solely responsible for the following:

1. Any and all pay, benefits, and employment taxes and/or other payroll withholding;
2. Any and all vehicles used by the Contractor's employees, including all insurance required by state law;
3. Damages incurred by Contractor's employees within the scope of their duties under the contract;
4. Maintaining Workers' Compensation and health insurance that complies with state and federal law and submitting any reports on such insurance to the extent required by governing law; and
5. Determining the hours to be worked and the duties to be performed by the Contractor's employees.
6. All claims on behalf of any person arising out of employment or alleged employment (including without limit claims of discrimination alleged against the Contractor, its officers, agents, or subcontractors or subcontractor's employees)

If the Contractor intends to utilize any subcontractor, the subcontractor's level of effort, tasks, and time allocation should be clearly defined in the bidder's proposal. The Contractor shall agree that it will not utilize any subcontractors not specifically included in its proposal in the performance of the contract without the prior written authorization of the State.

The State reserves the right to require the Contractor to reassign or remove from the project any Contractor or subcontractor employee.

Contractor shall insure that the terms and conditions contained in any contract with a subcontractor does not conflict with the terms and conditions of this contract.

The Contractor shall include a similar provision, for the protection of the State, in the contract with any subcontractor engaged to perform work on this contract.

EMPLOYEE WORK ELIGIBILITY STATUS

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The Contractor is required and hereby agrees to use a federal immigration verification system to determine the work eligibility status of employees physically performing services within the State of Nebraska. A federal immigration verification system means the electronic verification of the work authorization program authorized by the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324a, known as the E-Verify Program, or an equivalent federal program designated by the United States Department of Homeland Security or other federal agency authorized to verify the work eligibility status of an employee.

If the Contractor is an individual or sole proprietorship, the following applies:

1. The Contractor must complete the United States Citizenship Attestation Form, available on the Department of Administrative Services website at http://das.nebraska.gov/materiel/purchasing.html

The completed United States Attestation Form should be submitted with the RFP response.

2. If the Contractor indicates on such attestation form that he or she is a qualified alien, the Contractor agrees to provide the US Citizenship and Immigration Services documentation required to verify the Contractor's lawful presence in the United States using the Systematic Alien Verification for Entitlements (SAVE) Program.

3. The Contractor understands and agrees that lawful presence in the United States is required and the Contractor may be disqualified or the contract terminated if such lawful presence cannot be verified as required by Neb. Rev. Stat. §4-108.

COMPLIANCE WITH CIVIL RIGHTS LAWS AND EQUAL OPPORTUNITY EMPLOYMENT / NONDISCRIMINATION (Statutory)

The Contractor shall comply with all applicable local, state, and federal statutes and regulations regarding civil rights laws and equal opportunity employment. The Nebraska Fair Employment Practice Act prohibits Contractors of the State of Nebraska, and their subcontractors, from discriminating against any employee or applicant for employment, with respect to hire, tenure, terms, conditions, compensation, or privileges of employment because of race, color, religion, sex, disability, marital status, or national origin (Neb. Rev. Stat. §48-1101 to 48-1125). The Contractor guarantees compliance with the Nebraska Fair Employment Practice Act, and breach of this provision shall be regarded as a material breach of contract. The Contractor shall insert a similar provision in all subcontracts for services to be covered by any contract resulting from this RFP.

COOPERATION WITH OTHER CONTRACTORS

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Contractor may be required to work with or in close proximity to other contractors or individuals that may be working on same or different projects. The Contractor shall agree to cooperate with such other contractors or individuals, and shall not commit or permit any act which may interfere with the performance of work by any other contractor or individual. Contractor is not required to compromise Contractor's intellectual property or proprietary information unless expressly required to do so by this contract.

PERMITS, REGULATIONS, LAWS

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The contract price shall include the cost of all royalties, licenses, permits, and approvals, whether arising from patents, trademarks, copyrights or otherwise, that are in any way involved in the contract. The Contractor shall obtain and pay for all royalties, licenses, and permits, and approvals necessary for the execution of the contract. The Contractor must guarantee that it has the full legal right to the materials, supplies, equipment, software, and other items used to execute this contract.

OWNERSHIP OF INFORMATION AND DATA / DELIVERABLES

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

The State shall have the unlimited right to publish, duplicate, use, and disclose all information and data developed or obtained by the Contractor on behalf of the State pursuant to this contract.

The State shall own and hold exclusive title to any deliverable developed as a result of this contract. Contractor shall have no ownership interest or title, and shall not patent, license, or copyright, duplicate, transfer, sell, or exchange, the design, specifications, concept, or deliverable.

INSURANCE REQUIREMENTS

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The Contractor shall throughout the term of the contract maintain insurance as specified herein and provide the State a current Certificate of Insurance/Acord Form (COI) verifying the coverage. The Contractor shall not commence work on the contract until the insurance is in place. If Contractor subcontracts any portion of the Contract the Contractor must, throughout the term of the contract, either:

1. Provide equivalent insurance for each subcontractor and provide a COI verifying the coverage for the subcontractor;
2. Require each subcontractor to have equivalent insurance and provide written notice to the State that the Contractor has verified that each subcontractor has the required coverage; or,
3. Provide the State with copies of each subcontractor's Certificate of Insurance evidencing the required coverage.

The Contractor shall not allow any subcontractor to commence work until the subcontractor has equivalent insurance. The failure of the State to require a COI, or the failure of the Contractor to provide a COI or require subcontractor insurance shall not limit, relieve, or decrease the liability of the Contractor hereunder.

In the event that any policy written on a claims-made basis terminates or is canceled during the term of the contract or within one (1) year of termination or expiration of the contract, the Contractor shall obtain an extended discovery or reporting period, or a new insurance policy, providing coverage required by this contract for the term of the contract and one (1) year following termination or expiration of the contract.
If by the terms of any insurance a mandatory deductible is required, or if the Contractor elects to increase the mandatory deductible amount, the Contractor shall be responsible for payment of the amount of the deductible in the event of a paid claim.

Notwithstanding any other clause in this contract, the State may recover up to the liability limits of the insurance policies required herein.

1. **WORKERS' COMPENSATION INSURANCE**
   The Contractor shall take out and maintain during the life of this contract the statutory Workers' Compensation and Employer's Liability Insurance for all of the contactors' employees to be engaged in work on the project under this contract and, in case any such work is sublet, the Contractor shall require the subcontractor similarly to provide Worker's Compensation and Employer's Liability Insurance for all of the subcontractor's employees to be engaged in such work. This policy shall be written to meet the statutory requirements for the state in which the work is to be performed, including Occupational Disease. **The policy shall include a waiver of subrogation in favor of the State. The COI shall contain the mandatory COI subrogation waiver**

language found hereinafter. The amounts of such insurance shall not be less than the limits stated hereinafter. For employees working in the State of Nebraska, the policy must be written by an entity authorized by the State of Nebraska Department of Insurance to write Workers' Compensation and Employer's Liability Insurance for Nebraska employees.

2. **COMMERCIAL GENERAL LIABILITY INSURANCE AND COMMERCIAL AUTOMOBILE LIABILITY INSURANCE**
The Contractor shall take out and maintain during the life of this contract such Commercial General Liability Insurance and Commercial Automobile Liability Insurance as shall protect Contractor and any subcontractor performing work covered by this contract from claims for damages for bodily injury, including death, as well as from claims for property damage, which may arise from operations under this contract, whether such operation be by the Contractor or by any subcontractor or by anyone directly or indirectly employed by either of them, and the amounts of such insurance shall not be less than limits stated hereinafter.

The Commercial General Liability Insurance shall be written on an **occurrence basis,** and provide Premises/Operations, Products/Completed Operations, Independent Contractors, Personal Injury, and Contractual Liability coverage. **The policy shall include the State, and others as required by the contract documents, as Additional Insured(s). This policy shall be primary, and any insurance or self-insurance carried by the State shall be considered secondary and non-contributory. The COI shall contain the mandatory COI liability waiver language found hereinafter.** The Commercial Automobile Liability Insurance shall be written to cover all Owned, Non-owned, and Hired vehicles.

REQUIRED INSURANCE COVERAGE	
COMMERCIAL GENERAL LIABILITY	
General Aggregate	$2,000,000
Products/Completed Operations Aggregate	$2,000,000
Personal/Advertising Injury	$1,000,000 per occurrence
Bodily Injury/Property Damage	$1,000,000 per occurrence
Medical Payments	$10,000 any one person
Damage to Rented Premises (Fire)	$300,000 each occurrence
Contractual	Included
Independent Contractors	Included
If higher limits are required, the Umbrella/Excess Liability limits are allowed to satisfy the higher limit.	
WORKER'S COMPENSATION	
Employers Liability Limits	$500K/$500K/$500K
Statutory Limits- All States	Statutory - State of Nebraska
USL&H Endorsement	Statutory
Voluntary Compensation	Statutory
COMMERCIAL AUTOMOBILE LIABILITY	
Bodily Injury/Property Damage	$1,000,000 combined single limit
Include All Owned, Hired & Non-Owned Automobile liability	Included
Motor Carrier Act Endorsement	Where Applicable
UMBRELLA/EXCESS LIABILITY	
Over Primary Insurance	$2,000,000 per occurrence
PROFESSIONAL LIABILITY	
All Other Professional Liability (Errors & Omissions)	$1,000,000 Per Claim / Aggregate
MANDATORY COI SUBROGATION WAIVER LANGUAGE	
"Workers' Compensation policy shall include a waiver of subrogation in favor of the State of Nebraska."	
MANDATORY COI LIABILITY WAIVER LANGUAGE	
"Commercial General Liability & Commercial Automobile Liability policies shall name the State of Nebraska as an Additional Insured and the policies shall be primary and any insurance or self-insurance carried by the State shall be considered secondary and non-contributory as additionally insured."	

If the mandatory COI subrogation waiver language or mandatory COI liability waiver language on the COI states that the waiver is subject to, condition upon, or otherwise limit by the insurance policy, a copy of the

relevant sections of the policy must be submitted with the COI so the State can review the limitations imposed by the insurance policy.

3. **EVIDENCE OF COVERAGE**
The Contractor shall furnish the Contract Manager, with a certificate of insurance coverage complying with the above requirements prior to beginning work at:

Department of Health and Human Services
Attn: Program Manager Emergency Health Systems
301 Centennial Mall S.
Lincoln, NE 68509

These certificates or the cover sheet shall reference the RFP number, and the certificates shall include the name of the company, policy numbers, effective dates, dates of expiration, and amounts and types of coverage afforded. If the State is damaged by the failure of the Contractor to maintain such insurance, then the Contractor shall be responsible for all reasonable costs properly attributable thereto.

Reasonable notice of cancellation of any required insurance policy must be submitted to the contract manager as listed above when issued and a new coverage binder shall be submitted immediately to ensure no break in coverage.

4. **DEVIATIONS**
The insurance requirements are subject to limited negotiation. Negotiation typically includes, but is not necessarily limited to, the correct type of coverage, necessity for Workers' Compensation, and the type of automobile coverage carried by the Contractor.

ANTITRUST

NN			

The Contractor hereby assigns to the State any and all claims for overcharges as to goods and/or services provided in connection with this contract resulting from antitrust violations which arise under antitrust laws of the United States and the antitrust laws of the State.

CONFLICT OF INTEREST

NN			

By submitting a proposal, bidder certifies that there does not now exist a relationship between the bidder and any person or entity which is or gives the appearance of a conflict of interest related to this RFP or project.

The bidder certifies that it shall not take any action or acquire any interest, either directly or indirectly, which will conflict in any manner or degree with the performance of its services hereunder or which creates an actual or an appearance of conflict of interest.

The bidder certifies that it will not knowingly employ any individual known by bidder to have a conflict of interest.

The Parties shall not knowingly, for a period of two years after execution of the contract, recruit or employ any employee or agent of the other Party who has worked on the RFP or project, or who had any influence on decisions affecting the RFP or project.

ADVERTISING

NN			

The Contractor agrees not to refer to the contract award in advertising in such a manner as to state or imply that the company or its services are endorsed or preferred by the State. Any publicity releases pertaining to the project shall not be issued without prior written approval from the State.

NEBRASKA TECHNOLOGY ACCESS STANDARDS (Statutory)

Contractor shall review the Nebraska Technology Access Standards, found at http://nitc.nebraska.gov/standards/2-201.html and ensure that products and/or services provided under the contract are in compliance or will comply with the applicable standards to the greatest degree possible. In the event such standards change during the Contractor's performance, the State may create an amendment to the contract to request the contract comply with the changed standard at a cost mutually acceptable to the parties.

DISASTER RECOVERY/BACK UP PLAN

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

The Contractor shall have a disaster recovery and back-up plan, of which a copy should be provided upon request to the State, which includes, but is not limited to equipment, personnel, facilities, and transportation, in order to continue services as specified under the specifications in the contract in the event of a disaster.

DRUG POLICY

Contractor certifies it maintains a drug free work place environment to ensure worker safety and workplace integrity. Contractor agrees to provide a copy of its drug free workplace policy at any time upon request by the State.

PAYMENT

PROHIBITION AGAINST ADVANCE PAYMENT (Statutory)

Payments shall not be made until contractual deliverable(s) are received and accepted by the State.

TAXES (Statutory)

The State is not required to pay taxes and assumes no such liability as a result of this solicitation. Any property tax payable on the Contractor's equipment which may be installed in a state-owned facility is the responsibility of the Contractor.

INVOICES

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

Invoices for payments must be submitted by the Contractor to the agency requesting the services with sufficient detail to support payment. Invoices shall be sent to Department of Health and Human Services, Office of Emergency Health Systems, 301 Centennial Mall S, PO Box 95026, Lincoln, NE 68509-5026. Invoices to included project being billed for. Payment should be subject to DHHS approval of deliverables. The terms and conditions included in the Contractor's invoice shall be deemed to be solely for the convenience of the parties. No terms or conditions of any such invoice shall be binding upon the State, and no action by the State, including without limitation the payment of any such invoice in whole or in part, shall be construed as binding or estopping the State with respect to any such term or condition, unless the invoice term or condition has been previously agreed to by the State as an amendment to the contract.

INSPECTION AND APPROVAL

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

Final inspection and approval of all work required under the contract shall be performed by the designated State officials.

The State and/or its authorized representatives shall have the right to enter any premises where the Contractor or subcontractor duties under the contract are being performed, and to inspect, monitor or otherwise evaluate the work being performed. All inspections and evaluations shall be at reasonable times and in a manner that will not unreasonably delay work.

PAYMENT

Accept (Initial)	eject nitial)	& Provide Al- ve within RFP ıse (Initial)	NOTES/COMMENTS:

State will render payment to Contractor when the terms and conditions of the contract and specifications have been satisfactorily completed on the part of the Contractor as solely determined by the State. (Neb. Rev. Stat. Section 73-506(1)) Payment will be made by the responsible agency in compliance with the State of Nebraska Prompt Payment

Act (See Neb. Rev. Stat. §81-2401 through 81-2408). The State may require the Contractor to accept payment by electronic means such as ACH deposit. In no event shall the State be responsible or liable to pay for any services provided by the Contractor prior to the Effective Date of the contract, and the Contractor hereby waives any claim or cause of action for any such services.

LATE PAYMENT (Statutory)

The Contractor may charge the responsible agency interest for late payment in compliance with the State of Nebraska Prompt Payment Act (See Neb. Rev. Stat. §81-2401 through 81-2408).

SUBJECT TO FUNDING / FUNDING OUT CLAUSE FOR LOSS OF APPROPRIATIONS

NN			

The State's obligation to pay amounts due on the Contract for a fiscal years following the current fiscal year is contingent upon legislative appropriation of funds. Should said funds not be appropriated, the State may terminate the contract with respect to those payments for the fiscal year(s) for which such funds are not appropriated. The State will give the Contractor written notice thirty (30) calendar days prior to the effective date of termination. All obligations of the State to make payments after the termination date will cease. The Contractor shall be entitled to receive just and equitable compensation for any authorized work which has been satisfactorily completed as of the termination date. In no event shall the Contractor be paid for a loss of anticipated profit.

RIGHT TO AUDIT (First Paragraph is Statutory)

NN			

The State shall have the right to audit the Contractor's performance of this contract upon a 30 days' written notice. Contractor shall utilize generally accepted accounting principles, and shall maintain the accounting records, and other records and information relevant to the contract (Information) to enable the State to audit the contract. The State may audit and the Contractor shall maintain, the Information during the term of the contract and for a period of five (5) years after the completion of this contract or until all issues or litigation are resolved, whichever is later. The Contractor shall make the Information available to the State at Contractor's place of business or a location acceptable to both Parties during normal business hours. If this is not practical or the Contractor so elects, the Contractor may provide electronic or paper copies of the Information. The State reserves the right to examine, make copies of, and take notes on any Information relevant to this contract, regardless of the form or the Information, how it is stored, or who possesses the Information. Under no circumstance will the Contractor be required to create or maintain documents not kept in the ordinary course of Contractor's business operations, nor will Contractor be required to disclose any information, including but not limited to product cost data, which is confidential or proprietary to Contractor.

The Parties shall pay their own costs of the audit unless the audit finds a previously undisclosed overpayment by the State. If a previously undisclosed overpayment exceeds one-half of one percent (.5%) of the total contract billings, or if fraud, material misrepresentations, or non-performance is discovered on the part of the Contractor, the Contractor shall reimburse the State for the total costs of the audit. Overpayments and audit costs owed to the State shall be paid within ninety days of written notice of the claim. The Contractor agrees to correct any material weaknesses or condition found as a result of the audit.

Corporate Overview

a. BIDDER IDENTIFICATION AND INFORMATION

Since 2013, The Paramedic Foundation is (TPF) has been a Minnesota non-profit corporation that is tax-exempt under section 501c3 of the Internal Revenue Code as an IRS designated 170(b)(1)(A)(vi) public charity. It has no employees but is run by five volunteer board of directors (BOD). In addition to our BOD we have an external board of advisors comprised of 14 professionals from across the country who are able to be contractually engaged as needed for specific projects.

> *The mission of The Paramedic Foundation is to further the profession of paramedicine.*
>
> *Our vision is to provide resources and expertise through education, governance, credentialing, research, and provider safety so that paramedics will become recognized as professionals worldwide.*
>
> *We value accountability, competence, creditability, professional recognition, paramedic self-governance, and specialized knowledge of paramedics.*

b. FINANCIAL STATEMENTS

TPF follows Generally Accepted Accounting Principles (GAAP) a common set of accounting principles, standards and procedures that companies use to compile their financial statements. GAAP are a combination of authoritative standards (set by policy boards) and simply the commonly accepted ways of recording and reporting accounting information. TPF has completed work and managed contracts up to $500,000 with federal and state governments. TPF uses a top ten accounting firm (Clifton, Larsen, & Allen) to oversee our accounting practices and file our required tax returns and forms. Our project manager Nick Nudell has several years experience managing a federally funded project valued at just under $2 million.

TPF is managed by a volunteer board with an office and office staffing provided by a dedicated person donated by a large non-profit Minnesota-based ambulance service. TPF's other contractors are seasoned EMS professionals averaging over 30 years experience in EMS, most with significant experience working in and for rural EMS agencies. TPF has little overhead which allows us to dedicate the funding for projects almost entirely to the work on the project. As a consulting firm, Priori Health Partners (a TPF subsidiary) has had revenue averaging $100,000+ per year while TPF's revenue has grown from $5,000 in 2013 to over $250,000 per year.

Banking Reference:

Wells Fargo Bank
809 10th Ave N
Sartell, MN 56377
320-650-2280

No judgments, pending or expected litigation, or other real or potential financial reversals against TPF are known to exist.

c. CHANGE OF OWNERSHIP

No changes in ownership or control of the company are anticipated.

d. OFFICE LOCATION

The bidder's office location responsible for performance pursuant to an award of a contract with the State of Nebraska should be identified.

e. RELATIONSHIPS WITH THE STATE

TPF is under contract with DHHS until 12/31/2018 for DHHS Agreement #83928-O4.

f. BIDDER'S EMPLOYEE RELATIONS TO STATE

No individuals included in our proposal are or were an employee of the State within the past twelve (12) months.

g. CONTRACT PERFORMANCE

TPF nor its subcontractors have had a contracted terminated for default during the past five (5) years.

h. SUMMARY OF BIDDER'S CORPORATE EXPERIENCE

The bidder should provide a summary matrix listing the bidder's previous projects similar to the scope of this RFP. The State will use no more than three (3) narrative project descriptions submitted by the bidder during its evaluation of the proposal.

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Experience #1

Organization: Nebraska Department of Health and Human Services Division of Public Health EMS Program	Contact: Tim Wilson Phone Number: (402) 471-0124 E-mail: Tim.Wilson@nebraska.gov	
Address: 301 Centennial Mall SO POB 95026 Lincoln, NE 68509-5026	Project Name: Numerous rural EMS and CAH Assessments	
Function: Prime Contractor Dates: On Time Budget: Varies	Beginning Date of Project: 1/2005	Ending Date of Project: Ongoing

Since 2003 we have conducted 30 rural EMS or CAH assessments. Gary Wingrove has been the lead on all of the projects, responsible for the conduct, management, and coordination of projects.

Many of our assessments have been conducted in rural areas where the state was concerned about the short or long term viability of the ambulance service. We have also done several assessments on high functioning agencies that were seeking to know if they are well positioned to serve their communities long-term needs. Each assessment has led to a set of recommendations for improvement or change that some of which have been adopted on the local level in varying ways. We worked with three CAH hospitals who incorporated paramedics in the hospital to enhance hospital emergency department coverage and inter-facility patient ambulance transport care. Two of these hospitals are also providing advanced life support services to volunteer ambulance services in their service area.

The state of Nebraska is the contractor and uses federal rural health funds. The community populations vary in size from just a few hundred to 15,000.

TPF is solely responsible to conduct the assessment and create recommendations. The state reviews the draft final reports before they are given to the local agency and made public.

Many of these have been very satisfying in that they have created significant change. We have been successful in getting communities and counties to convert some struggling volunteer ambulance services into agencies that employ full time staff. These changes have improved ambulance response times and quality of pre-hospital patient care has been enhanced.

We have been doing these assessments long enough with the Department that we are starting to receive requests from them to do repeat assessments. One of the most satisfying results of our work was to visit an agency in a city where the ambulance only responded to 25% of their 9-1-1 calls (that's not a typo). The other 75% of the time volunteers had to respond into the city to complete the emergency transport. We suggested major structural changes to the agency and that the City hire full time paramedics, which they did. Ten years later the state asked us to return and assess the rest of the county. We found exactly the opposite problem, the full time agency in the city was now responding to 75% of the emergency calls for the volunteer agencies that surrounded the city. At that time we called on the county to fund full time paramedics, one on duty at a time, to be dispatched on all emergency requests for the volunteer ambulance services in the county. The county hired and funded four paramedics who respond by themselves to every call in the county except the county seat town and then treat and transport the patient with assistance from available area volunteer ambulance services.

Experience #2

Organization: Ohio Department of Health – State Office of Rural Health	Contact: Daniel Prokopf Phone Number: (614) 728-0519 E-mail: Daniel.Prokop@odh.ohio.gov	
Address: 246 N. High Street, 7th Floor Columbus, Ohio 43226	Project Name: Flex Rural Community Emergency Medical Services (EMS) Needs Assessment	
Function: Prime Contractor Dates: On Time Budget: $370,000	Beginning Date of Project: 7/2016	Ending Date of Project: 8/2018

TPF was awarded a multi-year contract by the Ohio State Office of Rural Health to conduct a statewide Flex rural needs assessment including updating community health needs assessements and to conduct targeted EMS system assessments for three counties.

We conducted an initial, high-level assessment of the rural EMS agencies that are known by the state to transport to Critical Access Hospitals (CAHs). CAHs were assessed for the need for and desire to have a Community Health Needs Assessment (CHNA) updated. Then we re-assessed the rural EMS agencies that transport to CAHs and held regional meetings to identify and discuss regional needs and variations. These data culminated in a final report produced for and presented to the state.

Experience #3

Organization: King County Emergency Medical Services (EMS) Division	Contact: Helen Chatalas Phone Number: (206) 263-8560 E-mail: helen.chatalas@kingcounty.gov	
Address: 401 5th Ave, Suite 1200 Seattle, WA 98104	Project Name: An Advanced Life Support Study	
Function: Prime Contractor Dates: On Time Budget: $109,536	Beginning Date of Project: 8/2016	Ending Date of Project: 4/2017

TPF was retained by the EMS Division to conduct a study to examine the Advanced Life Support (ALS) agency structure within the KCEMS regional tiered system in relationship to clinical outcomes and financial impacts. This ALS study had two primary deliverables:

1) Evaluate the ALS tier of service delivery and validate the optimal number (or range) of ALS agencies in the County, and the appropriate number (or range) of units operated per agency. The study also considered whether the current service model is designed to meet ALS system needs projected over the next decade (through 2025).

2) Develop a regional process for responding to any requests for changes to the current ALS agency configuration (e.g., if an ALS agency ceases operation).

The final deliverables included:

1) A written summary of the recommendations and findings of the investigation validating an optimal range of agencies and units to meet service needs through 2025, and a process for addressing any changes to the current ALS provider structure.

2) Presenting recommendations and findings to various regional Stakeholder groups. These Stakeholders include:

- BLS Working Group members
- EMS Advisory Task Force members
- Regional Policy Committee members
- King County Councilmembers

3) Revision of the final report and related presentations based on Stakeholder feedback; conducting follow-up meetings to review edits and answer additional questions, and leading the way toward reaching regional consensus.

i. SUMMARY OF BIDDER'S PROPOSED PERSONNEL/MANAGEMENT APPROACH

The Paramedic Foundation has formed the following team (See Table 1: The Paramedic Foundation Staffing Plan) and assignments based on the requirements of this project. The project will be led by Nikiah "Nick" Nudell, MS, NRP, a paramedic and the Chief Data Officer for TPF. Cindy, our finance manager, will process administrative documents and communications. The team of consultants will work with Nick to complete the project deliverables.

Resumes of key personnel are enclosed. We share the same references as provided in the experience section.

Table 1: The Paramedic Foundation Staffing Plan

Robert McNally	GIS consultant	kmcnally@carolina.rr.com

3. TECHNICAL APPROACH

SCOPE OF WORK

Stage One:

1. Facilitate one conference call with DHHS and EMS service(s) to determine the full scope of the assessment and priorities.

Stage Two:

2. Interview community leaders, public officials, business leaders, healthcare administrators, law enforcement personnel, emergency communication (dispatch/Public Safety Answering Point (PSAP)), personnel, healthcare professionals, ambulance services, healthcare consumers or other interested stakeholders who may provide information for the assessment and recommendations.

3. Provide a full assessment of Emergency Medical Services to include all or part of the following. A full assessment shall address all items below

    a. Organizational Structure and system design:
        i. Local authority structure and city or county laws or ordinances;
        ii. Integration with and support from other local healthcare and emergency response entities (fire, rescue, Emergency Management Agency (EMA), etc.);

iii. Human resources and the level of volunteerism, addressing the sustainability of volunteerism;
iv. Leadership within the organization;
v. Administration and management practices; and,
vi. Ownership and the level of involvement.

b. EMS response time reliability:
i. The total demand for service upon the system by response type, including historical demand and projected trends.
ii. A fractile measurement of the EMS systems response times.
iii. The EMS system's ability or inability to respond to every request for service and the causative factors.

c. Fiscal structure and stability:
i. Current EMS system finances.
ii. Billing practices.
iii. Funding sources within the service area, including the third-party payer mix within the service area and the relative need for subsidies.
iv. Value of donated labor.
v. Full and total cost of providing Emergency Medical Services.

d. The delivery and quality of clinical care including the use of quality improvement:
i. The current level of care authorized and provided based on the scopes of practice established by EMS Statute and Rules and Regulations listed in V.B. Project Environment.
ii. Medical direction including the level of involvement and expertise of the local Medical Director(s) and/or Surrogate(s).
iii. Quality Assurance and Quality Improvement plan.
iv. Education and training status.

e. Public education and outreach efforts to include the support and perception of the local community; public access to the emergency response system.

f. Communication systems to include the EMS agency's ability to communicate with hospitals, local and state emergency management, air medical ambulances, emergency response agencies and the support and involvement of the local dispatch entity or PSAP personnel.

g. Integration and involvement with other system of care initiatives and activities such as the trauma, cardiac and stroke systems of care.

h. The level of emergency preparedness of the system and its ability to respond to a disaster or public health emergency.

4. Collect relevant data regarding state and local regulations, laws, and ordinances, census data, demographics, local socioeconomics, industry, geography, highways, neighboring service areas, local medical and healthcare services, and facilities; unique impact factors, such as parks, mining, prisons, tourism and special events; and service location, for example, stroke, cardiac and trauma centers.

Stage Three:

5. Provide a comprehensive final report to be distributed to local officials, regional health departments, pre-hospital providers and DHHS for public distribution. The final report for each assessment will include all findings, recommendations and a plan how to improve the EMS services if applicable. Report will be made available for in preliminary and final forms to DHHS and the EMS Service(s).

6. We will utilize the 18 attributes of a successful EMS agency in our evaluations and reports. See http://worh.org/sites/default/files/EMS%20Attributes%20of%20Success%20Workbook.pdf

7. **Optional Services:**
   a. Additional items as requested by DHHS including but not limited to: additional site visits or consulting for EMS agency being evaluated
   b. Provide additional verbal and written reports to DHHS,
   c. Targeted Assessments: the contents of a targeted assessment will be determined by DHHS. These would include all three stages, but would only address two of the areas from sections V.C.4.a. - h.

BACKGROUND

The purpose of this contract is to provide Emergency Medical Service (EMS) consulting services for individual, city, county, regional, state, private or other types of EMS Services, Department of Health and Human Services (DHHS) Office of Emergency Health Systems (EHS) or the EMS Board. The consultation will include initial interviews and research (Stage One), an assessment to include items specified in sections V.C.3 – 5 (Stage Two), and a presentation of findings and final recommendations to EMS Services and DHHS (Stage Three). DHHS will have the option to request a targeted assessment, which would limit the items included in Stage Two. Location of assessments will vary throughout the State of Nebraska.

DHHS EHS requires that all assessments be completed per the agency's timeline which can vary in length. In order to achieve the needs of the agency, DHHS EHS may award a contract to no more than two (2) Contractors.

PROJECT ENVIRONMENT

Nebraska Emergency Medical Service (EMS) consulting services is grant funded by the Medicare Rural Hospital Flexibility Program specifically designated for rural EMS. Nebraska currently has over 420 EMS services; most of them are considered rural. Nebraska EMS services a variety of different types of ownership including but not limited to city, county, private or Rural Fire District and are primarily located in rural and frontier locations. Assessments may be performed on a single service or on a regional area.

Nebraska EMS is regulated by:

1. Emergency Medical Services Practice Act: http://dhhs.ne.gov/publichealth/Licensure/Documents/EmergencyMedicalServicesAct.pdf
2. Title 172 Nebraska Administrative Code Chapter 11 http://dhhs.ne.gov/publichealth/Licensure/Documents/EMS172-11.pdf
3. Title 172 Nebraska Administrative Code Chapter 12 http://dhhs.ne.gov/publichealth/Licensure/Documents/EMS172-12.pdf
4. Title 172 Nebraska Administrative Code Chapter 13 http://dhhs.ne.gov/publichealth/Licensure/Documents/EMS172-13.pdf

EMS appears in various other Nebraska Statutes and Rules and Regulations. The Office of Emergency Health Systems can assist in providing these during the assessment process if requested.

PROJECT REQUIREMENTS

The Contractor must provide its own supplies and equipment throughout the term of the contract including but not limited to: transportation, workspace, cell phone, computer, email, internet etc.

DHHS REQUIREMENTS

DHHS shall provide the following:

1. Access to data such as Trauma Registry, Crash Outcome Data Evaluation Systems (CODES), eNARSIS, and other resources upon request.
2. Name, contact information and localities to be assessed.
3. One (1) staff person to assist with helping organize the assessment, act as a liaison with services and other resources upon request.
4. Coordination of assessment related activities as needed

BIDDER REQUIREMENTS:

1. Please describe your company's qualifications including but not limited to history, approach, mission, areas of expertise, resources available to perform EMS

assessments and that your company has the ability to stay current with the full spectrum of Emergency Medical Services.

Bidder Response:

TPF recently completed a three year comprehensive Flex Rural Community EMS Needs Assessment for the Ohio Department of Health valued at $374,270. TPF also completed an ambulance rate rebasing analysis for the North Dakota Medicaid agency which resulted in the Governor including enhanced reimbursement in his budget the following year. TPF is the only EMS consulting firm that has ever completed a Medicaid ambulance rate rebasing study in any state.

TPF was contracted by the Minnesota Department of Health (MDH) to create an employer's toolkit to support the state's effort to "speed the adoption of Community Paramedics in Minnesota". This is one of three MDH contracts targeted to the emerging professions of Community Paramedics, Community Health Workers and Dental Therapists ($100,000 contract).

TPF was awarded a "challenge grant" from the Retirement Research Foundation (RRF). The project we are conducting with RRF's support is the creation of the first set of continuing education modules for Community Paramedics. RRF provided base funding and then challenged TPF to find other funding for a RRF match. StratisHealth, Minnesota's QIN/QIO granted funding which RRF has since matched (RRF granted $25k, Stratis granted $25k and then RRF matched it with another $20k). There is an additional granting and grant matching opportunity in which RRF will grant a final $20k.

In recent years TPF supported 6 monthly webinars for 25 participants. We also helped plan a face to face meeting in the Yukon Territory that brought together paramedics from 3 countries to address the unique needs of paramedics in remote areas and the patients they care for.

TPF coordinated statewide stakeholder meetings in Georgia, Wisconsin and Wyoming. These meetings averaged 100 attendees and educated disparate groups about community paramedicine, allowing them to plan in state follow up activities to move community paramedicine forward.

TPF was contracted to update the links on the state of Wisconsin's office of rural health's EMS related website. These links included policy and resources, providing for the first time, a one-stop shop for providers.

TPF was instrumental in coordinating Community Paramedic content for several national and regional paramedic conferences, including EMS Today (4,500 registrants), EMS World Expo (4,000 registrants) and the Zoll Summit (750 registrants). Each of these include a preconference workshop dedicated to community paramedicine along with other sessions throughout the conference or in "track" sequence.

Because we use contractors that fit the specific roles needed for a project we are a very versatile organization. Several of our contractors are self employed that move from project to project as needed. This project team includes two former state EMS directors and a former state regional EMS operations manager. The team working on this project brings unparalleled experience in paramedicine and engagement that includes:

- Founding member and chair of the International Roundtable on Community Paramedicine since 2005
- Conducting stakeholder engagement exercises for the states of California, Colorado, Georgia, Hawaii, Idaho, Maine, Michigan, Ohio, Nebraska, Nevada, North Carolina, North Dakota, Pennsylvania, South Carolina, Wisconsin, Winnipeg, MB, and Wyoming.
- Inaugural Top Ten EMS Innovator designated by the Journal of Emergency Medical Services
- Recipient of the 1996 Jim Parker Leadership Award from the Commissioner of the Minnesota Department of Health for advocating paramedicine principles within the state's public health network

2. Please describe your company's experience in conducting comprehensive EMS assessments; please address experience in rural areas and volunteer workforces.

Bidder Response:
TPFs is the most experienced firm in conducting comprehensive EMS assessments of rural communities. We have learned that although there may be commonalities with these assessments, just like real patients, each community needs to be assessed on its own merits. Our methodology for these assessments has been honed over the many years and assessments across the country. This core philosophy has driven our success in a number of rural states and counties and has been recognized by federal agencies who seek our formal and informal counsel on rural EMS and workforce issues.

We are currently contracted with DHHS to conduct a statewide EMS Needs Assessment. We have conducted some 20 comprehensive rural EMS assessments for Nebraska DHHS alone. We developed a plan for a regional EMS system in Wyoming. PrioriHealth Partners (PHP) is a subsidiary of TPF with a long history of performing statewide EMS, critical access hospital and rural EMS assessmetns and consultations throughout the Midwest. Between TPF and its subsidiary, TPF has conducted 34 local EMS agency assessments and four specifically for CAH related issues.

We also designed and administered statewide rural EMS assessments in Montana, Connecticut, and North Dakota. These include mixed methods approaches that were designed with each of the states and their identified needs and local insight. We have developed dozens of online surveys for data collection and problem identification to identify legislative challenges, rulemaking opportunities, grant fund priorities, and workforce challenges.

Many of these have been very satisfying in that they have created significant change. We have been successful in getting communities and counties to convert some struggling volunteer ambulance services into agencies that employ full time staff. These changes have improved ambulance response times and quality of prehospital patient care has been enhanced.

The Paramedic Foundation has the only team worldwide that has broad experience working with local and regional organizations, state and national associations, state and provincial governments and federal agencies. Collectively we have significant experience and technical ability in managing projects involving large, dynamic and continually evolving national EMS projects.

3. Please describe your company's proposed approach to completing the in Section V.C. Scope of Work. Provide an in-depth description of the services you propose to provide, the methods you will use, and the outcomes you propose to achieve.

Bidder Response:
We have developed the following proposed plan of work based on our understanding of the project:
Project kickoff: immediately upon project award the project manager will schedule a conference call with DHHS to discuss the project, make introductions of team members as necessary, and to discuss expectations and objectives.

- Project Management: The project manager will communicate with DHHS on at least a once per month basis in regards to assignments and related progress. We will be available during normal business hours and at other times as needed to schedule discussions as needed.
- The scope of work neatly lays out a work plan for each assessment that is similar to the work plans we have followed for many years. We would continue to follow these plans unless modifcations are needed based on discussion with DHHS. These involve a 2-3 day site visit with back to back meetings in the community with local stakeholders collecting quantitative and qualitative data,

observing facilities and community challenges, and establishing a rapport. The report is drafted over the following 4-6 weeks and provided to key persons for review prior to finalizing.

- Total project time is 2-3 months per assessment. It is possible to overlap the first or last month work with different communities but we try to avoid mixing the periods involving in-person and data analysis so each community can be evaluated with full attention given to its needs.

4. Please describe your knowledge of federal and State of Nebraska EMS laws and regulations.

We have extensive knowledge of federal and Nebraska state EMS laws and regulations. At the request o FORHP staff, we have served as the only non-governmental advisors and SMEs Flex Monitoring team to velop the next round of Flex grant guidance. We have served on the National EMS Advisory Council. Son of our team have spent a large portion of their career in 'government affairs' roles. We have also served state EMS office staff and directors. These experiences give us great insight into the specific laws and ru

5. Provide three examples of final reports that your company has provided to customers.

Bidder Response:
We have completed the following three final reports for previous clients and submit them here for your view. Please find attachments for reports from Ohio, Nebraska, and King County, Washington.

DELIVERABLES:

1. See Cost Proposal.

Attachment A: Project Team Curriculum Vitae

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Nick Nudell, MS, NRP, FACPE

(760) 405-6869 | medicnick@gmail.com

PROFILE

For more than 25 years I've succeeded as a visionary value-based health systems strategist in resource-constrained settings. My focus has largely been on improving health care system design, performance and engagement through innovative approaches to both knowledge discovery and management. I'm driven to use information to make sense of patterns and to understand complex relationships to develop market-leading strategies for long-term top performance, growth, and sustainability. I also develop machine learning and artificial intelligence that allows users to make more informed and better decisions. This means that one size does not fit all and specific challenges demand precise solutions, many we have not thought of yet.

PERSONAL DATA

Birthplace: Spokane, WA.

Citizenship: USA

EDUCATION

D.Sci. Information Systems - Analytics and Decision Support. Dakota State University (Expected).

MS - Computer Information Systems - Information Security. Boston University (2013).

BA - Management with concentration in Information Technology. Golden Gate University (2011).

Paramedic Certificate. Montana State University College of Technology - Great Falls (2001).

John Deere Ag Technology. Walla Walla Community College (1994-1996).

High School Diploma. Horizon High School - Broomfield, CO & Mountlake Terrace, WA. (1991).

AWARDS

Dean's List Scholar. Golden Gate University (Fall 2010).

Fellow of the American College of Paramedic Executives (FACPE). EMS Officer Credentialing Commission (February 2017).

PROFESSIONAL APPOINTMENTS/EMPLOYMENT

2017-Present. Paramedic & Division Chief of EMS Administration. UCHealth. Fort Collins, CO. www.uchealth.org

Executive level management of a high performance air and ground mobile health paramedic service within a health system that claims a Malcolm Baldrige award, IBM Watson Health's list of 5 Top Performing Large Health Systems, multiple hospitals in the 100 Top Hospitals by Truven Health Analytics, and the 7th highest performing academic hospital in the United States for delivering quality health care.

Directed the strategic managment of dedicated 9-1-1, interfacility, flight and ground CCT programs with 250+ staff, $15M+ budget, and $40M value stream for improved collections by more than $1M and decreased expenses by more than $3M annually while improving employee and community engagement during my tenure.

Implemented system status management, dynamic deployment, and other high performance EMS system features that resulted in immediate reduction in performance penalties and improvement in patient outcomes with 90% reduction in liquidated damages.

Mentoring junior staff & facilitating professional development with an intense focus on health system internal and external relationship development. Developed close working relationships with senior management team members resulting in the provision of subject expertise advisory roles across the health system.

Following a servant leader model, developed key performance indicators for clinical, operational, customer service, staff recruitment & retenton, and employee engagement performance expectations.

Increasing market share throughout the region while also strengthening relationships within healthcare system.

2000-Present. Board Member/ Chief Data Officer. Paramedic Foundation, Inc. (501c3) & PrioriHealth Partners, LLP. St Paul, MN. paramedicfoundation.org

Architect and engineer of numerous performance improvement initiatives for complex social determinants of health, public health, system evaluations, and health policy issues with a special focus on the particular needs of rural and remote areas.

Manage grant portfolio including applications for multi-year programs exceeding $500,000 annually.

Founder of the UltraMedical Team and development of evidence based guidelines & curriculum for ultra-endurance sports including managing more than 150 medical volunteers across North America.

Principal Investigator for:

- Flex Rural Community Emergency Medical Services (EMS) Needs Assessment for Ohio.
- Advanced Life Support (ALS) Study for King County Medic One.
- Emergency Medical Services Data for Performance Measurement project contracted with NHTSA.

Co-Investigator for:

- Prehospital Emergency Medical Services Personnel: Comparing Rural and Urban Provider Experience and Provision of Evidence-based Care with the University of Washington's WWAMI Rural Health Research Center.

2014 - 2017. Project Manager. National Association of State EMS Officials. Falls Church, VA. www.emscompass.com

Developed original concept & wrote contract proposal for EMS Compass, a $1.7M effort to develop evidence based performance measures on behalf of NHTSA with the entire EMS industry and paramedic profession being in the driver's seat.

Managed all aspects of the effort through its three year lifespan. Completed a contract extension after authoring a manuscript ready for peer review.

Coordinated six workgroups with more than 70 volunteer subject matter experts contributing to all phases of the work.

Conducted dozens of webinars, information sessions, and presentations at forums all across the country to inform and educate EMS professionals about performance improvement and measurement design.

2000 - Present. (Inactive) Critical Care Paramedic/Ed. Coordinator. Glacier County EMS. Cut Bank, MT. www.glacierems.com

2014 - 2015. Paramedic. Humboldt General Hospital. Black Rock City (Burning Man). Winnemucca, NV.

2008 - 2009. Per Diem Paramedic. Robert Wood Johnson University Hospital. New Brunswick, NJ.

1999 - 2000. EMT-B Volunteer. Pondera County Ambulance. Valier, MT. www.ourpmc.com

Supervised & taught First Responders, EMT partners, and Paramedic interns, then approving new hires for permanent employment status.

Provided customer service, marketing, and community education including providing patient care in 911 responses, inter-facility and regional ground transport in remote, rural, and urban settings.

2011 - 2013. System Integration Manager. FirstWatch Solutions, Inc. Encinitas, CA. www.firstwatch.net

Providing excellent customer service and support, project management, pre-sales engineering, and developing a next generation semi-automated data mining and quality improvement system for Emergency Medical Service patient care records.

2005 - 2011. Senior Field Clinical Engineer/Clinical Educator. AngelMed, Inc. Tinton Falls, NJ. www.angel-med.com

Reporting to VP of CRA, directed operational activities for feasibility study and then developed clinical strategy for 1,000+ patient/50 site pivotal trial for novel implantable cardiac monitoring mHealth device.

2006 - 2007. Regional Ops Manager. Idaho Dept. of Health and Welfare EMS Bureau. Boise, ID. www.idahoems.org

Designed an innovative hospital bed tracking system, based upon a unique collaborative research and development program to integrate rural EMS providers with Critical Access Hospital programs, multi-year strategic plan, and reorganized my staff of ten and per diem staff of 200+ in five regional offices.

Established EMS system standards including the conversion of National Registry examinations to Computer Based Testing; provided technical assistance for the startup of the Idaho EMS Physician Commission including the drafting of administrative rules and a comprehensive standards manual.

2004 - 2006. EMS Agency Specialist, Disaster & Emergency Operations Coordinator. San Francisco Dept. of Public Health. San Francisco, CA. www.sanfrancisoems.org

Performed strategic planning then developed EMS disaster and Emergency Operations Plans, policies, procedures and training guidance for EMS field providers, nursing and medical staffs and led multiple patient incident exercises and drills.

Managed complex programs with individual budgets exceeding $1 million including the first Disaster Registry Program and the Strategic National Stockpile CHEMPAK program.

2003 - 2005. ER Technician. John Muir Medical Center. Walnut Creek, CA. www.johnmuirhealth.com

2001 - 2003. ER Technician. Northern Rockies Medical Center. Cut Bank, MT. nrmcinc.org

Credentialed as mid-level provider in Critical Access Hospital functioning as a resuscitation team leader, neonatal provider, and orthopedic technician in a low-resource rural environment.

1995 - 1998. Precision Agriculture Information Systems Development. ConAgra. Walla Walla, WA/Valier, MT.

Developed applications for agricultural information systems to support sales, marketing, and field engineering programs.

Identified new market opportunities including the first successful online "Partners in Precision" marketing campaign resulting in a 35% revenue increase.

1999 - 2000. Service Manager. Lloyd Torgerson, Inc. Etheridge, MT.

1994 - 1995. Service Department Manager. Russ Dean Ford, Inc. Pasco, WA.

1993 - 1994. Assistant Service Manager. Courtesy Ford, Inc. Conrad, MT.

Designed pay for performance program that resulted in 20% increase in profit while increasing employee compensation 30% while process improvements led to 88% reduction in customer wait times.

PUBLICATIONS, PROCEEDINGS & PRESENTATIONS

Selected manuscripts in refereed journals

1. Fishe JN, Crowe RP, Cash RE, **Nudell NG,** Martin-Gill C, Richards CT. Implementing Prehospital Evidence-Based Guidelines: A Systematic Literature Review. *Prehospital Emergency Care.* 2018;0(0) np.
2. **Nudell NG**, Hoffman MH. Case Report: Acute Mental Status Changes Following an Ultramarathon. *British Paramedic Journal.* 2017, vol. 2(1) 16–19.
3. Rice DT, **Nudell NG,** Habrat DA, Smith JE, Ernest EV. CPR induced consciousness: sedation protocols for this special

population. *British Paramedic Journal.* 2016;1(2) 24–29.

4. Rice DT, **Nudell NG,** Habrat DA, Smith JE, Ernest EV. CPR Induced Consciousness It's Time for Sedation Protocols for this Growing Population. *Resuscitation.* (2016), http://dx.doi.org/10.1016/j.resuscitation.2016.02.013
5. **Nudell N**, Rice D, Gale JA, Wingrove GW. Rural acute myocardial infarction survey. *International Paramedic Practice.* 2013 Jan 1;2(1), 169-175.
6. Ellestad MH, Messenger J, Montgomery B, **Nudell N**, Narula J. Intracardiac Electrogram and Ischemia Alert. *Journal of the American College of Cardiology.* 2012 Feb 7;59(6):631-3.
7. Lerner EB, Schwartz RB, Coule PL, Weinstein ES, Cone DC, Hunt RC, Sasser SM, Liu JM, **Nudell NG**, et al. Science and Evidence-based Considerations for Fulfilling the SALT Triage Framework—Lerner et al Reply. *Disaster Medicine and Public Health Preparedness.* 2010;4(01):12-.
8. Lerner EB, Schwartz RB, Coule PL, Weinstein ES, Cone DC, Hunt RC, Sasser SM, Liu JM, **Nudell NG**, et al. Lerner et al reply. *Disaster Medicine and Public Health Preparedness.* 2010;4(1).
9. Lerner EB, Schwartz RB, Coule PL, Weinstein ES, Cone DC, Hunt RC, Sasser SM, Liu JM, **Nudell NG**, et al. Lerner et al reply. *Disaster Medicine and Public Health Preparedness.* 2009;3(2).
10. Lerner EB, Schwartz RB, Coule PL, Weinstein ES, Cone DC, Hunt RC, Sasser SM, Liu JM, **Nudell NG**, et al. Mass Casualty Triage: Universal Versus Specific: Lerner et al reply. *Disaster Medicine and Public Health Preparedness.* 2009;3(02):72-.
11. Lerner EB, Schwartz RB, Coule PL, Weinstein ES, Cone DC, Hunt RC, Sasser SM, Liu JM, **Nudell NG**, et al. Mass casualty triage: an evaluation of the data and development of a proposed national guideline. *Disaster Medicine and Public Health Preparedness.* 2008;2(S1):S25-S34.

Selected poster and conference presentations

1. Fishe JN, Crowe RP, Cash RE, **Nudell NG,** Martin-Gill C, Richards CT. Prehospital EBG Implementation Methodology: A Systematic Literature Review. *National Association of EMS Physicians, San Diego, CA.* 2018 (Presented).
2. Jarvis J, Sager LN, **Nudell NG,** Barton D. Benchmarking EMS Compass Cardiac Performance Measures Using a Large National Dataset. *National Association of EMS Physicians, San Diego, CA.* 2018 (Presented).
3. Jarvis J, Sager LN, **Nudell NG,** Barton D. Benchmarking EMS Compass Pediatric Performance Measures Using a Large National Dataset. *National Association of EMS Physicians, San Diego, CA.* 2018 (Presented). Awarded *best poster abstract.*
4. Jarvis J, Sager LN, **Nudell NG,** Barton D. Benchmarking EMS Compass RLS Performance Measures Using a Large National Dataset. *National Association of EMS Physicians, San Diego, CA.* 2018 (Presented).
5. Jarvis J, Sager LN, **Nudell NG,** Barton D. Benchmarking EMS Compass Stroke Performance Measures Using a Large National Dataset. *National Association of EMS Physicians, San Diego, CA.* 2018 (Presented).
6. Jarvis J, Sager LN, **Nudell NG,** Barton D. Benchmarking EMS Compass Seizures and Hypoglycemia Performance Measures Using a Large National Dataset. *National Association of EMS Physicians, San Diego, CA.* 2018 (Presented).
7. Jarvis J, Sager LN, **Nudell NG,** Barton D. Benchmarking EMS Compass Trauma Performance Measures Using a Large National Dataset. *National Association of EMS Physicians, San Diego, CA.* 2018 (Presented).
8. Jonk Y, Wingrove G, **Nudell N,** McGinnis K, Nehring T, Hart, L. Addressing Geographic Disparities in Access to Ambulance Services: Ensuring Access while Minimizing Costs. North Dakota GIS Users Conference. September 2017 (Presented).
9. **Nudell NG**. Optimizing The Emergency Call Taking Process With Machine Learning Methods. *Institute for Operations Research and the Management Sciences Annual Meeting, Houston, TX.* October 2017 (Presented).
10. Jonk Y, Wingrove G, **Nudell N,** McGinnis K, Nehring T, Hart, L. Addressing Geographic Disparities in Access to Ambulance Services. *National Rural Health Association's 40th Annual Conference, San Diego, CA.* 2017 (Presented).

Selected commissioned reports

1. Anderson P, **Nudell N**, Wingrove G, Cole D. Hamilton County EMS System Assessment, Ohio, Aug 2017.
2. Anderson P, **Nudell N**, Wingrove G, Cole D. Seneca County EMS System Assessment, Ohio, Jul 2017.
3. **Nudell N**, Narloch L, Caffrey S, Zavadsky M, Garza A, Hinchey P, Mears G, Nelson B, Tuke T, Reinert A, Goodwin J. 2016 National Survey - Data Collection, Use and Exchange in EMS, Clinton Mississippi. *National Association of EMTs*, June 2016.
4. **Nudell N**, Wingrove G, Patterson DG, Robinson-Montera A. Emergency Medical Services Data for Performance Measurement: Data Quality Assessment and Recommendations. Washington, DC: *National Highway Traffic and Safety Administration*, Sep 2014.
5. Wingrove G, **Nudell N,** Womble M. Otoe County EMS System Assessment, Nebraska, Jul 2013.
6. Wingrove G, **Nudell N,** Murray J. Cass County EMS System Assessment, Nebraska, Jun 2013.
7. Wingrove G, **Nudell N.** Hamilton County EMS System Assessment, Nebraska, Jan 2013.
8. **Nudell N,** Becknell J, Reinert A. A Crisis and Crossroad in Rural North Dakota Emergency Medical Services, North Dakota, Jun 2011.
9. Becknell J, **Nudell N,** Reinert A. The Rural Ambulance Service Leader›s Survival Guide - Nine Questions Every Rural Ambulance Service Leader Should Ask, North Dakota, Jun 2011.

10. Becknell J, **Nudell N,** Reinert A. The Impact of Oil and Energy Development on on Out-Of-Hospital Emergency Medical Services, North Dakota, Jun 2011.
11. **Nudell N,** Wingrove G, Becknell J, Reinert A. North Dakota Rural EMS Improvement Project, North Dakota, Jun 2011.
12. **Nudell N,** Wingrove G, Becknell J, Reinert A. Pembina County EMS Assessment, North Dakota, May 2011.
13. Sandy C, **Nudell N,** Wingrove G, Becknell J, Reinert A. An Introdution to Rural EMS Medical Direction in North Dakota, North Dakota, Apr 2011.
14. **Nudell N,** Wingrove G. How Good Is Your Ambulance Service? A Basic Ouality Kit for Rural North Dakota Ambulance Services, North Dakota, Apr 2011.
15. Wingrove G, Murray J, **Nudell N,** Becknell J, Reinert A. Boone County EMS System Assessment, Nebraska, Sep 2009.
16. Wingrove G, Murray J, **Nudell N**, Becknell J, Reinert A. City of Bridgeport EMS System Assessment, Nebraska, Aug 2009.
17. **Nudell N**. Idaho EMS Physician Commission Standards Manual. Approved under state law 2006.
18. **Nudell N**, Wingrove G, Patterson PD. A Patient Tracking Demonstration And Evaluation Project. *Florida Department of Health, Division of Emergency Medical Operations, Office of Emergency Operations*, Orlando, Jun 2006.

Selected articles in trade journals/self published

1. **Nudell N.** Artificial Intelligence for us? *Annals of Emergency Dispatch & Response. 2017;5(1)5.*
2. **Nudell N.** (May 2016).The birth of a performance measure. *JEMS.com.*
3. **Nudell N.** (Feb 2015). How EMS is impacted by in-home caregivers' use of digital info. *EMS1.com.*
4. **Nudell N.** (Dec 2014). Why EMS Belongs In The Federal Health IT Plan. *EMS1.com.*
5. Hoffman MH, **Nudell NG,** Berry J. (Sep 2014). Introduction to the Ultra Medical Team. *National Association of EMS Physicians Newsletter.*
6. **Nudell N**. (Aug 2013). Case Studies: How The Power of Data Can Transform EMS. *EMS World.*
7. **Nudell NG.** (2004). The Concept of Scalable, Interoperable, and Fully Integrated Healthcare Information Tracking Systems for Disasters. The Paramedic Foundation. Retrieved April 8, 2016, from http://paramedicfoundation.org/
8. **Nudell N**. (Jan 1997). GPS In Agriculture - An Overview. *Automatic Flagman Company.*

INVITED TALKS

- American Ambulance Association. St. Louis, MO-EMS Compass Initiative.
- HIE in EMS Summit 2014, Los Angeles, CA - HIE designed for EMS use.
- EMS Today. 2013, Washington, DC-EMS Leadership Getting More From Less: How To Use Data in Your CAD and ePCR to Improve Operational and Clinical Performance. 2015, Washington, DC-EMS Performance Measures Project. 2016, Baltimore, MD-EMS Compass Town Hall Meeting: How Performance Measures Could Transform EMS.
- EMS World. 2013, Las Vegas, NV-How To Use Data to Improve Clinical Performance. 2015, Las Vegas, NV-Town Hall Meeting: Building Performance Measures and Why the Future of EMS Depends On It. Integrated Healthcare Forum Session Moderator: How Technology Is Transforming Integrated Healthcare.
- Foothills and Mile High RETAC ePCR Vendor Expo. 2015, Denver, CO-EMS Compass Initiative.
- Health Information Management Systems Society (HIMSS). 2015, Chicago, IL- Disaster Data Challenges: Don›t let data become part of the disaster.
- Idaho Preparedness Conference. 2006, Burley, ID-Multiple Patient Incident Response Planning.
- Industry Council for Emergency Response Technologies (iCERT). 2015, Milpitas, CA-Forum on Cyber & ICT Security for Emergency Calling and Communications - Leveraging Secure Cloud Services for First Responder Networks.
- International Association of EMS Chiefs. 2013, Washington, DC-Leveraging Data for Results!
- International Roundtable on Community Paramedicine. 2006, Rochester, MN-The Bigger Than Idaho Project .
- King County Regional Policy Coucil. 2016, Seattle, WA - King County Medic One Advanced Life Support Study.
- Medicine & Science in Ultra-Endurance Sports Conference. 2015, Squaw Valley, CA-The Medical Kit Workshop; Ultra Medical Team Executive Director's and CMO's Perspective.
- mHealth Summit. 2015, Washington, DC-Evolving EMS: Implications of Mobile Technology.
- National Association of City and County Health Officials/Association of State and Territorial Health Officials. 2006, Washington DC-Session Moderator: Remote Control: Preparedness Challenges and Successes in Rural Areas.
- National Association of EMS Physicians. 2015, New Orleans, LA-QI Committee Discussion of EMS Performance Measures.
- National Association of State EMS Officials. 2013, Nashville, TN-Health Information Exchange and EMS Data. 2014, Orlando, FL-Health Information Exchange. 2015, New Orleans, LA-Medical Director›s Council-EMS Compass Introduction. San Antonio, TX-EMS Compass Initiative. 2015, Louisville, KY-How Technology Will Shape EMS: Introducing EMS 3.0.

- National EMS Information System. 2015, Park City, UT-EMS Compass Initiative.
- National EMS Management Association. 2005, Orlando, FL-Integrated Information Technology.
- National Organization of State Offices of Rural Health. 2017, Fargo, ND-What's In It for us? Using Data for Success in Patient Care!
- National Rural Health Association Resources Center. 2014, Washington, DC-PIPSAA Overview.
- Oregon EMS Conference. 2015, Salem, OR-EMS Compass Initiative. PIMP My Agency: How to future proof your EMS agency. Ultra Medical Care.
- Pinnacle EMS. 2011, Miami, FL-Integrating Automated Data Into Your QA Process. 2012, Colo. Spgs., CO-Is your ePCR System Living up to its Billing? 2015, Jacksonville, FL-Why Standard Performance Measures Matter More Than Ever.
- WAVE. 2015, Austin, TX -The EMS Compass Initiative.
- Wyoming EMS & Trauma Conference. 2017, Cheyenne, WY - Quality Improvement.
- ZOLL Summit. 2015, Denver, CO-How Technology Will Shape a Totally New Experience for EMS - Introducing EMS 3.0, Designing Performance Measures for EMS. 2016, Denver, CO-Finding the answers that are right under your feet!

TEACHING EXPERIENCE

Glacier County EMS. Cut Bank, MT.
Emergency Medical Technician (Undergraduate: Numerous dates 2000-2003).
Advanced Emergency Medical Technician (Undergraduate: Numerous dates 2000-2003).
Emergency Medical Responder (Undergraduate: Numerous dates 2000-2003).

Heartshare Training Services. San Jose, CA.
Advanced Cardiac Life Support (Continuing Education: Numerous dates 2003 - 2005).
Pediatric Advanced Life Support (Continuing Education: Numerous dates 2003 - 2005).
Prehospital Trauma Life Support (Continuing Education: Numerous dates 2003 - 2005).

Idaho State University. Pocatello, ID.
EMS Development and Strategic Planning (Undergraduate: Fall 2015).

Montana State University-College of Technology. Great Falls, MT.
EMT Basic DOT Refresher (Continuing Education: Numerous dates 2002 - 2003).
Paramedic DOT Refresher (Continuing Education: Numerous dates 2002 - 2003).
Prehospital Trauma Life Support (Continuing Education: Numerous dates 2002 - 2003).

LICENSURE/CERTIFICATIONS

ACLS/BLS Healthcare Provider. American Heart Association.

American Academy of Pediatrics. Neonatal Resuscitation Provider.

Certified Test Administrator. PearsonVUE.

CCEMT-Paramedic. University of Maryland Baltimore County Dept. of EHS #15715 (Expired).

Department of Homeland Security. National WMD Standardized Awareness Authorized Trainer; Mass Fatality Program Instructor Trainer.

Emergency Management Institute. ICS100; ICS200; IS5a; NIMS-700; Integrated Emergency Management.

Idaho EMS Bureau. ALS Instructor.

Integral Performance Solutions, LLC. Six Sigma Green Belt.

Montana State EMS Bureau. ALS Training Coordinator; Advanced Drivers Education.

O.B. STAT, Inc. Advanced Concepts of O.B. Transport.

Paramedic #041516. Colorado Department of Public Health & Environment (Expires 7/19/2020).

Paramedic #MED-PARA-LIC-3052. Montana State EMS Bureau (Expires 3/31/2019).

Paramedic #M0931478. National Registry of Emergency Medical Technicians (Expires 3/31/2019).

Paramedic #110065. Wyoming Department of Health Office of EMS (Expires 12/31/2019).

Valier Fire Department (Montana). Basic Firefighting.

WestMed College. EMS Instructor Training.

PROFESSIONAL SERVICE

Committees:
2018 - Present - Prehospital Care Research Forum at UCLA
2017 - Present - Larimer County Combined Regional Information System Project (CRISP). Steering & Admin Committees.
2017 - Present - International Paramedic Registry (IPR). U.S. Advisory Committee.
2017 - Present - International Trail Running Association. Health Commission.
2017 - Rural EMS Advisory Commitee. Health Resources and Services Administration - Federal Office of Rural Health Policy.
2016 - Present - Board Member. National EMS Management Association. Liasion to Information and Technology Committee.

2016 - Present - Prehospital Guidelines Consortium. Co-chair Dissemination, Implementation, & Evaluation Committee. Member of Evidence Review Committee conducting GRADE level reviews.
2014 - 2017 - Attributes of a Successful Rural Ambulance Service. Advisory Committee. Wisconsin Office of Rural Health.
2013 - 2017 - Project Execution Group, Project Manager. EMS Compass Initiative. National Association of State EMS Officials.
2012 - 2017 - Dedicated Short Range Communication Technical Committee. SAE - International.
2011 - 2017 - Quality Measurement, Research, & Improvement Council member. Regionalized Emergency Medical Care Services Steering Committee Member. National Quality Forum.
2016 - 2016 - California Office of Statewide Health Planning and Development Song-Brown Health Care Workforce Training Act Grant Reviewer. Family Medicine Capitation Evaluation.
2004 - 2016 - Paramedic Advisory Committee. West Med College.
2014 - 2015 - Developing Program Performance Measures for Rural EMS Advisory Committee. University of Southern Maine.
2012 - 2015 - Data Manager Representative. National EMS Advisory Council. National Highway Traffic Safety Administration.
2011 - 2012 - EMS Systems Sub-Committee. National EMS Advisory Council. National Highway Traffic Safety Administration.
2008 - 2009 - Chair. EMS - A Call To Action And A Vision For Change. National EMS Management Association.
2004 - 2007 - Public Safety Partnership Project for advanced communications. Project Mesa.
2000 - 2001 - Montana Region 2A EMS Association. Board of Directors.

Peer Review:

2017 - Present. International Journal of Computers in Clinical Practice (IJCCP).
2017 - Present. International Journal of Public Health Management and Ethics (IJPHME).
2016 - Present. Americas Conference on Information Systems (AMCIS) SIGHEALTH minitrack.
2016 - Present. British Paramedic Journal (BPJ).
2016 - Present. Hawaii International Conference on System Sciences (HICSS).
2016 - Present. International Journal of Healthcare Information Systems and Informatics (IJHISI).

PROFESSIONAL MEMBERSHIPS

2017 - Present - American College of Healthcare Executives.
2016 - Present - Canadian Paramedic Association.
2016 - Present - American Evaluation Association. Disaster and Emergency Management Evaluation; Social Network Analysis; Data Visualization and Reporting; Health Evaluation; Community Psychology.
2016 - Present - National Association of EMS Physicians. Committees: Community Paramedicine, Quality Improvement, Rural EMS, Wilderness EMS, Research, Standards & Clinical Practice.
2016 - Present - Paramedic Chiefs of Canada.
2015 - Present - Association for Information Systems. IT in Health Care (SIGHealth).
2015 - Present - AcademyHealth.
2013 - Present - Wilderness Medicine Society.
2012 - Present - SAE - International.
2012 - Present - Health Level Seven International (HL7).
2012 - Present - American Trail Running Association.
2011 - Present - INFORMS. Transportation Science & Logistics Society. Decision Analysis Society. Information Systems Society. Transportation Science and Logistics Society - TS Intelligent Trans Systems.
2008 - Present - Health Information & Management Systems Society (HIMSS). Non-Profit Partner (NPP)
2003 - Present - National EMS Management Association.
2000 - Present - National Association of EMT's.

SECONDARY & CONTINUING EDUCATION

2002 - University of Maryland Baltimore County CCEMT-Paramedic. Mountain Plains Health Consortium.
2002 - Montana Reserve Sheriff Deputy training. Glacier County Sheriff's Office.
2015 - Human Subjects Research - Social-Behavioral-Educational. CITI Program.
2016 - Coursera - Machine Learning Foundations: A Case Study Approach.
2016 - EdX. - Practical Improvement Science in Health Care: A Roadmap for Getting Results; Foundations of Data Analysis. Introduction to R Programming.
2017 - Coursera - Neural Networks and Deep Learning.
2018 - Difficult Airway Course; Advanced Emergency Medical Dispatch; Just Culture; NAEMT Safety.

FILM CREDITS

- Set medic. Hidalgo (Feature). Viggo Mortenson. 2002. Disney Production. Director: Joe Johnston.
- Production Assistant/Set medic. Blinkers On (Commercial). 2000. Honda Commercial. Tool of North America Honda.

Paul Anderson, MS, NRP

3939 Fountain Gate Drive, Duluth, MN 55811-5444
218.576.3701 – panderson@paramedicfoundation.org

Summary

Built on a career in paramedicine, provides consultation working with The Paramedic Foundation. Applies real-life experience and insights to deliver high value assessments to EMS agencies, especially in rural settings. Leadership skills developed in operations, budgeting, system efficiency measures, patient satisfaction metrics, quality review systems and other operational and administrative parameters enable thorough and focused review of large and small systems and agencies. Remains an NRP (M0800086) with "inactive status."

Experience

Ohio Department of Health, Office of Rural Health (ORH) – as a Senior EMS Design consultant for The Paramedic Foundation served as a team member and co-authored multiple reports. *2016 – 2018*

Wisconsin Office of Rural Health – as Paramedic System Advisor for The Paramedic Foundation authored "Attributes of a Successful Rural Ambulance Service: A Workbook". *2016*

King County (WA) Medic One – as Paramedic System Advisor for The Paramedic Foundation completed on site assessments and co-authored "An Advanced Life Support Study". *2016*

Lovelock (NV) Volunteer Fire Department - as Paramedic System Advisor for The Paramedic Foundation, completed on site assessments and co-authored "An Advanced Life Support Study". *2016*

Mayo Clinic – as Chief Operating Officer (COO) of Gold Cross Ambulance, provided leadership to a team of 450 that responded to over 85,000 requests for service annually. Employed skills to standardize processes and increase

efficiency and effectiveness as the system grew from operations in four cities to operations in 14 cities. Led development and implementation of paramedic continuing education efforts, government relations initiatives, quality initiatives and public relations plans. Developed skills in leadership and patient care as Assistant Director and Paramedic prior to becoming COO in 1994. *1974-2015*

Education

Master of Science, Health Care Administration
University of St Francis *1999*

Bachelor of Arts, Biology
University of Minnesota, Duluth *1974*

References

References are available on request.

Gary Wingrove
1071 Adams Ave Unit K, Florida City, FL 33034-3621
+1.202.695.3911 gary@wingrove.us fax: +1.206.337.0925

EDUCATION

University of Minnesota – School of Public Health
ISP Health Care Management **1995-1997**
1-1/2 years of master's preparation in healthcare administration

Century College, White Bear Lake, MN (916 AVTI)
Paramedic **1982**
Nationally Registered and Minnesota Certified Paramedic

Bethel University, St. Paul, MN **1979-1980**
General studies

AWARDS

- **Paramedic Medal** – Nation of Ireland **2017**
- **Calico Rural Health Quality Award** – National Rural Health Resource Center **2012**
- **National EMS Innovator** – Journal of Emergency Medical Services **2009**
- **Rural Health Hero** – Minnesota Department of Health **2008**
- **Recognition Award** – National Organization of State Offices of Rural Health **2006**
- **Commissioned Honorary Flight Paramedic** – International Association of Flight Paramedics **2004**
- **President's Award** – American Ambulance Association
- **Leadership in Public Policy** – American Heart Association/Northland Affiliate **2003**
- **Leadership** – North Central EMS Institute **2001, 2008**
- **Dedicated Service in Government Affairs** – Mayo Medical Transport **2000**
- **Leadership** – North Central EMS Cooperative **2000, 2007**
- **Governor's Commendation for Outstanding Service and Leadership** – The Honorable Arne H. Carlson, Governor of Minnesota **1996**
- **Jim Parker Leadership Award for Innovation in Community Health Services** – Minnesota Commissioner of Health **1996**

EMPLOYMENT EXPERIENCE

Gold Cross/Mayo Clinic Medical Transport, Rochester, Minnesota
Government Affairs & Strategic Alliances **1995-Present**
Represent the company to external stakeholders; participate in association development; educate local, state & federal elected officials; initiate formal and informal partnerships.

State of Minnesota **1995-1997**
State EMS Director
Transitioned the staff and functions of EMS regulation in Minnesota from the Minnesota Department of Health to the Minnesota EMS Regulatory Board. (Leave of absence from Gold Cross/Mayo Clinic Medical Transport)

Life Link III, St. Paul, Minnesota **1990 – 1995**
Director of Communications & Ground Operations
HealthEast Transportation, Minneapolis, Minnesota **1980 - 1990**
Assistant Operations Manager/Communications Center Manager

RELATED EXPERIENCE

Priori Health Partners

President **2005 - present**

Provides strategic planning and preparedness consulting to local and state public health and EMS agencies.

PUBLICATIONS AND PAPERS

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CONGRESSIONAL BRIEFINGS & TESTIMONY

- **US House & US Senate Congressional Staff Briefings**: *The Rural & Frontier EMS Agenda for the Future*, September 5, 2004
- **US Senate Governmental Affairs Committee – Panel II Witness**: *Oversight of the Centers for Medicare and Medicaid Services: Medicare Payment Policies for Ambulance Services*, November 15, 2001

HEALTH-RELATED AND PREPAREDNESS BOARDS & COMMITTEES

- **American Ambulance Association** –Member, *Government Affairs Committee;* Former Member, *Board of Directors*
- **American College of Paramedic Executives** – Chief Commissioner
- **Association of Air Medical Services** – Member, *Government Relations Committee*
- **Canadian Standards Association** – Member, *Community Paramedicine Technical Committee*; Member, *Paramedic Psychological Health & Well Being Technical Committee*
- **Center for Leadership, Innovation and Research in EMS** – President
- **Emergency Medical Error Reduction Group** – Designated Federal Contact
- **FLEX Monitoring Team** – Member, *Expert Work Group*
- **International Community Healthcare and Emergency Cooperative** - Coordinator
- **International Paramedic** – Convener of Paramedic G5 Meeting; Steering Committee
- **International Roundtable on Community Paramedicine** – Inaugural Convener; Coordinator/Webmaster; Chair
- **Minnesota Department of Health** – Member and Past Chair, *Rural Hospital Flexibility Advisory Committee*
- **National Academy of Ambulance Coding** – Member, *National Advisory Committee*
- **National Association of EMTs** – Member, *Government Affairs Committee*; *Member, Mobile Integrated Health/Community Paramedicine Committee*; Liaison to the *Paramedic Association of Canada* and the *Paramedic Chiefs of Canada*
- **National Association of EMS Physicians** – Member, *Rural EMS, Community Paramedicine and*

Public Health Committees

- **National Joint Committee on Rural Emergency Care** – Member
- **National Rural Health Association –** Member, Past Member, *Government Affairs Committee*
- **Paramedic Association of Canada** – Liaison, *National Association of EMTs*; Steering Committee Member, *Canadian Paramedic Profile* update
- **Paramedic Chiefs of Canada** – Liaison, *National Association of EMTs*
- **The Paramedic Foundation** – Founder; President; Chief Innovation Officer
- **Rural Health Innovations** – Member, *Board of Directors*
- **Rural Health Resource Center** – EMS Representative, *National Advisory Committee for the Medicare Rural Hospital Flexibility Program*; Technical Consultant
- **StratisHealth** – Immediate Past Chair, *Board of Directors*; Chair, *Executive Finance Committee*

PAST LEADERSHIP ACTIVITIES

- Advocates for EMS – Member, Government Affairs Committee; Former Member, Board of Directors
- American Ambulance Association – Elected Board Member; Co-chair, Rural EMS Leadership Initiative; Chair, Small Providers Committee; Vice-Chair, Government Affairs Committee
- American Heart Association –Vice-Chair, Advocacy Coordinating Committee; Chair, 9-1-1 Task Force, Northland Affiliate, National STEMI Committee
- American Heart Association – Member, *Mission: Lifeline Advisory Working Group*
- American Stroke Association – Member, Minnesota Stroke Committee
- Association of Critical Care Transport – Inaugural Member, *Board of Directors*
- Best Practices in Emergency Services – Member, *Editorial Board*; Contributing Author
- Federal Rural EMS & Trauma Technical Assistance Center (REMSTTAC) – Member, National Advisory Committee; Technical Consultant
- HIMSS/COMCARE Emergency Responder Task Force – Member, Task Force; Member, Concept of Operations Workgroup
- International Association of Flight Paramedics – Advisor, *Government & Legislative Affairs Committee*
- International Rural & Remote Prehospital Collaborative – Convener, Steering Committee
- Mayo Foundation – Member, Medical Direction Committee; Member, Transportation Administration Committee
- Minnesota Ambulance Association – Co-chair, Billing and Financial Information Committee
- Minnesota Department of Health – Commissioner's Appointee, Rural Ambulance Work Group; Member (Governor's Appointment) Rural Health Advisory Committee
- Minnesota EMS Regulatory Board –Member (Governor's Appointment); Secretary; Chair, Complaint Review Committee; Program Committee Representative, Health Professional Services Program
- Minnesota Rural Health Association – President; Chair, Legislative & Executive Committees
- NRHA/National Association of State EMS Directors/NOSORH/Federal Office of Rural Health Policy – Member, Editorial Board – Rural and Frontier EMS Agenda for the Future
- National EMS Advisory Council – Inaugural Member, *Appointed by Secretary of Transportation, USDOT*
- National EMS Insurance Captive/Ambulance Risk Management Association/Ambulance Insurance Exchange – Coordinator
- National EMS Management Association – Past-President, *Board of Directors*; Convener, *National EMS Caucus & Political Action Committee Roundtable Discussion*
- National EMS Outcome Measures Project – Convener & Coordinator
- National Rural Health Association –Chair, Rural EMS Issue Group; Member, Rural Health Congress
- National Quality Forum – Member, Steering Committee on Hospital Emergency Department

Outcome Measures, Steering Committee on Regionalized Systems of Care

- National Rural Health Association - Member – Traffic Safety Advisory Committee
- North Central EMS Cooperative – Past-President and Member, *Board of Directors*
- North Central EMS Institute –President, *Board of Directors*
- Professional Ambulance Association of Wisconsin – Member, Board of Directors
- Rural Domestic Preparedness Consortium – Past Chair; Member, *Advisory Board*
- SafeCom (US Department of Homeland Security) – Member, *Executive Council* University of St. Thomas – Associate Faculty, Mini-MBA in EMS Management
- Unity Medic Collaborative – Member, Board of Directors

Attachment B: Example Final Reports

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2018 OHIO RURAL EMS SURVEY

The Paramedic Foundation | 2800 N 7TH ST - ST. CLOUD, MN 56303
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AUGUST 2018

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Acknowledgement

The project team would like to thank the Ohio Department of Health and the Ohio Department of Public Safety, for their assistance in the funding and preparation of this report.

Special thanks to the EMS agencies and practitioners that participated in the submission of information and attended meetings held throughout Ohio. Many of these individuals complete their work for the agency they are affiliated with as volunteers and give liberally of their time in their community.

Frequently Used Acronyms

The Emergency Medical Services field makes frequent use of acronyms that may not be familiar to many persons. To reduce confusion for the purposes of this report the following acronyms are defined as:

ALS	Advanced Life Support (EMT-I/AEMT or paramedic level agency)
BLS	Basic Life Support (EMT/EMR level agency)
CAH	Critical Access Hospital
CAAS	Commission on the Accreditation of Ambulance Services
CAMTS	Commission on the Accreditation of Medical Transport Systems
CE	Continuing Education
CISD	Critical Incident Stress Debriefing
ED	Emergency Department
EMD	Emergency Medical Dispatch (pre-arrival instructions for 911 calls)
EMR	Emergency Medical [First] Responder
EMS	Emergency Medical Services
EMT	Emergency Medical Technician certified by Ohio
EMT-I/AEMT	EMT certified by Ohio at the Intermediate level (ILS)
EOC	Emergency Operating Center
IFT	Interfacility Transfer
MICU	Mobile Intensive Care Unit
MCI	Multiple Casualty Incident
Paramedic	Paramedic certified by Ohio (ALS)
PIER	Public Information, Education, and Relations
PMD	Physician Medical Director
PSAP	Public Safety Answering Point
ODPS	Ohio Department of Public Safety
ODH	Ohio Department of Health
SNF	Skilled Nursing Facility

Table of Contents

Executive Summary

The Paramedic Foundation was engaged by the state of Ohio Department of Health's State Office of Rural Health (SORH) to conduct a Rural Emergency Medical Services (EMS) needs assessment. This effort was funded entirely by the federal Medicare Rural Hospital Flexibility Grant Program.

The primary objective of the assessment was to assess the methods and delivery of EMS throughout rural Ohio, specifically related to agencies which interface with Critical Access Hospitals (CAHs). We maintained focus on what is needed by these EMS agencies to sustain the critical link of care provided to rural Ohio. The results discovered are translated into recommendations in this report and are intended to inform the on-going grant application processes that are used by the SORH.

Information contained in this report summarizes a statewide assessment of rural EMS agencies based on a web-based survey conducted March through May 2018. The findings were validated in June 2018 through in-person meetings with representatives of EMS agencies throughout Ohio. Information gathered in two previous assessments focused on two specific agencies, commissioned by the SORH in Ohio in 2017, is also embedded in the report.

The number of responses from agencies to the invitation to participate in the survey via a web-based response (other "hard copy" options were offered) were typical for this survey method. On site, face to face regional meetings conducted throughout Ohio were attended by highly-engaged, knowledgeable and informative individuals.

The following set of recommendations emerged from the survey and meetings and can be used by the SORH in future competitive and continuing applications for funding under the Medicare Rural Hospital Flexibility Grant Program (FLEX). The SORH should assist agencies in:

- Effective recruitment efforts;
- Effective staff retention efforts;
- Reviewing and securing funding sources;
- Developing and improving efficiencies within their agency; and,
- Developing a system to support the transport of patients between hospitals, especially from CAHs to tertiary care centers.

The results of this survey provide an opportunity for critical analysis of opportunities to invest in and positively impact the delivery of care to patients requesting service from EMS agencies, especially those in rural Ohio.

Background

EMS in general, but especially EMS in rural and small-town America, continues to be influenced by the unique way it developed over the last 50+ years. Ohio, as most other states, does not have laws mandating that any form of local or regional government provide EMS. The amount of EMS and the level of care provided is a local issue and has become a product of historical precedent and local initiative.

Modern EMS has roots in the 1960s yet over the last four decades, EMS in most rural communities has been heavily subsidized by volunteers who donate their time to staff emergency medical response and transportation. EMS agencies that are dependent on volunteers for staffing and fund-raising for revenue have found advancement difficult. It is a challenge to assure a timely response in these settings. In the current era of preparing public safety for effective response to manage natural disasters and other events, the reality of rural/frontier EMS is that the infrastructure upon which to build such a response is itself in jeopardy.

In any given year, roughly seven out of ten Ohioans *do not* engage in *any* organized volunteer work at all. In 2014, only 27.5% of all Ohioans reported any involvement with formal volunteer work during the year. A majority of Ohioans, it is clear, simply do not give back to their communities in this way. Volunteerism in many communities has noticeably declined in the last decade while at the same time that demand for EMS has grown.

In 2017, the nationwide average value of a volunteer's hour was $24.69 while in Ohio it was $23.33 per hour[1]. For one Ohio ambulance to be staffed 24 hours a day, 7 days per week for a year, the volunteers are contributing $408,742 (8,760 * 2 = 17,520 * 23.33 = $408,742) in free labor to the community per pair of volunteer ambulance staff.

Ohio Methods, Findings & Discussion

The Ohio Department of Health's State Office of Rural Health (SORH) contracted The Paramedic Foundation (TPF) to design, administer and assess a survey of EMS agencies in rural Ohio. The TPF team brings a combined 120+ years of experience, serving the EMS needs of rural communities in many different roles, including overseeing EMS operations at the state level as well as providing operational leadership for the purpose of assuring long-term viability of patient-centric delivery of care, notwithstanding call volume, demographics or other rural health care issues. The purpose of the survey was primarily to identify needs of rural EMS agencies within Ohio which may be positively impacted through planning and implementation of specific initiatives as determined by the SORH.

In 2016, the Wisconsin Office of Rural Health developed and published 18 Attributes of Successful Rural Ambulance Agencies. Members of our project team were expert advisors to

[1] The Independent Sector. The Value of Volunteer Time. 2018. https://www.independentsector.org/resource/the-value-of-volunteer-time-2018/

the process and authored the accompanying "EMS Attributes of Success Workbook". This document has served as the cornerstone for rural EMS development ever since and led to the development of a survey for Ohio rural EMS agencies.

Using the framework of that published work as the foundation, our 2016 survey was designed to gather information that would allow the current status of those attributes within EMS agencies in rural Ohio to be evaluated. Potential interventions to improve overall performance and sustainability of agencies were gleaned from the inputs. This survey provides an opportunity to seek out areas where changes could be made to increase the success of a rural EMS agency. It is impractical to expect that all 18 attributes can be addressed at one time, however, they provide a starting point for system improvement.

For the 2016 survey the Ohio Department of Public Safety, EMS Division (ODPS) provided a list of email contacts for each agency that had transported to one of the 33 CAHs in the previous year. For the 2018 survey, ODPS provided TPF a list of the EMS agencies serving the rural areas of Ohio. Email invitations to participate in the survey were sent by us between March and April 2018. Email bounces were researched with ODPS staff and through other means to identify participant contact information. Of the 480 individual agencies who were invited to complete the survey, 75 (16%) partially completed it and 49 (10%) completed all of it. The sixteen percent response rate (completion rate) is insufficient to develop a satisfactory confidence interval, however the data collected is consistent with expert and anecdotal opinion and should prove useful for the SORH as they engage in planning for future fiscal cycles.

Our 2018 survey focused on agency operations and questions used by the ODPS in an attrition survey were incorporated to allow this survey to complement their work and promote ease of comparison between the two.

Detailed Recommendations

Our 2018 online survey included an open-ended question asking agencies what they needed in order to continue to serve the public.

Survey question 22: What needs does your agency have in order to maintain or enhance your service? *There were 53 responses to this open-ended question (many contained multiple items). In those, there were 16 unique items.*

1. More part-time or paid staff (20 responses)
2. Funding for ambulance, building and equipment purchases (18 responses)
3. More local (including tax levy), grant, state and federal funding for operations support (17 responses)
4. Funding for initial and ongoing training (7 responses)
5. More volunteers (4 responses)
6. Larger pool of applicants (2 responses)
7. Funding for supplies (2 responses)
8. In house training center (2 responses)
9. Tax/Student loan incentives that would help draw new employees to the line of work
10. Less federal and state requirements on training for volunteers
11. Fewer non-emergency transports
12. Clinics to treat patients instead of transport them
13. Increased ambulance staff meetings
14. Tax Levy designed to implement part-time paid staff
15. Aggressive Protocols
16. In house QA Measures

These "need" responses were used in the June in-person regional meetings to further tease out specific recommendations that could be completed by existing SORH Flex-EMS funding (approximately $200,000 per year) that would provide the highest impact to the EMS agencies and the public they serve while being addressed with minimal financial investment. For future planning and funding, these areas may serve as targets for larger initiatives as more financial resources become available to the state.

The consensus that emerged during the regional meetings was the concept of developing a toolkit that would contain step-by-step suggestions and contain information on:

- Examples of successful practices and how they were achieved
- How to educate the public on the key role EMS plays in the community and healthcare
- How to cultivate community stakeholders including policy makers to support EMS
- How to work with the media to tell the EMS story
- Successful tax initiatives and other financial programs implemented to finance and enhance EM5 services
- Examples of personnel and policy and procedure manuals
- Utilization of grant writers or a "road map" with step-by-step actions to help the agency successfully complete and submit grant applications

Considering the full results of the survey and regional meetings, the following four areas include recommendations for FFY2019.

RECRUITMENT

Those who provided input into this survey and review process agree their agencies are weak in the area of recruitment.

- "Our agency has advertised to pay a potential employee's tuition plus offer them a job. (We) have never had an individual take advantage of the offer in five years; I don't understand!"
- "People do not want to work for $12 - $14 an hour, they can make the same in fast food or other jobs with less responsibility and work."
- "We aren't able to compete with wages and benefits offered by larger services or public safety jobs."
- "The number of services starting part-time paramedic (advanced life support) services has increased making it a challenge to find enough providers to provide coverage."
- "People want to work for agencies that pay more or have less runs to do when they are on duty. This is true in trying to find part-time people, they go where there is less work, so they can rest and get paid."
- "We are always competing with other activities."
- "We have to do a better job of asking or persuading young people to join a service, they do not come forward on their own like in the past, they need to be convinced EMS will benefit them."

Issue:

Although the data show the total numbers of practitioners within agencies that responded to the survey as being "flat", the total number of ambulance responses and length of transports between medical facilities is increasing. The total number of practitioners needs to increase in the EMS agencies that rely partially or primarily on volunteer staffing. Every participant in the regional meetings expressed concern or agreed the pool of potential candidates is smaller now than in the past and seems to continue to get smaller each year.

Recommendation #1:

There were 69 responses to survey question 19 regarding specific recruitment activities already conducted by Ohio EMS agencies. There were 32 unique responses in the categories of advertising, education and finance, and personal contact.

A targeted survey on recruitment efforts should be conducted. The survey should contain the list of responses obtained in 2018 asking the agencies to rank the effectiveness of each option, and to submit success stories for options that are particularly effective. A report should be issued that ranks the activities by effectiveness. This ranking can be used by the agencies to increase their activities on effective

strategies and to abandon ineffective strategies. The success stories should be shared along with any specific effort that can be replicated (for example, sample flyers or newspaper ads).

RETENTION

Approaching retention of staff in a well-planned, methodical manner rather than in a "shot-gun" fashion allows an agency to measure effectiveness of efforts undertaken and to effectively and efficiently utilize those efforts which are proven to be successful. Retention efforts must be well thought out and specifically focused. Those providing input provided insights into how recruitment efforts are hampered.

- "The 30-year retirement plan needs to be looked at (in our county), other areas have a 20 and 25-year plan which attracts people."
- "There seems to be no or very little recognition for volunteers in EMS. (We) have suggested to a legislator that there needs to be a tax break for volunteers to encourage them to become volunteers."

The list of efforts presently being undertaken by agencies as well as efforts which the agencies desire to undertake is long and multifaceted. Arguably there is a specific individual initiative which an agency has used, and which has shown itself to be successful. Conversely, there are likely several specific individual initiatives which have been deployed with no success. Investing time in efforts that have not worked or that have a very low rate of return needs to be exchanged for investing in efforts that worked and have shown a favorable return on the investment of time and other resources.

Issue:

Retention efforts are being used by all but four of the agencies that participated in the survey. There is no indication of whether or not any specific strategy, effort or idea deployed is effective in the greater retention effort.

Recommendation #2:

Rural agencies need help with retention efforts. There were 65 responses to survey question 20 regarding specific retention activities already conducted by Ohio EMS agencies. There were 21 unique responses in the categories of work environment, compensation and benefits, and education.

A targeted survey on retention efforts should be conducted. The survey should contain the list of responses obtained in 2018 asking the agencies to rank the effectiveness of each option, and to submit success stories for options that are particularly effective. A report should be issued that ranks the activities by effectiveness. This ranking can be used by the agencies to increase their activities on effective strategies and to abandon ineffective strategies. The success stories should be shared along with any specific effort that can be replicated.

FUNDING

A list of perceived operational funding needs is likely heavily influenced by the most recent or most talked about need of the particular single agency responding to a survey. Inter-agency perspectives, coordination and planning may help focus in on a specific subset of needs which, if applied equitably and effectively, may impact many of the other items. Some specific comments related to meeting needs, frequently connected to financial support, include:

- "Being the first (entity) on the ballot (with a levy request) helps get a levy increase passed."
- "We found out Walmart will provide $500 in gift cards a Month to agencies to help the department. Firehouse Subs has a grant program for emergency agencies too."
- "Maybe we can learn how to take advantage of special groups like Shriners, Jaycees, Lions club, etc. to tell agencies story and explain the agencies needs and what they do."
- "We all need to educate the public on what EMS does, we need to learn how to tell the EMS story."
- "We need to have a person help us find grants that are available."
- "It would be helpful to have someone do the grant application work."
- "(We) need a toolkit of success and example of how success was achieved."

Funding showed up in many comments throughout the survey process. The understanding of the EMS leaders who completed the survey and invested into the review process is that money is needed to enable the agency represented to do the job required of them.

Issue:

Insufficient funding is a reality for many of the agencies providing EMS to rural Ohio.

Recommendation #3:

Agencies need focused resources in order to address their funding issues. A standardized "community benefit" tool should be developed patterned from the existing CAH tool that will help agencies better describe to the public, their governing bodies and politicians the value they add to the community. The value to the public provided by agency volunteers must be recognized in the community benefit tool.

A standardized "financial distress" tool should be developed patterned from the existing CAH tool that can quantify the financial stability of the EMS agencies and that can identify the agencies most at risk. The tool will help the agencies better describe to the public, their governing bodies and politicians the current financial state. The ability to quantify the financial state will be a key to secure future local funding and it would allow the state to target resources to the agencies most in need.

There should be an effort to catalogue and assess local initiatives that have been successfully and unsuccessfully used by agencies to increase funding. A limited sampling of successful efforts along with the steps used to achieve success should be made

available as a standard tool for agencies to use in their efforts. One specific example: we heard from several EMS agencies that their levy requests were "always" voted in by the public because they were reasonable and specific to the agency's needs. The members of these agencies and community partners did significant communication with the public explaining the needs addressed by the levy request. We heard from an almost equal number that their levy requests were "never" approved by voters. While there may be some regional issues in play, including in a toolkit of specific methods used by those whose levy requests are approved along with specific success stories and strategies to explain the agency's needs to the public could be useful if used in planning by agencies whose levy requests were not approved in the past.

EFFICIENCIES

Having served as volunteers in various urban and rural locales, we understand the need to develop solutions that fit the local agency's unique needs. This experience has pointed to the reality that *os valuable as local solutions are, learning and applying broader based industry wide practices to local problems can be invaluable*. When attempting to increase effectiveness through increased efficiency the agencies are strongly encouraged to look broadly at experiences others have had in attempts to solve similar challenges.

Issue:

Initial EMT training and continuing education is considered by many to be too expensive, and inaccessible for many in rural settings due to distance needing to be traveled ta attend courses. (This issue impacts several areas of operation such as, Recruitment, Retention, Funding, and Efficiencies.)

Recommendation #4:

With limited funding, innovative educational resources could be expanded and accessibility to students increased through the development of online resources that would meet educational needs of EMS providers. The state should consider ways to increase the availability of initial EMT, AEMT and paramedic training in areas of the state not currently covered. A combination of distance learning with local clinical time may be a strategy to consider.

Issue:

Agencies in rural Ohio are working hard to be innovative in an effort to make their agency the best it can be. Having served as volunteers in other locales, it is understandable and to some degree desirable ta have solutions to operational issues take on a highly local flavor. However, much is to be learned from other agencies in rural Ohio and beyond.

Recommendation #5:

A survey and assessment of efforts being pursued or planned by agencies should be made with the intent of providing a source of best practices for all agencies to refer to which includes a broad industry-wide perspective of solutions.

INTER-FACILITY TRANSFER OF PATIENTS

As medical care systems develop, often comprised of CAHs, tertiary care centers and other entities, the need to move patients between those entities increases. With such increase in demand to move patients between facilities, EMS agencies experience a corresponding increase demand on their workforce and infrastructure. Agencies rely primarily on volunteer staffing arguably experience the greatest stress on resources. Without a corresponding increase of staffing and other infrastructure needed to successfully handle such increase volume in patient transfers, patient and facilities will experience delays in transport times.

- "Hospitals in some areas are cooperating with services to provide funds or personnel to help with funds or patient transfers; others are not so cooperative, could care less about EMS." Even when the volume of critical care patients increased.
- "Some patients can stay in a CAH hospital ER for 12 hours waiting for transport ambulance. We realize this is an issue that will not go away and will get worse with Baby Boomer generation getting older."

During the review of the survey results, agencies provided anecdotal evidence that patients experience delays in transfer from a CAH to a tertiary care center or other facility of up to 12 hours. In previous work with rural Ohio agencies incidents were documented in which patients waited 4 to 6 hours or more for an inter-facility transfer. Some of these delays included critical care patients. These delays were reported to occur 3-4 times each week. A number of agency providers agreed that this issue may only get worse with the aging of Baby Boomers.

Issue:

CAHs and other hospitals throughout rural Ohio have difficulty securing ground ambulance service to transfer patients out of the emergency department (ED) resulting in extending patient time in the ED which affects patient flow through and delays the patient's arrival at the facility that is best suited to care for the patient.

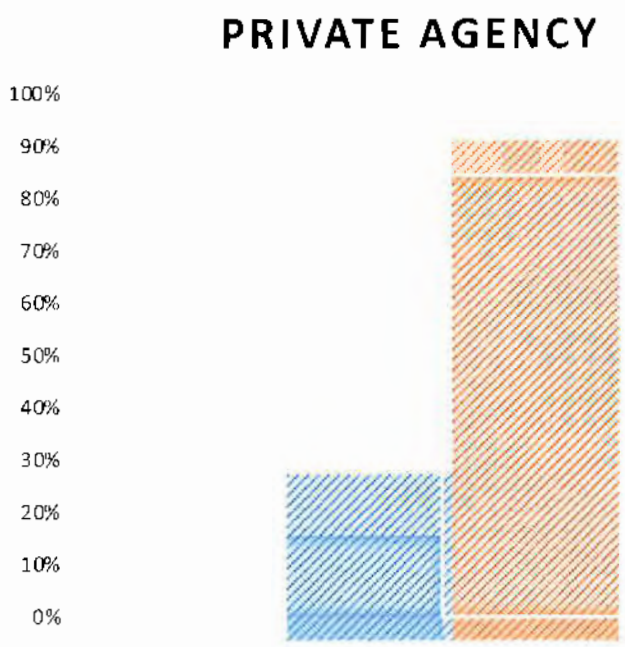
Recommendation #6:

An assessment of options to transport patients between facilities should be conducted and a plan should be advanced to address solutions to challenges currently being faced. This assessment and solution building effort should include as many stakeholders as practical but should be completed in a manner to reflect more than a local solution. It should be built so that solutions are identified for each geographical point of the state.

Survey Response Detail

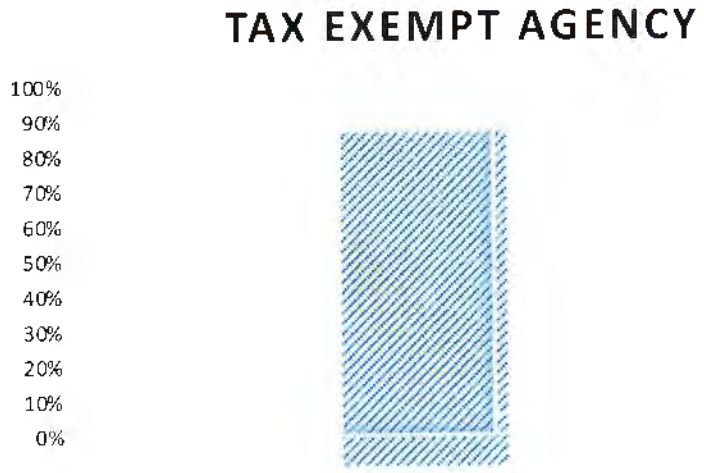
Agency Demographics

Question 1: Are you a private agency?



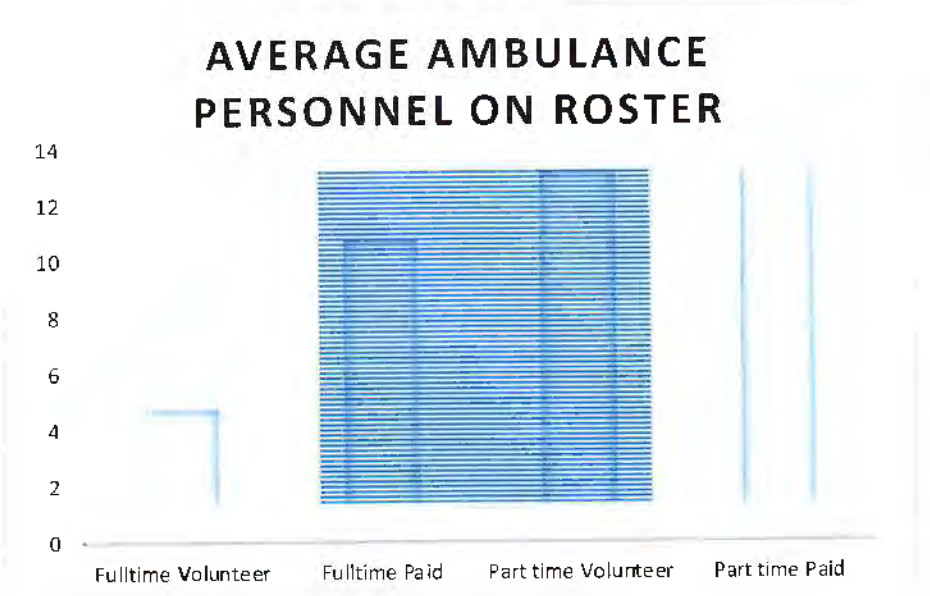
Private agencies often provide service to more populated areas and increasingly are associated with or are embedded within a hospital system. Public agencies are frequently associated with a geopolitical division which includes a paid department responsible for providing EMS. The public agencies that participated in this survey largely are representative of an agency that is small and which relies heavily on volunteer leadership and staffing, as well as modest government financial support through levies, grants and fee for service billing to Medicare, Medicaid and private parties (insurance and individuals.) Both private and public agencies have challenges specific to their size and relationships with governing entities. All agencies may find themselves in the position of having to justify their existence to the public and to rely more heavily on public and third-party payers for financial resources.

Question 2: Are you a federal tax-exempt organization?



Federally tax-exempt agencies generally are in a position to maximize benefits available to them in terms of grants and funding for specific agency needs.

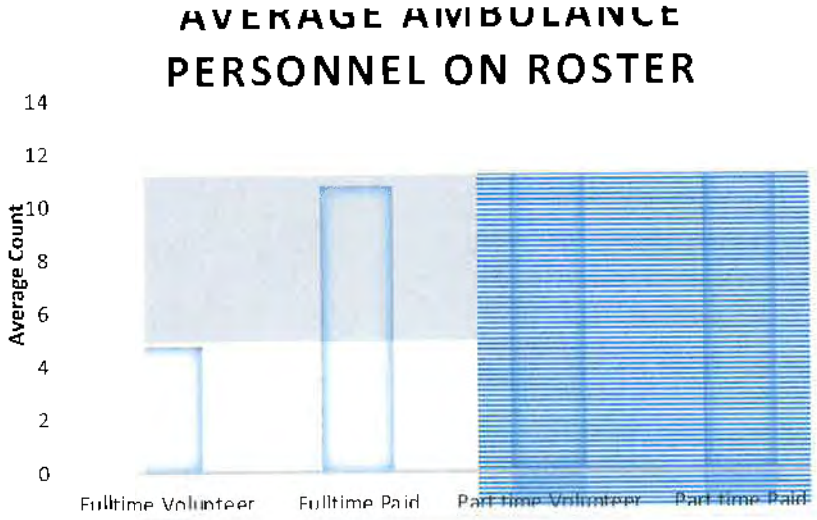
Question 3: How many total ambulance personnel are currently on the roster at this ambulance agency?



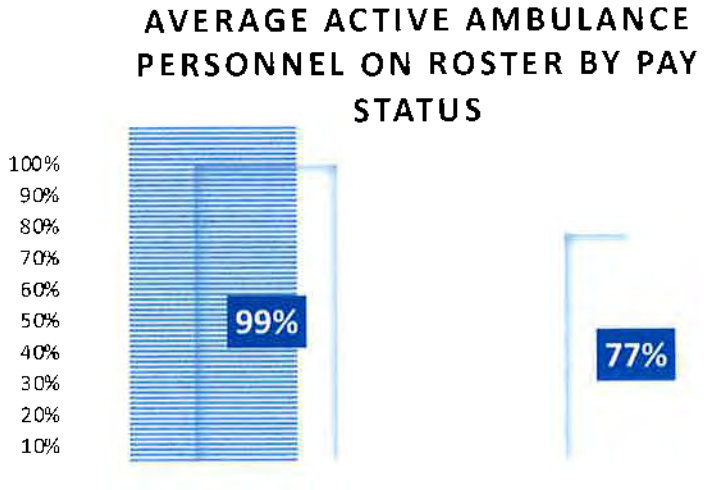
Each agency, in consultation with the public they serve, needs to determine what the ideal number of personnel is required to have a team ready to respond to the needs of the patients. More is not always better. Standards related to staffing levels of the agency and expectations of volunteers in providing coverage to meet those standards helps clarify the commitment made by those who will fill a spot on the agency's roster.

The value to the public provided by agency volunteers must be recognized. According to Independent Sector[2], an Ohio volunteer's time in 2017 was valued at $23.33 per hour. This cost is rarely accounted for in budgeting for volunteer agencies, nor is it generally recognized by the political and public entities that rely heavily on the volunteer agencies to fill the role of a critical and essential service. Adding more staff without funding is increasingly difficult as demands on staff increase (related to volume and length of transfers) as well as a general decline in the commitment individuals have to volunteer time to organizations such as EMS agencies.

Question 4: How many of these ambulance staff are active (participate in training, cover call time or shifts, etc.)?



[2] https://independentsector.org/

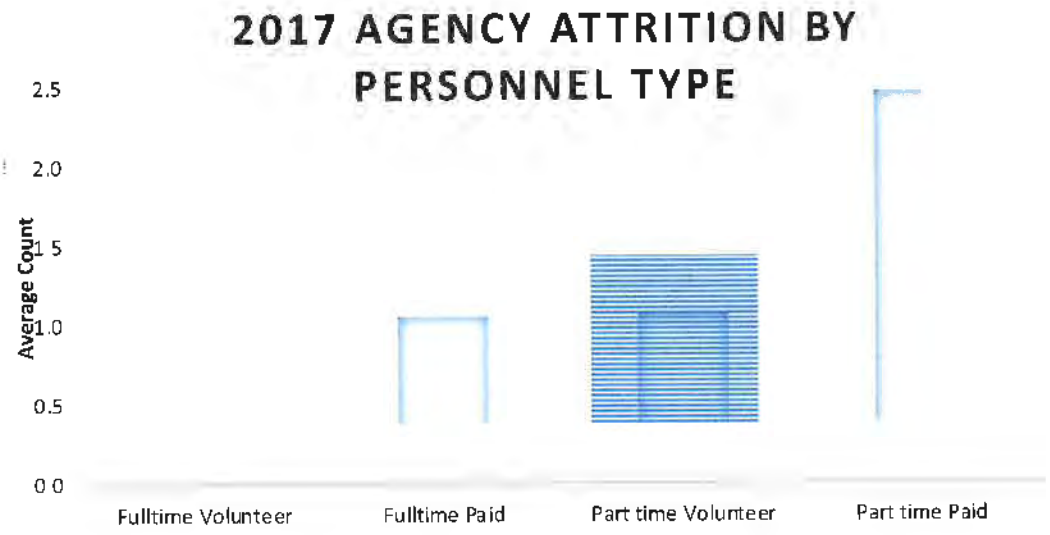


Personnel, whether paid or volunteer, must meet the requirements of the agency to become and remain an active member of the agency. As commonly expected and often accepted, volunteers are allowed to remain in an active status with an agency even if the individual's participation in training, call coverage and shifts covered is viewed by some as below the level necessary to remain active. Standards and mutually understood expectations need to guide the level of participation, again so the agency is well-prepared to meet the needs of the patients.

Individual's inputs convey significant frustration related to personnel on the agency's roster who are not active. Examples of comments include:

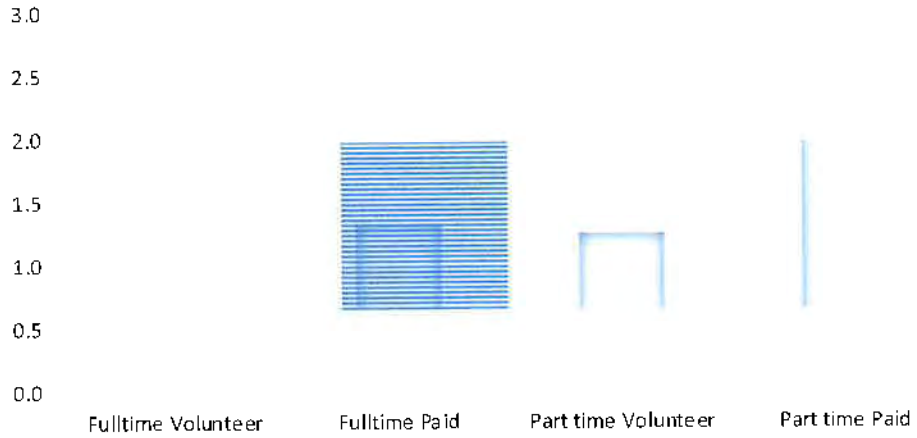
- "It always goes back to what you are willing to pay people and we don't have money to pay them (to stay active)."
- "Money is the biggest motivator to attract and keep people. There never seems to be enough money for EMS."
- "People do not want to work as hard now, days especially, doing hard work like patient care."
- "People do not want to work in EMS for $12.00 to $14.00 per hour when they can make the same working fast food or other jobs with less demands and responsibilities."

Question 5: How many total ambulance personnel left this ambulance agency in 2017?



(See notes following the next question and graph.)

Question 6: How many total ambulance personnel were successfully added to the roster 2017?



The total number of ambulance personnel who left agencies in 2017 is nearly identical to the total number of personnel added to the rosters of agencies in 2017. This data is consistent with data from the ODPS Division of EMS certifications database that collects data on certification renewals and the Division of EMS Attrition Survey related to non-renewal of individual certifications.

Although the data show the total numbers of providers within agencies that responded to the survey as being "flat", workload (total number of responses, as well as length of transports between medical facilities) is increasing. Especially for agencies that rely partially or primarily on volunteer staffing the total number of providers engaged in each agency needs to increase. Anecdotally, every participant in the regional meetings expressed concern or agreed the pool of potential candidates is smaller now than in the past and seems to continue to get smaller each year. Participants attributed this to:

- Less job opportunities in rural communities
- Young families and individuals are more transient today than in the past and are not as inclined to stay and get involved in a community as in the past
- There is an attitude among young people that "the grass is greener on the other side" which makes them more willing to move and not be established in a community
- EMS is competing with school and other activities and organizations for the family's time and commitment

Question 7: Why did these personnel leave the agency?

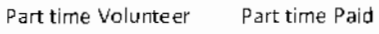
Reason for leaving	Number
Relocated	29
External factors/not employee's choice to leave	11
Unknown	9
Needed to meet EMS job requirement for a different job	8
Lack of promotion opportunities	7
Unable to find full-time work	6
Inflexible work schedule	6
Did not enjoy EMS work	5
Poor management or hostile work environment	2
Work injury	2
Tried it only to see if I liked it	2
Got a degree in another field	1

The "understood" reason(s) for personnel leaving an agency may differ significantly with reasons provided from the individual leaving. Individuals who completed this survey are actively engaged in an agency. As such, this data is provided by the team member who is still engaged in the agency, not the individuals who left. This discrepancy is significant as an entirely different set of reasons may rise to the top if those who left were queried. There was a perception among the participants in our regional meetings that personnel tend to move from agency to agency as full-time or higher paying jobs become available.

Representative comments pertaining to why people left, include:

- "One left because of pay and another left because of frustration with local governments lack of action to address local EMS issues."
- "Politicians are a barrier and (that) frustrates people staying in EMS because they have no clue what EMS does and talk circles around issues. (We) cannot pin them down just where they stand in reference to EMS. This is very frustrating."
- "Time commitment is the reason for loss of volunteers."
- "Run volume and dealing with more challenging and critical patients."
- "Individuals (are) not as loyal to an organization as in the past."
- "People leave for more money now, not for benefits. Benefits are not important to young people. They are short-term, not long-term thinkers."

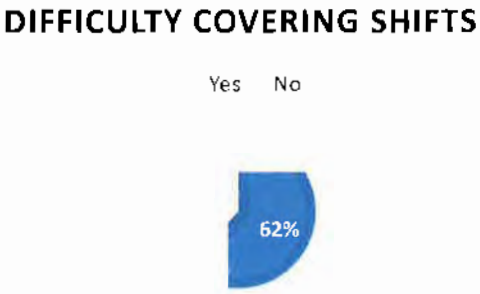
Question 8: Are you trying to add volunteer or paid ambulance staff to your roster at this time?



Difficulties are faced by most agencies that try to add staff. Perspectives offered include:

- "Not many medics are applying for positions. The lack of a training program in our area has impact on recruiting personnel and providing service."
- "People just do not want to work, especially hard work like patient care."
- "Both family members now have to work to support family members, that makes it hard to recruit volunteers. This is the same issue in fraternal organizations like the Elks, Jaycees etc."
- "There is a generational issue about not wanting to volunteer, the younger generation just does not want to volunteer because they are too busy, do not see the importance to volunteer plus they need to be persuaded to volunteer."
- (People just do not want to work) "we buy them pants, boots and shirts and never see them again"

Question 9: Do you have trouble covering shifts?

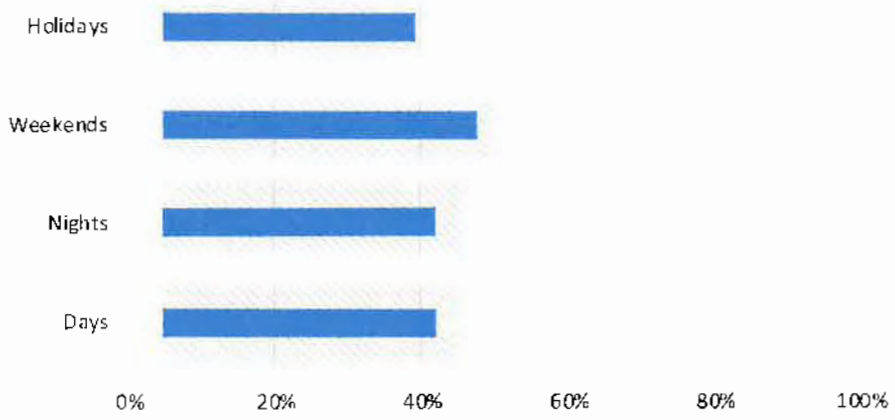


The inability to cover shifts must be a primary driver in an agency's decision to add staff. This inability threatens the agency's ability to meet the needs of the patients served. This may be due to vacancies created by personnel leaving, volumes of specific types of calls increasing or a demand to increase coverage presented by changing demographics. These challenges are met by adding staff and necessary infrastructure.

Inputs were offered about why shifts go uncovered:

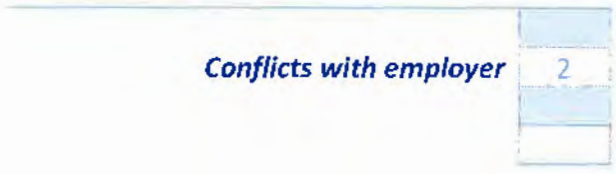
- "People are working overtime because others do not help."
- "(The volunteers) work outside the community they live in so may have job that is not as flexible for them to provide coverage or do not have time to provide coverage because of travel between work and home."
- "Yes, we have same staff coverage (as we did) 10 years ago covering for a marked increase in workload today."
- "We're dealing with forced overtime because of call volume and not enough providers."
- "Volume has increased but (the agencies) are now losing money because of reimbursement technicalities."

Question 10: Which shifts?



Often shifts are most difficult to cover when the shift falls within time slots which are also considered "prime family" or "recreational" time. It is also common for volunteer agencies to have difficulty covering shifts during time periods when employers are not able or willing to release employees from their vocational commitments.

Question 11: Top TWO reasons for not being able to cover all ambulance shifts?



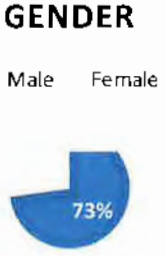
Question 12: What other reasons do you have trouble covering shifts?

There were 31 responses to the open-ended portion of this question. In those responses there were 17 unique items:

1. Low- or no-pay (5 responses)
2. Lack of volunteers (4 responses)
3. Volunteers: conflicts with full-time non-EMS job (3 responses)
4. Full-Time work obligations elsewhere (3 responses)
5. Recertification demands too high (2 responses)
6. Lack of qualified applicants (2 responses)
7. Working for more than one EMS agency
8. Mandatory overtime at another job
9. Family obligations
10. Lack of enough paramedics on paid staff
11. Paid staff unwilling to work excessive overtime to cover open shifts
12. Long Transport times
13. Millennials
14. No desire to run calls in the middle of the night
15. Public misuse of the EMS service causing burnout
16. Some just don't like to work
17. Sometimes unable to get a full 24 hours of coverage

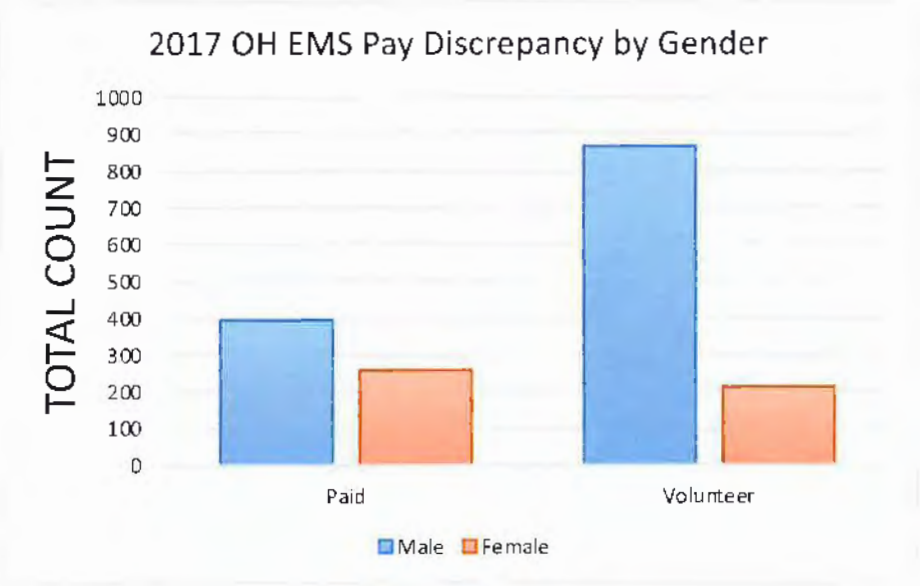
In general, the frustration carried by agencies can be summed up by a succinct comment "Trying to compete with overtime pay of paid departments when trying to get coverage is impossible."

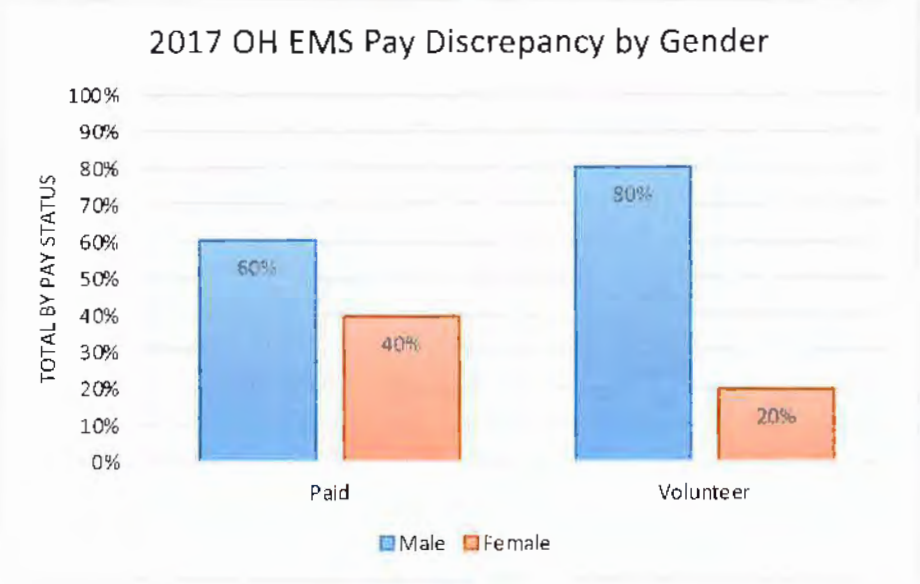
Question 13: Gender of Staff?



EMS workforce gender is changing. Understanding and tracking such changes allows the agency to find and use the very best EMS practitioners in their community as well as those outside the community who are seeking the opportunity to work for the EMS agency.

One interesting comment received was that there is a "pocket of counties in rural Ohio" that rely on "older ladies" who have effectively provided coverage for the volunteer EMS service in those areas for "some time". Another comment was that there are some agencies specifically recruiting retired people to volunteer, especially during work day hours.





Question 14: How long have your staff been with your agency?

Longevity	Total Workforce	Volunteers	Paid Staff
<1 year	9%	7%	11%
1-2 years	12%	13%	12%
3-5 years	18%	15%	19%
6-10 years	25%	29%	23%
>10 years	36%	36%	36%

Longevity of staff can be an indicator of several characteristics of an agency:

- staff satisfaction
- ability to effectively integrate new members into the agency
- overall efficiency of an agency
- experience level of staff
- employee's perception of being appreciated and highly valued
- existence of clear expectations for employees and the agency
- agency leadership

These factors, expounded on in this report, are something an agency cannot buy but can invest in.

Question 15: What is the age of your staff?

Age of Workforce	Total Workforce	Volunteers	Paid Staff
18-24	33%	29%	35%
25-34	29%	22%	34%
35-44	18%	17%	19%
45-54	9%	10%	8%
55-64	2%	4%	1%
65-74	0%	0%	0%
>75	9%	17%	3%

The current workforce reported by survey respondents is comprised primarily (80%) of individuals who are 18 to 44 years old, weighted heavily with those 18 to 34 years old. This represents a workforce that is not at significant risk due to retirements, which are generally associated with an older workforce. This survey data is in conflict with workforce data held by ODPS which indicates there is an aging workforce and that the 18-24-year-old range provides

the smallest percentage of the workforce. This discrepancy is likely due to the convenience sample of agencies used in the survey – the state's data includes the entire licensed workforce.

Question 16: What are the licensure levels of the staff on your roster?

Licensure Level	Total Workforce	Volunteers	Paid Staff
EMR	47%	60%	38%
EMT	10%	13%	8%
AEMT	38%	18%	53%
Paramedic	5%	10%	2%

A phenomenon, referred to as the "paramedic paradox"[3] refers to the fact that the more rural an area is, potentially the most difficult geographical areas to attract paramedics to work in, the more essential it is to be able to provide paramedic level service to the population served. Increasing the number of AEMTs and paramedics within a local agency is a worthwhile goal. Recruitment and retention efforts can be successful in helping to solve this paradox. Relatively high on any list containing initiatives to achieve such a goal is accessibility to quality, relevant and meaningful education and training. Input received included "more agencies are becoming paramedic level services."

Question 17: What is the staffing level for your agency?

Staffing Level	Total Workforce	Volunteers	Paid Staff
EMR	7%	16%	4%
EMT	36%	69%	21%
AEMT	6%	7%	6%
Paramedic	51%	9%	69%

A direct correlation exists between the staffing level for an agency and the licensure levels of staff on the agency's roster. Variables that move the numbers in that correlation include whether or not staff is fulltime paid, part time paid, volunteer or some hybrid of those models.

[3] https://www.nasemso.org/Projects/MobileIntegratedHealth/documents/RHNfall01.pdf

Question 18: What languages are spoken by your staff?

Language	Percent of Workforce	Volunteers	Paid Staff
Dutch	46%	42	12
Spanish	38%	26	19
German	10%	12	0
French	3%	2	2
Arabic	1%	0	1
Chinese	1%	0	1

This list of languages represents languages identified by the Ohio School System[4] as "first languages" spoken by families of students within Ohio schools.

Question 19: What steps does your agency take to recruit staff?

1. Advertising
    a. Newspaper (18 responses)
    b. Internet - associations, Facebook or other social media (17 responses)
    c. Flyers or mailers (4 responses)
    d. Sign advertising (3 responses)
    e. Civil service advertising (2 responses)
    f. Radio
    g. Announcement at sporting events
    h. Fund raiser
2. Education/Financial
    a. Paid education (5 responses)
    b. Low-cost education (5 responses)
    c. Provide training of new EMTs (2 responses)
    d. Provide good equipment (2 responses)
    e. Pay exam cost
    f. Explorer post
    g. Paid on-call stipends
    h. Enhanced pay
3. Personal contact
    a. Word of mouth (14 responses)
    b. Friends & family, open house or community events (13 responses)
    c. Recruiting at schools and colleges (6 responses)
    d. Health & job fairs (4 responses)
    e. County fairs, parades, festivals, sporting events (4 responses)
    f. With other agencies that we know to help recruit (2 responses)

[4] http://education.ohio.gov/Topics/Other-Resources/English-Learners/Research/Profile-of-Ohio-s-English-Language-Learners-ELL

g. Recruit from EMS course participants
h. Informal meetings
i. Formal meetings
j. Emergency and first responder recruiting
k. Employee referral

Recruitment of new team members is an issue that is a concern for EMS agencies. Those who provided input into this survey and review process agree their agencies are weak in the area of recruitment. Difficulties in recruiting exist and were clearly expressed.

- "Our agency has advertised to pay a potential employee's tuition plus offer them a job. (We) have never had an individual take advantage of the offer in five years; I don't understand!"
- "People do not want to work for $12 - $14 an hour, they can make the same in fast food or other jobs with less responsibility and work."
- "We aren't able to compete with wages and benefits offered by larger services or public safety jobs."
- "The number of services starting part-time paramedic (advanced life support) services has increased making it a challenge to find enough providers to provide coverage."
- "People want to work for agencies that pay more or have less runs to do when they are on duty. This is true in trying to find part-time people, they go where there is less work, so they can rest and get paid."
- "We are always competing with other activities."
- "We have to do a better job of asking or persuading young people to join a service, they do not come forward on their own like in the past, they need to be convinced EMS will benefit them."

Question 20: What steps does your agency take to <u>retain</u> staff?

1. Work Environment
    a. Work on good staff morale/work environment (17 responses)
    b. Flexible scheduling (7 responses)
    c. Keep stations, ambulances and equipment updated (6 responses)
    d. Engage staff in planning, decision making, and quality programs (3 responses)
    e. Family and team building events (3 responses)
    f. Promote internally first (2 responses)
    g. Accessible governing board
    h. Foster a community minded environment
2. Compensation and benefits
    a. Progressive pay (11 responses)
    b. Provide benefits (9 responses)
    c. Pay for time on run/call time (6 responses)
    d. Pay comparable for region (4 responses)
    e. Financial incentives (4 responses)
    f. Provide uniforms

g. Flexible time off
h. Meal cards

3. Education
    a. Continuing education (13 responses
    b. Free training (5 responses)
    c. Paid certification advancement (3 responses)
    d. Staff development training
    e. Paid initial and continued training

Four agencies responded that they have no retention plan or activities.

Approaching retention of staff in a well-planned, methodical manner rather than in a "shot-gun" fashion allows an agency to measure effectiveness of efforts undertaken and to effectively and efficiently utilize those efforts which are proven to be successful. Retention efforts must be well thought out and specifically focused. Those providing input provided insights into how recruitment efforts are hampered.

- "The 30-year retirement plan needs to be looked at (in our county), other areas have a 20 and 25-year plan which attracts people."
- "There seems to be no or very little recognition for volunteers in EMS. (We) have suggested to a legislator that there needs to be a tax break for volunteers to encourage them to become volunteers."

Question 21: What mechanisms are in place to provide orientation and training to new or existing staff?

There were 56 written responses to this open-ended question (many included multiple methods). In those, there were 76 unique items:

1. In house training and continuing education (25 responses)
2. Structured orientation including checklist (21 responses)
3. Field training/ride-along program/probation (20 responses)
4. Mentors (7 responses)
5. Paid training as long as the new staff needs it
6. Customer service classes
7. Hospital orientation
8. Yearly EMS Competency review and protocol test

As demonstrated by the preceding list, agencies employ a wide variety of initiatives in an effort to provide training and orientation to their staff. Providers report that:

- there are "gaps in coverage for education opportunities in rural areas of Ohio", and
- "there are counties in Ohio where there is no internet access which hampers educational efforts."
- "Ohio exceeds national curriculum standards which make reciprocity to Ohio a challenge."

From broad-based system perspective, investing in a means to measure the efficacy of these efforts would be valuable. If done effectively the orientation process, as well as the on-going continuing education of staff, is a comprehensive and costly effort. Specific orientation and continuing education plans with measurable goals, will serve the new staff member and the agency with an increased measure of effectiveness and potentially staff satisfaction.

Question 22: What needs does your agency have in order to maintain or enhance your service?

There were 53 responses to this open-ended question (many contained multiple items). In those, there were 16 unique items.

1. More part-time or paid staff (20 responses)
2. Funding for ambulance, building and equipment purchases (18 responses)
3. More local (including tax levy), grant, state and federal funding for operations support (17 responses)
4. Funding for initial and ongoing training (7 responses)
5. More volunteers (4 responses)
6. Larger pool of applicants (2 responses)
7. Funding for supplies (2 responses)
8. In house training center (2 responses)
9. Tax/Student loan incentives that would help draw new employees to the line of work
10. Less federal and state requirements on training for volunteers
11. Fewer non-emergency transports
12. Clinics to treat patients instead of transport them
13. Increased ambulance staff meetings
14. Tax Levy designed to implement part-time paid staff
15. Aggressive Protocols
16. In house QA Measures

A list of perceived operational needs, such as the one compiled here, is likely heavily influenced by the most recent or most talked about need of the particular agency responding to a survey. Inter-agency perspectives, coordination and planning may help focus in on a specific subset of needs which, if applied equitably and effectively, may impact many of the other items included in this list. Some specific comments related to meeting needs, frequently connected to financial support, include:

- "Being the first (entity) on the ballot (with a levy request) helps get an increase passed."
- "We found out Walmart will provide $500 in gift cards a Month to agencies to help the department. Firehouse Subs has a grant program for emergency agencies too."
- "Maybe we can learn how to take advantage of special groups like Shriners, Jaycees, Lions club, etc. to tell agencies story and explain the agencies needs and what they do."

- "We all need to educate the public on what EMS does, we need to learn how to tell the EMS story."
- "We need to have a person help us find grants that are available."
- "It would be helpful to have someone do the grant application work."
- "(We) need a toolkit of success and example of how success was achieved."

Question 23: How would you rate your staff's job satisfaction?

Very satisfied	41%
Somewhat satisfied	46%
Neither satisfied or dissatisfied	7%
Somewhat dissatisfied	2%
Very dissatisfied	4%

Much like the scoring for the question on why a team member terminated, the scoring for this question is based on the perception of the one who is completing the survey on behalf of the agency. Opinions and ideas can vary greatly between those who are fully engaged, such as may be the case for the individual completing the survey, and those who are less engaged, perhaps due to low job satisfaction.

Question 24: In your opinion what actions could your agency take to increase job satisfaction?

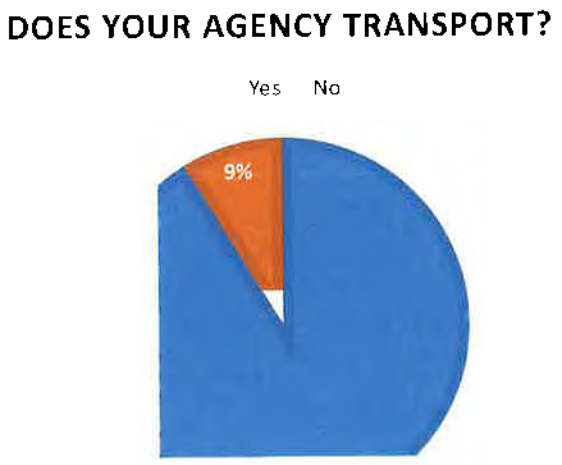
There were 95 responses to this open-ended question (many contained multiple items). In those, there were 23 unique items.

1. Higher pay rates to support having a single job (18 responses)
2. Flexible scheduling/increase staffing level (16 responses)
3. Better/updated equipment (13 responses)
4. Provide more inside and outside training (10 responses)
5. Provide or improve benefits (9 responses)
6. Construct larger/replace existing station (5 responses)
7. Provide call-time pay (5 responses)
8. Job advancement options (4 responses)
9. Provide incentive pay (3 responses)
10. More training time (3 responses)
11. Annual wage increases (3 responses)
12. Less requirements to obtain and retain certification (3 responses)
13. Pay for paramedic school (2 responses)
14. Provide uniforms (2 responses)
15. More or better leadership (2 responses)
16. More partners (2 responses)
17. Positive recognition program (2 responses)

18. Eliminate non-emergency response/transfer runs (2 responses)
19. 25-year retirement (2 responses)
20. Take over full time EMS for the city
21. Tax breaks for volunteers
22. Receive support from the city administration. Have the administration view us as an important service that needs supported and improved
23. Upgrade vehicle fleet

Funding, recruitment, retention and satisfaction issues tie closely together. A systematic over-arching plan will have the greatest potential of effectively addressing such issues. It was clear that working to enhance EMS staff satisfaction is critical. One frank comment, in a somewhat grave manner, was: "Volunteer service is not dead but is having CPR performed on it".

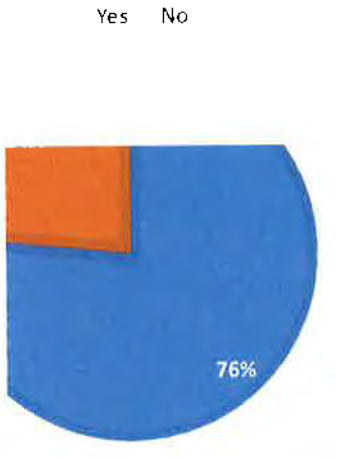
Question 25-31: Agency Demographics



Number of Runs	1,196
Number of Stations	2

Anecdotal comments from providers indicate number of runs are increasing, financial support of agencies is diminishing, or being stretched, and volunteer staff is becoming more difficult to sustain.

Question 32: Is your agency the primary provider of EMS for a political subdivision?



Competition between multiple agencies located within a single subdivision has been shown to be deleterious to the provision of EMS. Being the sole provider within a subdivision provides a greater opportunity to establish a well-equipped and functioning EMS agency. At the same time, being the sole provider places a greater burden on the agency to assure service can be provided to any patient at any time.

An insight related to cooperation and competition was provided: "Regional rivalries between departments are not as bad (as they were), but it is still there to some degree in a few areas." It was also noted "there are still a lot of stand-alone EMS agencies in Ohio" implying a lack of cooperation.

Question 32: Revenue from public subsidies, personal gifts, grants, EMS billing, contracts, state reimbursements, and other misc. revenue?

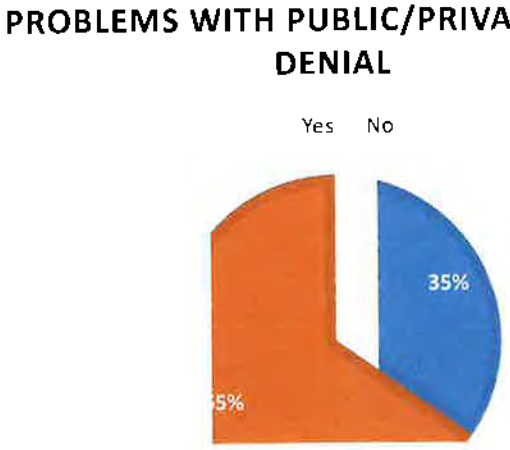
	2016	2017	Change
rce 4	;1,052.50	$ 20,608.79	34%

Sources of revenue change from year to year. The ability to monitor, project and adjust to such changes is critical.

A sampling of current perceptions shared include:

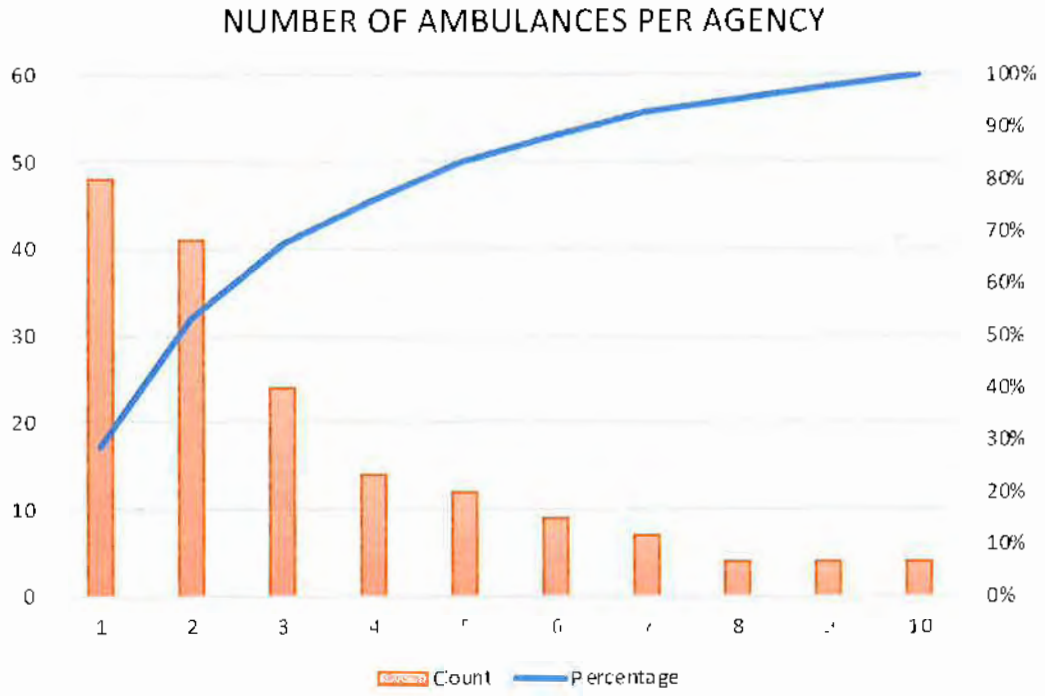
- "We have been operating on same mill levy for 20 years while demand has increased over 20%."
- "No resource funds are available to promote EMS to help generate funds."
- "Communities may have to get use to less services if funding does not increase."

Question 33: Is your agency experiencing problems with Medicare, Medicaid or private insurance claims being denied?



A large percentage of agencies rely on third party, professional billers to submit claims to Medicare, Medicaid and private parties. This does not eliminate issues with billing, but it appropriately places the complicated process in skilled and systematic professional companies.

Section 5 – Vehicle Information



Section 6 - General

As medical care systems develop, often comprised of CAHs, tertiary care centers and other entities, the need to move patients between those entities increases. With such increase in demand to move patients between facilities, EMS agencies experience a corresponding increase demand on their workforce and infrastructure. Agencies rely primarily on volunteer staffing arguably experience the greatest stress on resources. Without a corresponding increase of staffing and other infrastructure needed to successfully handle such increase volume in patient transfers, patient and facilities will experience delays in transport times.

- "Hospitals in some areas are cooperating with services to provide funds or personnel to help with funds or patient transfers; others are not so cooperative, could care less about EMS."
- "Some patients can stay in a CAH hospital ER for 12 hours waiting for transport ambulance. We realize this is an issue that will not go away and will get worse with Baby Boomer generation getting older."

Regional Meetings

Following initial analysis of the survey results Regional Meetings were scheduled for five locations within Ohio. All those who participated in the survey were invited to participate or have representation at the meetings. In addition, all interested EMS agencies as well as individual providers were encouraged to attend. Representatives from the Ohio Department of Health, Office of Rural Health and the Ohio Department of Public Safety, EMS Division were represented at each meeting.

Inputs were clearly in line with issues the survey had identified. During the Regional Meetings discussion lead to the full understanding that neither the ORH or the ODPS had funds available to completely address and satisfy the needs of any specific issue. To that end, the concept of developing a "tool box" which would contain step-by-step suggestions and contain information on:

- Examples of successful practices and how they were achieved
- How to educate the public on the key role EMS plays in the community and healthcare
- How to cultivate community stakeholders including policy makers to support EMS
- How to work with the media to tell the EMS story
- Successful tax initiatives and other financial programs implemented to finance and enhance EMS services
- Examples of personnel and policy and procedure manuals
- Utilization of grant writers or a "road map" with step-by-step actions to help the agency successfully complete and submit grant applications

APPENDIX A (2018 Survey Participants)

Agency Name	City
Anna Rescue Unit Inc	Anna
Appleseed Joint Ambulance District	Arlington
Arcanum Rescue	Arcanum
Arrowhead Joint Fire District	Gnadenhutten
Ashtabula Fire Department	Ashtabula
Athens County EMS	The Plains
Bellefontaine Fire Department	Bellefontaine
Bladensburg Fire District	Bladensburg
Bolivar Fire	Bolivar
Central Fire District	Smithville
Central Ohio Joint Fire District	Centerburg
Chillicothe Fire Dept	Chillicothe
City of Ashland, Division of Fire	Ashland
Clinton Twp. Fire Department	Shreve
College Township Fire Department	Gambier
Coshocton County EMS	Coshocton
Crooksville Fire Dept	Crooksville
Deerfield Township Fire/Rescue	Loveland
Dresden Vol. Fire Dept.	Dresden
East Holmes Fire & Ems Co.	Millersburg
East Palestine Fire Department	East Palestine
Eastern Knox County Joint Fire District	Danville
Fayette County Memorial Hospital Emergency Medical Services	Washington CH
Firelands Ambulance Service	New London
Geneva Fire Department	Geneva
Gettysburg Rural Fire Dept., Inc.	Gettysburg
Henry County South Joint Ambulance District	Hamler
Hicksville Rescue Squad	Hicksville
Highland County North Joint Fire and Ambulance District	Leesburg
Hocking County Emergency Medical Service	Logan
Holmes fire district #1	Millersburg
Homeworth Volunteer Fire Company	Homeworth
Jackson County EMS	Jackson
Jackson-Forest Ambulance District	Forest
Macochee Joint Ambulance District	West Liberty
Malta & McConnelsville Fire Department	McConnelsville

Marion Fire Department	Marion
Mechanicsburg Fire and EMS	Mechanicsburg
Mercer Health	Coldwater
Midvale-Barnhill Volunteer Fire Department	Midvale
Mineral-Sandy Ambulance District	Mineral City
Muskingum Watershed Conservancy District	New Philadelphia
Negley Fire/EMS	Negley
Paint Township Fire and Rescue	Mount Eaton
Paint Township Volunteer Fire Department	Winesburg
Pleasant Township Fire Department	Marion
Putnam County EMS	Atlantic
Ridgeville Twps. Vol. Fire Dept.	Ridgeville Corners
Rittman EMS	Rittman
Riverside Emergency Medical Service	De Graff
Robinaugh EMS	Bellefontaine
Sandusky County EMS	Fremont
Saybrook Twp. Fire Dept.	Ashtabula
Scioto Valley Fire District.	La Rue
Seneca County EMS	Tiffin
Somerset Emergency Service	Somerset
South Central Ambulance District	Rome
South Central Fire District	Fredericksburg
SRWW Joint Fire District 2	Sabina
Strasburg Volunteer Fire Department	Strasburg
Uniopolis Vol. Fire Dept. 140	Uniopolis
Upper Scioto Valley Ambulance District	Alger
Van Wert Fire Department	Van Wert
Versailles EMS	Versailles
Wapakoneta Fire & EMS	Wapakoneta
West Point Volunteer Fire Department INC	Lisbon
Williams County EMS	Bryan
Zanesville Fire Department	Zanesville

APPENDIX B

Regional Meeting Locations and Attendance by Agency			
	Meeting Location	Agencies Represented	
#1	New Philadelphia, OH	Bolivar Fire Department Coshocton County EMS Buckeye Career Center EMS Education Ohio Dept of Health, Office of Rural Health Ohio Dept of Public Safety, Division of EMS	
#2	Nelsonville, OH	Athens County EMS Hocking County EMS Jackson County EMS Hocking College EMS Education Malta & McConnelsville Fire Department Ohio Dept of Health, Office of Rural Health Ohio Dept of Public Safety, Division of EMS	
#3	Chillocothe, OH	Central Ohio Fire District Chillicothe Fire Department Fayette County EMS Lawrence County EMS Pickaway-Ross EMS Education Ohio Dept of Health, Office of Rural Health Ohio Dept of Public Safety, Division of EMS	
#4	Lima, OH	American Township Fire Department Alger Apollo EMS Education Jackson-Forest Joint Ambulance District Macochee Joint Ambulance District Mercer County EMS Sandusky EMS Seneca County EMS Spencerville Ambulance Service Williams County EMS Ohio Dept of Health, Office of Rural Health Ohio Dept of Public Safety, Division of EMS	
#S	Archbold, OH	Antwerp EMS Four County Career Center EMS Hicksville Rescue Squad Ridgeville Township Volunteer Fire Department Ohio Dept of Health, Office of Rural Health Ohio Dept of Public Safety, Division of EMS	
	By Phone	Bradford Fire and Rescue Tipp City EMS	

APPENDIX C (2018 Survey Tool)

King County Emergency Medical Services Division

An Advanced Life Support Study

December/2016

TABLE OF CONTENTS

TABLE OF EXHIBITS

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ACKNOWLEDGEMENT

This project was funded by the King County EMS Levy. The project team thanks the King County Department of Public Health EMS Division and the King County Demographer. The project team also thanks the many people of King County that rearranged their schedules to meet with us and who provided information essential to this report.

EQUITY AND SOCIAL JUSTICE STATEMENT

Consistent with King County Ordinance 16948 TPF has strived to integrate equity and social justice foundational practices into our work and recommendations that follow. To that end we will selectively use 'inequity' only when it "means differences in well-being that disadvantage one individual or group in favor of another; and when these differences are systematic, patterned and unfair and can be changed because inequities are not random; they are caused by past and current decisions, systems of power and privilege, policies and the implementation of those policies."[1] If we refer to concepts of 'social justice' it will include "all aspects of justice, including legal, political and economic, and require the fair distribution of public goods, institutional resources and life opportunities for all people."[2]

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[1] King County Ordinance 16948 Section G
[2] King County Ordinance 16948 Section H

FREQUENTLY USED ACRONYMS

The Emergency Medical Services (EMS) field makes frequent use of acronyms that may not be familiar to many persons. To reduce confusion for the purposes of this report the following acronyms are defined as:

AEMT	Advanced Emergency Medical Technician, certified at the Intermediate level
ALS	Advanced Life Support (i.e. EMT-I/AEMT or paramedic level service)
BLS	Basic Life Support (i.e. EMT/EMR level service)
CAD	Computer Aided Dispatch software system
CON	Certificate of Need
E-9-1-1	Enhanced 9-1-1 System (provides number and location services)
EMD	Emergency Medical Dispatch (pre-arrival instructions for 9-1-1 incidents)
EMR	Emergency Medical [First] Responder
EMS	Emergency Medical Services
EMT	EMT certified by Washington Department of Health (BLS)
KCEMS	King County EMS includes regional EMS agencies
KCM1	King County Medic One is the paramedic agency operated by the EMS Division
MPD	Medical Program Director
Paramedic	Paramedic certified by Washington Department of Health
PIER	Public Information, Education, and Relations
PSAP	Public Safety Answering Point
PUM	Public utility model uses a governmental entity to manage EMS in a community
STEMI	ST Elevation Myocardial Infarction
TPF	The Paramedic Foundation
3rd Service	EMS delivered by a local government alongside other public safety departments (police and fire) and employs civilian EMS practitioners.
UGA	Urban Growth Area
UH	Unit Hour is one hour of time for a fully staffed, equipped, and 'ready to respond' medic unit
UHA	Unit Hour Activity is a measure of the fraction of total time that was spent on responses during a specified time period.
UHU	Unit Hour Utilization is a measure of productivity whose numerator is either the number of incidents responded to (UHU-R) or the number of transports (UHU-T) and denominator of the number of unit hours provided.

EXECUTIVE SUMMARY

The King County EMS (KCEMS) System has been a global leader in paramedic resuscitation science for more than 40 years. Valuable best practices have been compiled to develop the Resuscitation Academy; a joint effort of Seattle Medic One, the University of Washington, and King County Emergency Medical Services. These best practices are now shared with other EMS professionals contributing to improved resuscitation rates worldwide.

KCEMS is a tiered, integrated, and regional system with paramedics deployed from five fire departments and one county operated service. All paramedics in King County are trained through a 3,000-hour University of Washington training program codified in County Ordinance that got its start in the 1970s and is largely modeled after physician emergency medicine training with an extensive mentorship and field training or practicum regimen.

The KCEMS system is funded primarily by taxpayers through a property tax known as the EMS Levy generating approximately $75 million revenue annually. The levy is on a six-year cycle that must be renewed by the super majority vote of citizens and is managed by the Public Health – Seattle & King County EMS Division.

The EMS Division evaluates the system to ensure it meets the needs of the changing county demographics on a continual basis. This includes but is not limited to determining whether the number of medic units and locations are adequate to meet the needs of the county.

The Paramedic Foundation (TPF), however was retained by the EMS Division to determine the optimal number of paramedic agencies in King County and how many medic units are appropriate for each to operate. Secondly, TPF was asked to develop a regional process for responding to any changes to the current ALS agency configuration and whether that configuration would meet the needs of the county for the next ten years.

In order to assess KCEMS and determine the answers to those questions we collected qualitative and quantitative data. We considered system efficiency through medic unit productivity, economies of scale through costs per capita, and medic unit response times to emergency incidents.

OPTIMAL NUMBER OF ALS AGENCIES AND MEDIC UNITS PER AGENCY

Based on our quantitative analysis of data from the previous ten years of paramedic-generated patient records and incident data, we found the paramedic agencies are meeting and in some cases exceeding their response time requirements throughout the county. By meeting the demands of the system the agencies demonstrate an adequate number of medic units and personnel are in place today.

We also found the current agency configuration with multiple, decentralized agency operations makes responding to changes in the configuration a slow and expensive process. A configuration change is currently necessary as Vashon Island Fire & Rescue has asked to relinquish its ALS agency.

We conducted interviews with an array of stakeholders including ALS providers, fire districts chiefs, medical directors, dispatch personnel, and elected officials. These individuals provided first-hand knowledge and insights about agency and unit configurations. Key informants were nearly unanimous in saying that "the fewer providers the better" for greater economy of scale, but also generally said the ideal number of units per agency is the same number that their agency already has.

From an efficiency and financial perspective, the optimal number of ALS providers countywide is one. However, that change is not likely to be politically feasible in the near future. Fewer agencies benefit from greater economies of scale. Standardization, reduction of duplication, and portability of paramedics from one agency or area to another can improve the operations, finances and performance of the system as a whole. Rather than reducing the total number of agencies, partners may want to consider an intermediate approach based on these principles that achieve those benefits and may be acceptable in the short term, such as a move towards consolidating agencies operating in Zone 1.

REGIONAL PROCESS FOR RESPONDING TO ALS RECONFIGURATION NEEDS

Stakeholders also provided advice during interviews about developing a regional process that can be used in the event changes in the ALS agency configuration are required in the future. Most informants trust the EMS Division to facilitate such a process. Stakeholders viewed both quantitative (e.g., call volume, response time) and qualitative (e.g., geography, a jurisdiction's motivation, knowledge and availability of required resources and oversight if interested in providing an ALS unit) data as valuable in informing the change process and both should continue to be used in the future.

Several stakeholders noted the value of including elected officials as part of proceedings to build consensus, elevate the discussion beyond EMS operations, and to move the process forward. A process similar to that employed for levy deliberations was offered as a possible structure.

PROCESS RECOMMENDATIONS

We recommend the EMS Division continue to periodically and proactively review the system's medic units and capacity. Evaluation and realignment should be conducted as situations arise, such as any time a provider relinquishes oversight or a need for system realignment is identified by the EMS Division (e.g., failure to meet key performance measures, agency withdrawal, significant changes in incident volumes by zone, or by other factors).

Elements of evaluations should include but not be limited to:

- A clear determination of community need
- A consensus process
- Clear selection criteria for stakeholder inclusion in the consensus process
- Impartial facilitation; and,
- Expert consultation to identify barriers/facilitators for success

A Central Region EMS and Trauma Council policy adopted in 2012 requires requests for geographic expansion or contraction of ALS or BLS service and requests for new ALS or BLS service within King County be subject to the approval of the King County Medical Program Director (MPD) and must be authorized by the Central Region EMS & Trauma Care Council. The MPD and the Central Region Council should be fully informed through access to the business case.

Prior to initiating any formal changes to support a new ALS agency in taking over an existing ALS medic unit or coverage area, we strongly suggest the leadership of that agency communicate with and attempt to develop a proposal jointly with the existing provider. This will avoid the perception that a hostile takeover is being made and will allow the affected organizations to collaborate on a viable proposal for the EMS Division to consider.

Proposals for an agency to take over ALS geography from another ALS agency, or to become a new provider must include a business case. The business case must include a detailed description of the meetings and attempted resolution of issues with existing provider(s) and why they were not successful. It must also contain the costs for each levy cycle that include the balancing factors such as how it will impact adjoining agencies negatively, or positively. The agency must discuss what their value added proposition is and what any existing ALS agency would relinquish. The proposals should focus on how the change or addition makes the system better or fixes an existing problem.

If an entity submits a request for consideration as a new ALS provider, then balancing the metrics of the need and the impact on the existing providers should be heavily considered. An approach that mimics the Washington State Department of Health Certificate of Need (CON) process identified in Chapter 246-310 WAC should be used. Specifically, the determination of need described in WAC 246-310-210 can be adapted for KCEMS needs with little difficulty and it already incorporates the concepts of social justice and equity. Specifically, the hospital bed need methodology should be consulted for appropriateness of definitions and process modeling. The specifics could be determined jointly through an existing or a new EMS advisory committee to the EMS Division.

If an agency wants to withdraw then a pre-determined process must be activated to determine if the operation of the medic unit goes up for bid or the bordering agency is forced to take it

over, with clearly defined parameters of the minimum number of units that that should be under an agency's purview.

Future plans are built on forecasts that are greatly impacted by industry, the economy, housing prices, and migration patterns. The EMS Division's levy planning cycle needs to consider scenarios far into the future that are not known today and may not be predictable. The same is true for redesigning the system, including medic unit placement, paramedic supply management in the context of retirements, and changes in educational technologies that could enhance the substantial training provided by the EMS Division to paramedics, EMTs, dispatchers, and others.

The ultimate decision in creating EMS system change will need to be made by the system stakeholders that have ownership in the outcomes: leaders and decision makers from throughout the region, the EMS Division, its many EMS partners, and the public. Many issues do not have easy or quick solutions and may require further analysis and consultation.

We appreciate the foresight of the EMS Division to investigate these topics in advance of the next levy using an independent third party. We provide an objective analysis of the issues and topics identified and have organized this report in a manner friendly for the layperson and public.

[Continued on the next page]

BACKGROUND

KING COUNTY ALS STUDY OBJECTIVES

The Paramedic Foundation (TPF) was retained by the EMS Division to conduct a study that examines the current Advanced Life Support (ALS) agency structure within the KCEMS regional tiered system in relationship to clinical outcomes and financial impacts. This ALS study has two primary deliverables:

1) Evaluate the ALS tier of service delivery and validate the optimal number (or range) of ALS agencies in the County, and the appropriate number (or range) of units operated per agency. The study also considers whether the current service model is designed to meet ALS system needs projected over the next decade (through 2025).

2) Develop a regional process for responding to any requests for changes to the current ALS agency configuration (e.g., if an ALS agency ceases operation).

TPF recognizes that the current EMS system provides excellent patient care, and our recommendations ensure that:

- The provision of medical care or patient outcomes does not deteriorate;
- The system remains a tiered, integrated, regional system;
- The delivery of patient care is derived from the highest standards of medical training based on scientific evidence with continued oversight by EMS physicians; and
- The system sustains its focus on operational and financial effectiveness and efficiencies.

METHODOLOGY

QUANTITATIVE DATA & METHODS

The project team requested and received the following data from the EMS division (for all agencies except Seattle) and Seattle Fire Department for our analysis:

- Financial summaries (2011-2016 for agencies except Seattle; 2011 through 2015 for Seattle)
- Available electronic Medical Incident Report Forms (eMIRF) from 2006 through mid-2016 for all agencies except Seattle
- Computer Aided Dispatch (CAD) system summary data for Seattle 2006 through 2015

Note:

Patient identifying information was removed prior to our response data analysis with incident locations identified by a simple grid number provided by the EMS Division.

Seattle is in the process of converting paper records into electronic records by scanning them into a software system. Seattle's manual process is six to nine months behind and may be

incomplete, limiting our primary data analysis to only data available from the Computer Aided Dispatch (CAD) system. This did not include detailed data for 2015 and that limits our comparative analysis as noted where applicable in this report.

We also requested demographic data from the King County Demographer and sourced data from the US Census website and the National EMS Information System (NEMSIS) website.

In an effort to make meaningful distinctions between agencies, models and systems, several different ratios were examined. Since agency revenue is based on per unit reimbursement from the levy pool, only moderate differences can be found when evaluated on a per agency basis. However, as we will discuss through the report other measures were identified and used in our analysis. Several cost ratios were calculated:

- Cost per unit hour
- Salaries and benefits per unit hour
- Unit hour utilization
- Cost per transport
- Cost per response
- Cost per capita

QUALITATIVE DATA & METHODS

Between mid-September and early October 2016, TPF conducted interviews with 21 stakeholders, including fire chiefs from all three ALS zones, medical directors, dispatch directors, and elected officials. A TPF team of five or six conducted interviews in a semi-structured manner to address the two primary research questions and to elicit related ALS service issues.

Detailed handwritten notes were recorded, compiled, analyzed, and thematically coded using Atlas.ti qualitative software. This systematic data synthesis was employed to objectively capture the multitude of viewpoints expressed by various stakeholders.

This report does not contain all of the analysis we performed on information we collected as some of the key informant input validated a good practice or was otherwise helpful, but may not have addressed the primary study questions and as a result do not require specific mention in the report.

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KING COUNTY DEMOGRAPHICS

Key to understanding how the history of KCEMS progressed into the mature system that exists today is awareness of the geographic challenges and urban growth over the past forty years.

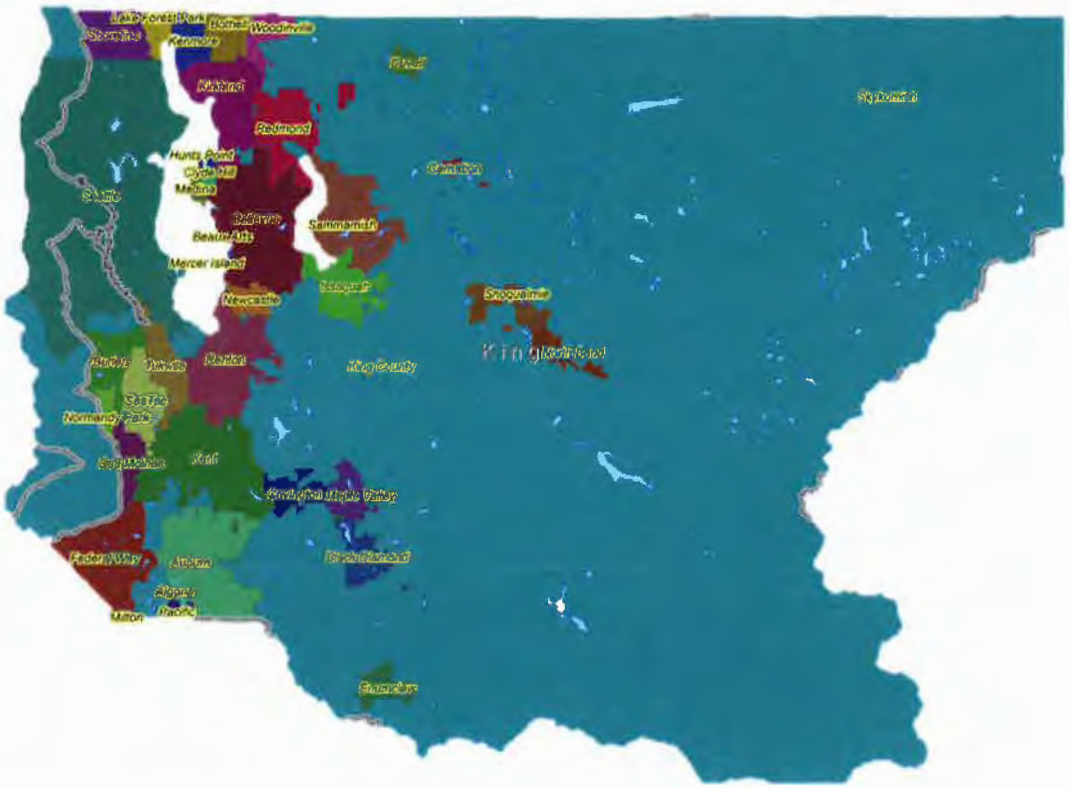

Exhibit 1: King County incorporated areas

The Seattle-Tacoma-Bellevue, WA Metropolitan Statistical Area (MSA) is the country's 14th most populous (Census 2012) with a 2010 total population of 3,439,809. King County is part of the MSA, is located in western Washington State, and includes 2,116 square miles. King County is bordered on the west by the Puget Sound and on the east by the Cascade Mountains and includes both Vashon and Maury Islands. In 2015 the population (2015 US Census Bureau estimates) was estimated to have increased 9.6% over 2010 reaching 2,117,125. At 1,000 persons per square mile, King County is the most densely populated county in the state.

The City of Seattle has been the seat of King County since January 1853. Seattle currently contains 32% of the county population with an estimated population of 684,451 (2015 Census estimate), a 12.5% increase over 2010 population levels. Seattle's population is spread over 84 square miles, with a density of 8,148 persons per square mile.

The City of Bellevue contains 7% of the county population. Bellevue's estimated population is 139,820 (2015 Census estimate), a 9.3% increase since 2010. Covering 32 square miles, Bellevue has a population density of 4,320 persons per square mile.

While the City of Seattle is the most densely populated municipality in the county, there are pockets of dense population north and south of the city. Most of the ALS medic unit station locations are within or nearby areas of higher population.

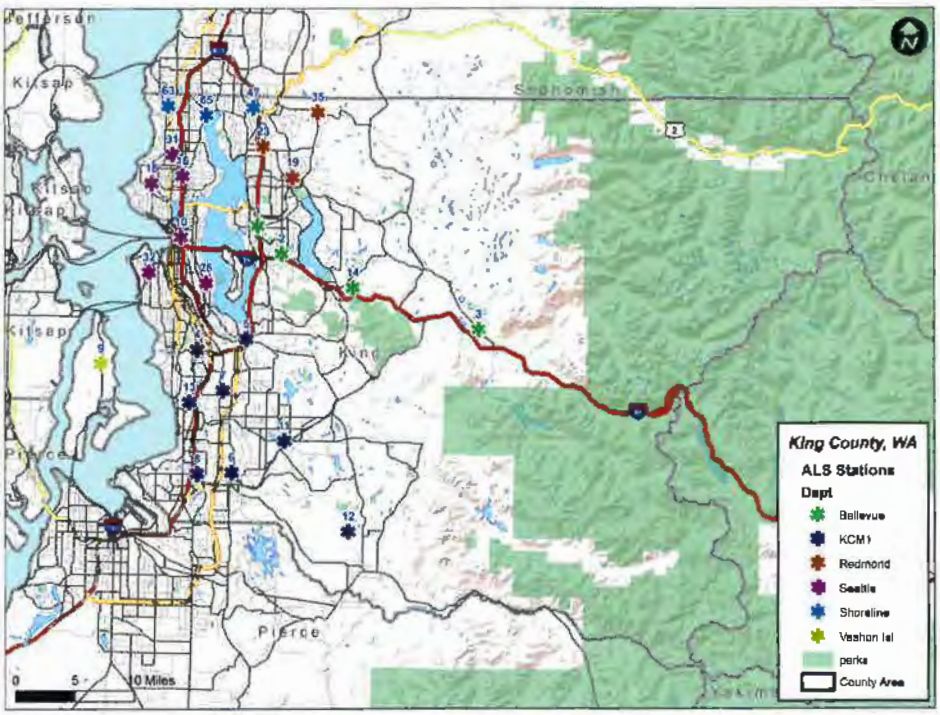

Exhibit 2: Medic unit locations with road networks

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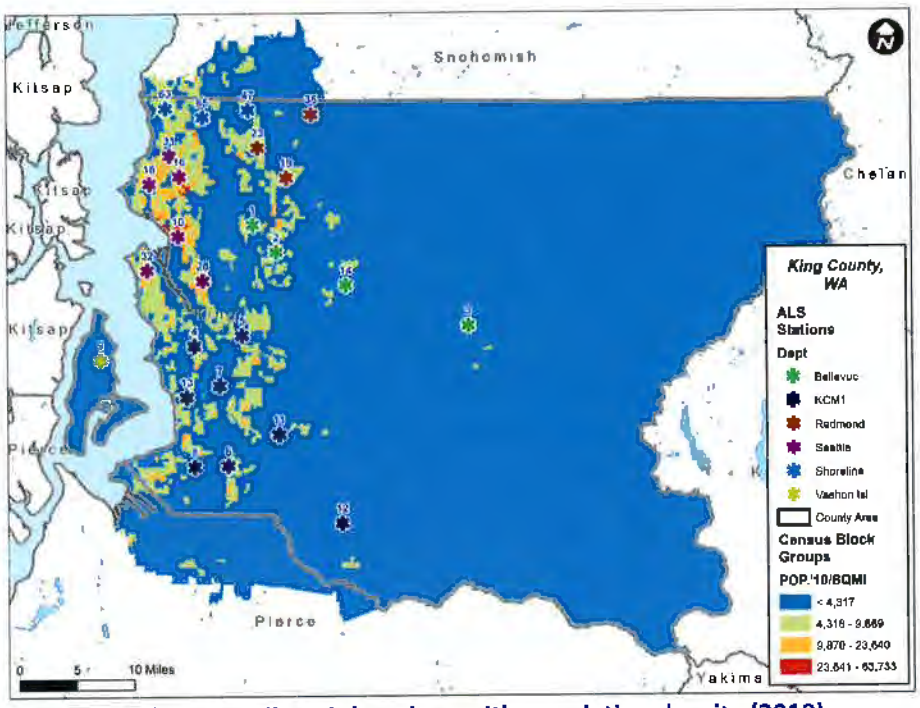

Exhibit 3: Medic unit locations with population density (2010)

The ALS medic unit station locations are primarily on the west side of the county where the vast majority of the population and transportation infrastructure has been built.

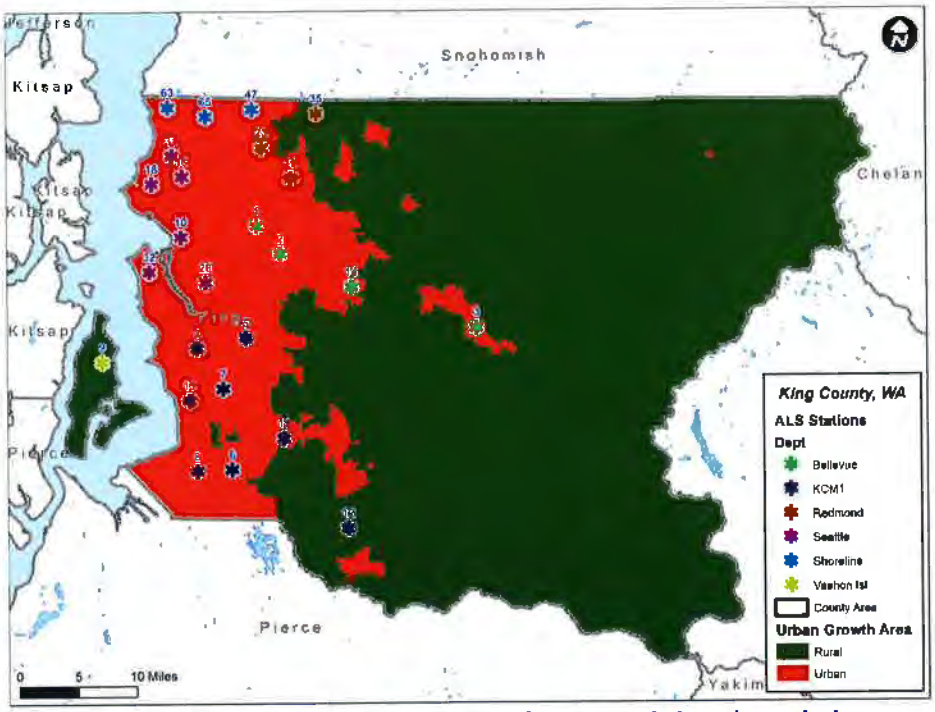

Exhibit 4: Medic unit locations with Urban Growth Area boundaries

The eastern two-thirds of King County are primarily rural in nature due in part to the Cascade mountain terrain and protected lands that are inland away from the seaport. These factors limit urban growth. The King County Comprehensive Plan designates an Urban Growth Area (UGA) that includes areas and densities sufficient to permit the urban growth that is projected to occur in the County for the succeeding 20-year period. Areas within the UGA boundaries are designated for higher density growth while areas outside are designated for low density growth. All but two ALS medic unit stations are within the UGA Boundary.

Exhibit 5: KCEMS service area descriptions

Paramedic Agency	Paramedic Units	Paramedics	Service area(s)	Service Area Population* (2014)	Service Area Density* (2014)
Seattle Medic One	7	73	Seattle	690,151	8,225
King County Medic One	8	71	Auburn, Black Diamond, Burien, Covington, Des Moines, Enumclaw, Federal Way, Kent, Maple Valley, Pacific, Renton, Seatac, Sea-Tac Airport, Skyway, Tukwila, White Center	750,157	670
Shoreline Medic One	3	29	Bothell, Kenmore, Lake Forest Park, Shoreline	161,143	3,354
Bellevue Medic One	4	37	Bellevue, Issaquah, Mercer Island, North Bend, Sammamish, Snoqualmie	314,075	332
Redmond Medic One	3	31	Duvall, Kirkland, Redmond, Woodinville	199,180	526
Vashon Medic One	1	7	Vashon and Maury Island	10,946	16
Total	**26**	**248**		**2,125,652**	

* 2014 Service Area Population is calculated by summing the 2014 census tract populations for each tract designated per agency. Density is then calculated by dividing that calculation with the summed square mileage of those census tracts.

Exhibit 5: KCEMS service area descriptions represent the service area population and population density by ALS agency (2014 census tract data).

The service areas represent the actual populations served by each agency's primary area of response. Approximately 14% of King County's population reside in unincorporated areas on the Eastern side of the county. KCM1, Bellevue Fire Department, and Redmond Fire Department have primary responsibility for the Eastern and unincorporated areas which are. This method objectively "assigns" the population to the agency with the closest medic unit station responsibility for response.

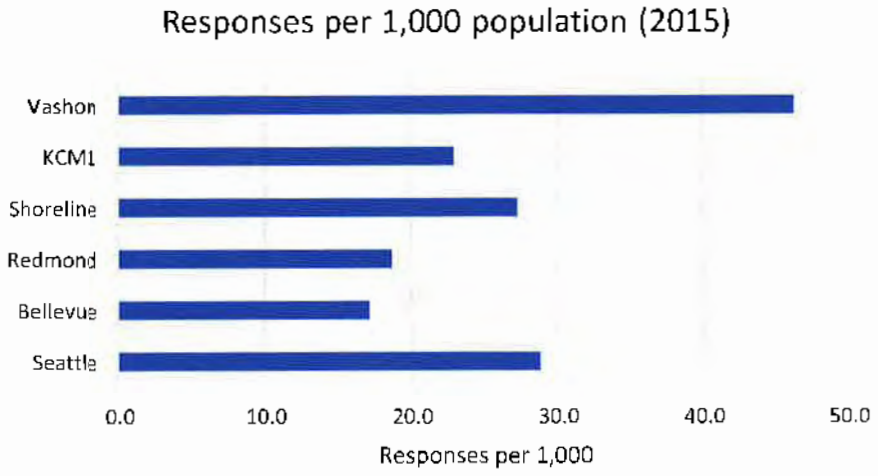

Exhibit 6: Responses per 1,000 (2014 service area population)

Exhibit 6: Responses per 1,000 (2014 service area population) shows the variability in the number of responses per capita by ALS agency, which also represent geographical variances within the county.

DEMOGRAPHIC FORECASTING

The Puget Sound Regional Council has developed "forecast analysis zones" for purposes of forecasting future growth within the region (see Exhibit 7).

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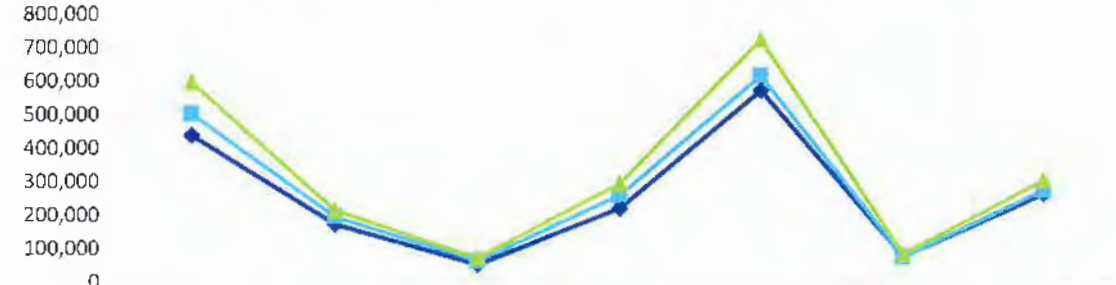
Exhibit 7: Forecast Analysis Zones (Source: Puget Sound Regional Council)

PROJECTED KING COUNTY POPULATION BY FORECAST ANALYSIS ZONE



	Eastside King	Green River	King Other	SE King	Seattle Area	Shoreline Area	SW King
2000	430,920	165,587	44,186	211,951	563,554	67,058	254,567
2010	495,288	188,505	55,854	251,178	608,863	66,518	265,043
2025	589,309	207,792	64,406	285,108	714,755	75,149	295,078

Exhibit 8: Projected King County population by Forecast Analysis Zone (Source: Puget Sound Regional Council, 9/2015 forecast)

Population changes and trends factor into the forecasting for planning purposes. In considering the Puget Sound Regional Council's forecasts for the next ten years it is prudent to recognize that an increasing volume of incidents will occur in the Eastside King and Seattle areas; with more modest growth in the remaining areas. The growth patterns prior to 2010 are not the same as those forecasted for the next ten years. Noticeable growth in the Shoreline Area, Green River, SE King, SW King and King Other zones will be modest while the Eastside King and Seattle Area growth will be stronger (Exhibit 8).

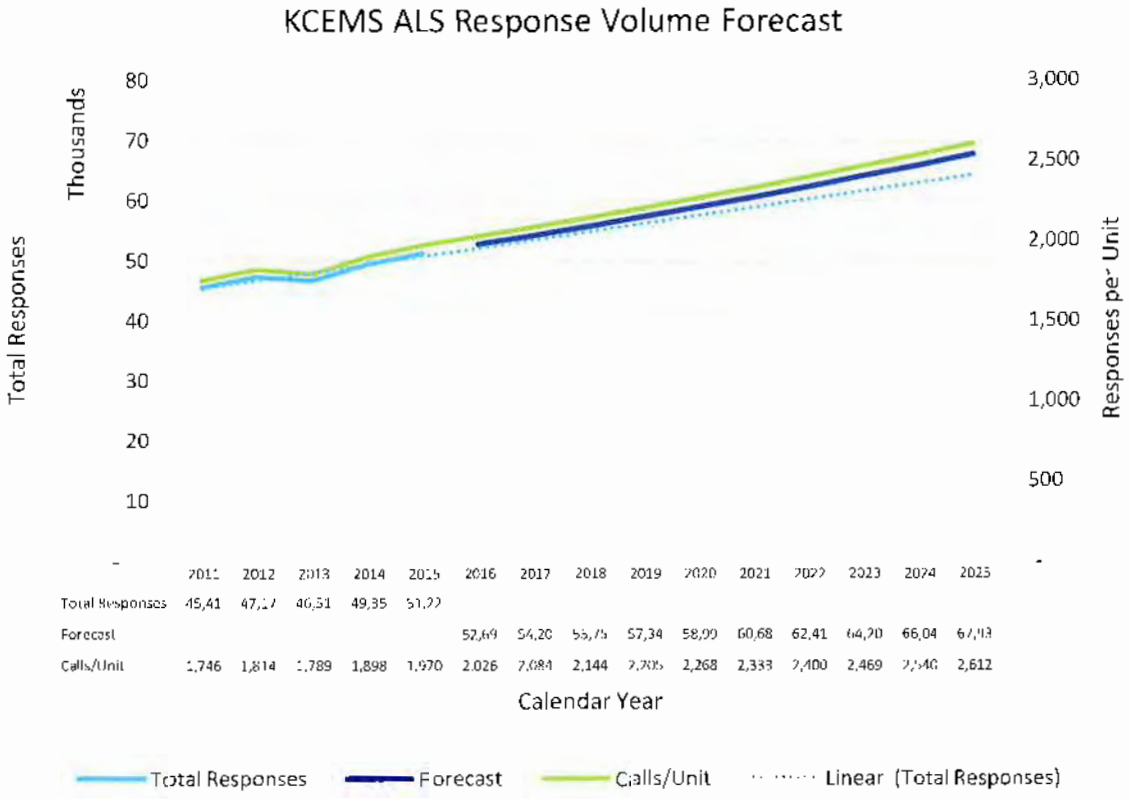


Exhibit 9: KCEMS response volume forecast

The response volume forecast (simple linear trend based on forecasted population trends) shows an increase in total KCEMS system volume of 29% over the next decade (Exhibit 9).

KING COUNTY EMS SYSTEM

The KCEMS system is comprised of six pre-hospital regional ALS agencies operating 26 medic units throughout King County: one third-service agency (also known as King County Medic One or KCM1), three municipal fire departments (Seattle Fire Department, Bellevue Fire Department, and Redmond Fire Department), and two fire districts (Shoreline Fire Department, and Vashon Island Fire & Rescue). In addition, a contract with Snohomish County Fire District 26

brings ALS agencies to the Skykomish/King County Fire District 50 area, from Baring to Stevens Pass.

In many parts of the county private ambulance companies co-respond either automatically or upon request and complete a majority of the lower acuity transports.

There are twelve Public Safety Answering Points (PSAPs) in King County that each transfer medical related 9-1-1 incidents to one of five KCEMS dispatch centers in Seattle and throughout King County. Dispatchers determine the level of care necessary for immediate dispatch following medically approved emergency dispatch triage guidelines.

There are eighteen hospitals and three stand-alone emergency departments in the county. For specialty care, there is one level I trauma center, four level III trauma centers, three level IV trauma centers and one level V trauma center. Categorized Cardiac and Stroke Centers are also distributed in the heavily populated areas along I-5 and I-405 and I-90. There are twelve level 1 and four level 2 cardiac centers; and four level 1, seven level 2, and five level 3 stroke centers in the county. The State's only Level I trauma center is located in Seattle and it serves patients from Washington, Wyoming, Alaska, Montana and Idaho.

The KCEMS system operates in a coordinated manner by numerous agencies that provide high quality pre-hospital medical care across King County. It is this unique integrated regional system of consistent, standardized, and collaborative medical care that allows the system to excel and achieve the best possible patient outcomes.

A "Tiered Response System" is defined by the EMS Division as an EMS response system that uses dispatch criteria to differentiate between BLS and ALS practitioner response levels to 9-1-1 incidents. The KCEMS tiered response system consists of primarily BLS and ALS agencies but there are also alternative response models for some lower acuity 9-1-1 incidents (Section 5.17 of Seattle & King County Public Health Policy PHL 9-2 DPH, 2012).

An "Integrated Regional System" is defined by the EMS Division as the coordination of EMS system components, including BLS and ALS agencies that respond in a seamless manner regardless of jurisdictional boundaries, in order to achieve the highest level of pre-hospital patient care (Section 5.10 of Seattle & King County Public Health Policy PHL 9-2 DPH, 2012).

The KCEMS tiered response system increases patient safety and care because it does not over-dispatch paramedics to incidents that do not need their level of care. By managing the system this way a smaller number of paramedics are used and each has the chance to perform low-volume high-risk procedures with greater frequency.

Systems that are all ALS dilute the ability of the paramedics to perform low-volume high-risk procedures because a significantly larger number of paramedics are required in the workforce,

and all of them respond to incidents where many of them will not have the opportunity to use any paramedic skills. In addition, as a practical matter, dual paramedic systems allow weaker-skilled providers to "hide" behind a stronger provider and the weaker provider is much harder to detect through quality improvement activities.

EMS DIVISION REGIONAL SERVICES

The EMS Division manages the core regional services and supports other key elements of the integrated regional system. The EMS Division is essential to enabling KCEMS agencies to provide the highest quality out-of-hospital emergency care available. Regional coordination ensures pre-hospital patient care is delivered at the same standards across the region; regional policies and practices that reflect the diversity of needs are maintained; and, local area service delivery is balanced with centralized interests in an efficient manner.

The EMS Division also manages innovative projects and operations known as Strategic Initiatives, which are designed to improve the quality of KCEMS agencies and manage the growth and costs of the system. Regional Strategic Initiatives have allowed the KCEMS system to maintain its role as a national leader in the field and have been key in the system's ability to manage its costs.

Examples of Regional Services and Regional Strategic Initiatives include:

- Uniform education of more than 4,200 EMTs and dispatchers
- Regional medical control and quality improvement for over 30 EMS agencies
- Injury prevention public health programs
- Regional (centralized) data collection and analysis
- Regional planning for the KCEMS system
- Financial/administrative management
- More than 10,000 public school students per year are taught CPR
- BLS efficiencies with a stated objective to reduce unnecessary requests for paramedics by EMTs

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KCEMS RESPONSE ZONES

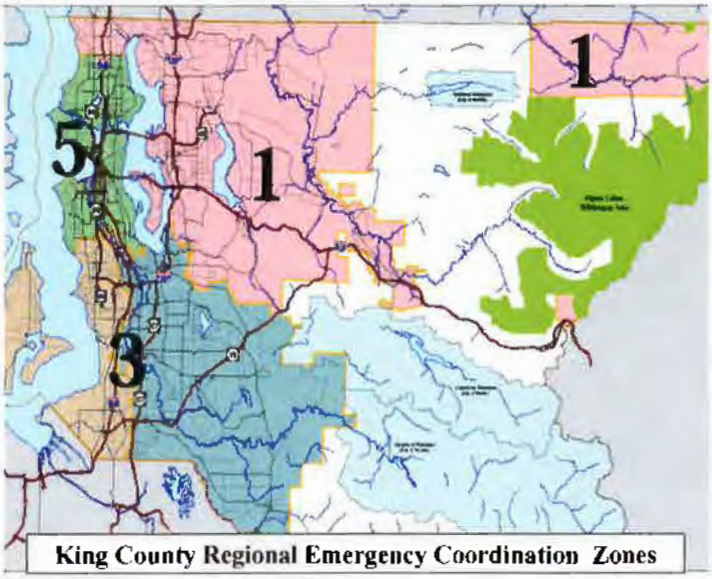

Exhibit 10: King County emergency coordination zones

Exhibit 10 shows King County emergency coordination zones. KCEMS Zone 1 is the North and East County areas and are served by Shoreline Fire Department, Redmond Fire Department, and Bellevue Fire Department. Zone 1 borders the Seattle Fire Department border at the north city limit and Renton Fire Department's border at its northern limit. KCEMS Zone 1 includes the cities of: Bellevue, Bothell, Duvall, Issaquah, Kenmore, Kirkland, Lake Forest Park, Mercer Island, North Bend, Sammamish, Shoreline, Snoqualmie, Redmond, and Woodinville.

KCEMS Zone 3 is the South County area served by KCM1 and includes the cities of Auburn, Black Diamond, Burien, Covington, Des Moines, Enumclaw, Federal Way, Kent, Maple Valley, Pacific, Renton, Seatac, Sea-Tac Airport, Skyway, Tukwila, and White Center.

KCEMS Zone 5 is served by Seattle Fire Department and includes the entire city.

KING COUNTY GOVERNANCE

The King County EMS Division resides within King County's Public Health Department. King County is governed by the Metropolitan King County Council (MKCC), a district elected legislative body consisting of nine members. The Council adopts laws, sets policy, and holds final approval over the budget. The council is free to pass all laws and ordinances it sees fit to further its operations, within the boundaries of the state and federal constitutions.

Currently KMCC has nine standing policy committees and three regional committees. Members of the Seattle City Council and representatives from suburban cities and local sewer districts are also members of the regional committees. In addition, all nine members of the Council meet as a Committee of the Whole to discuss broad-reaching legislation and issues.

The King County Executive is the highest elected official representing the government. The Executive is not a member of the County Council, and is a separately elected official who submits legislation to the County Council for consideration. Each year in October, the Executive submits a proposed budget to the County Council for the operation of County government for the coming year. The Executive also has veto power over ordinances passed by the County Council.

EMS SYSTEM OPERATIONAL EFFICIENCIES

EMS systems exist in a complicated regulatory and economic environment. They exist at the nexus of healthcare, public safety, and public health, and often use a combination of funding mechanisms from each. EMS systems are constrained by federal, state and local regulation in terms of system design, response reliability, certification, licensing and healthcare compliance. Each level of regulation adds cost to the system but also improves the quality, reliability, and responsiveness to local expectations as well.

EMS systems exist within the realm of public utility economics such that most of the cost is in establishing the network. As an essential public service that is locally regulated, EMS shares many economic attributes with public transportation, water, power and other utilities. As with the fire service, most of the cost of an EMS agency is associated with "readiness" (the ability to respond reliably to the next request for service).

EFFECTIVENESS MEASURES

Some public services may be uncomfortable with or unaccustomed to measures of productivity but one of the hallmarks of the KCEMS system is its interest in efficiency. While KCEMS agencies may not have many comparable peer groups outside of the county from which benchmarks can be set, the benchmarks within the county can and should be monitored and thus are able to be managed.

An objective measure of the effectiveness of productive effort is based on the deployment of ALS medic units throughout the county. Unit hour utilization (UHU) is a measure of productivity that is often used as a proxy for EMS system efficiency. UHU identifies the most efficient providers of an EMS service by their ability to produce a given level of output using the least number of inputs. This is a measure of medic unit productivity, not of individual paramedics and does not measure non-response related workloads.

UHU measures the productivity of the inputs (ALS medic unit hours) with the amount of time they are treating or transporting patients for productive activity. A unit hour (UH) is a fully staffed medic unit available for response to incidents for one hour. Thus the UHU is typically calculated by dividing the number of responses (UHU-R) or the number of transports (UHU-T) by the number of UHs consumed to cover those responses or transports.

A higher UHU indicates better productivity although at a certain point it can be so high that issues of practitioner fatigue or other concerns may become an issue. As a productivity measure in urban or suburban systems (rural areas provide geographic coverage and rarely have the ability to improve productivity). A UHU of 40% is generally considered a ceiling for 24 hour shifts.

Common UHU Scale for Urban & Suburban EMS	
45% – 55%	High Utilization
35% - 45%	Optimal Utilization
25% - 35%	Average Utilization
15% - 25%	Below Average Utilization
1% - 15%	Low Utilization

Exhibit 11: Common UHU scale for Urban & Suburban EMS

Workload expressed as Unit Hour Activity (UHA) more accurately measures the workload pressure put on the paramedics staffing a medic unit in their role as emergency medical responders. It also somewhat levels the playing field for differences in driving times between remote, rural, suburban, and urban agencies. This is an important consideration because research in the EMS, medicine, and transportation sectors supports that overworked staff make more mistakes and reduce the quality of patient care. UHA is calculated by using the total number of hours that units are engaged on calls by the total number of unit hours, or put more simply it is the fraction of the period that is spent engaged in responses to the total time on duty. It does not include time spent doing other work that may be assigned such as chart reviews, training, or restocking.

Hypothetically, if a medic unit were to never respond, it would always be available for a response. Conversely, if a medic unit were to go on every response, it would have limited availability for the next response and in some cases would not be able to respond (such as simultaneous dispatches to different incidents). Therefore, it is important for KCEMS to balance *readiness* to respond with the *availability* (factoring both UHU and 9-1-1 calls it was unavailable to be dispatched to) to respond, for a given medic unit. KCEMS could develop a composite measure that balances efficiency with capacity.

Other composite measures relying on UHU include subjective data such as crew fatigue and worker dissatisfaction with other objective points such as sick calls, worker compensation claims, etc., to give leaders a measure and "feel" for when new units are needed or when productivity starts to decrease or paramedics become bored. When measured over time these can be powerful indicators of system health.

Another distinction of KCEMS is an intense focus on minimizing the incidents that paramedics respond to and then minimizing the number of transports they perform. As such it is appropriate to measure the UHU for both responses and transports on an ongoing basis and to use these figures for discussing and managing the deployment of the system to ensure that the design of the system and trends in transportation decisions are appropriate to meet the needs of the patients requiring them.

For all current ALS medic units in KCEMS, the number of UHs per unit per year is 8,760 hours (24 * 7 * 365). That means a 24-hour ALS medic unit that runs eight incidents during a 24-hour shift would have a UHU-R of 0.33 or 33% (8/24). If it transports patients in 4 of those incidents, it would have a UHU-T of 0.17 or 17% (4/24). The UHA would determine that the four responses without a transport averaged 45 minutes (4 * 45 = 180 minutes) and the four transported averaged 75 minutes (4 * 75 = 300 minutes) for a total of 480 minutes of time spent on responses in 24-hours (1,440 minutes) for a fraction of 0.375 or 37.5%.

In many EMS systems, when a unit reaches a UHU-R of 40%-50% (9-12 responses per 24-hour shift), concerns are raised about the workload and its potential effect on the practitioners in terms of sleep time and fatigue on long shifts. Since KCEMS units fall below this level so fatigue is not likely to be a primary concern for KCEMS.

2014 KCEMS ALS Workload Comparison			
Agency	**UHU-R**	**UHU-T**	**UHU-A**
Vashon Island Fire & Rescue	6%	2%	6%
Redmond Fire Department	14%	4%	10%
Bellevue Fire Department	15%	6%	10%
Shoreline Fire Department	17%	7%	13%
KCM1	23%	6%	14%
Seattle Fire Department	31%	11%	17%

Exhibit 12: KCEMS ALS workload comparison

These UHU levels (Exhibit 12) demonstrate that Seattle Fire Department has the highest productivity metric; this is not surprising considering the entire urban geography served by the department. Among the more widespread urban-suburban mix of the other agencies, KCM1 stands out in productivity. This too is not surprising due to the single role nature of the KCM1 practitioners and the design of the response system in the South County area. The single unit Vashon system is a geographical coverage unit and thus will likely never significantly improve its UHU. Not shown is a recent trend in that KCM1 has become increasingly productive (an increasing UHU-R) over the last three years while the fire-based systems have remained unchanged.

MEDIC UNIT RESPONSE TIME

The public and elected officials focus on response times primarily because it is one of the few things that they both measure and understand. The public is unaware of adherence to protocols, drug dosages and other components of competent quality clinical care, but they know how quickly the system responds to their calls for help.

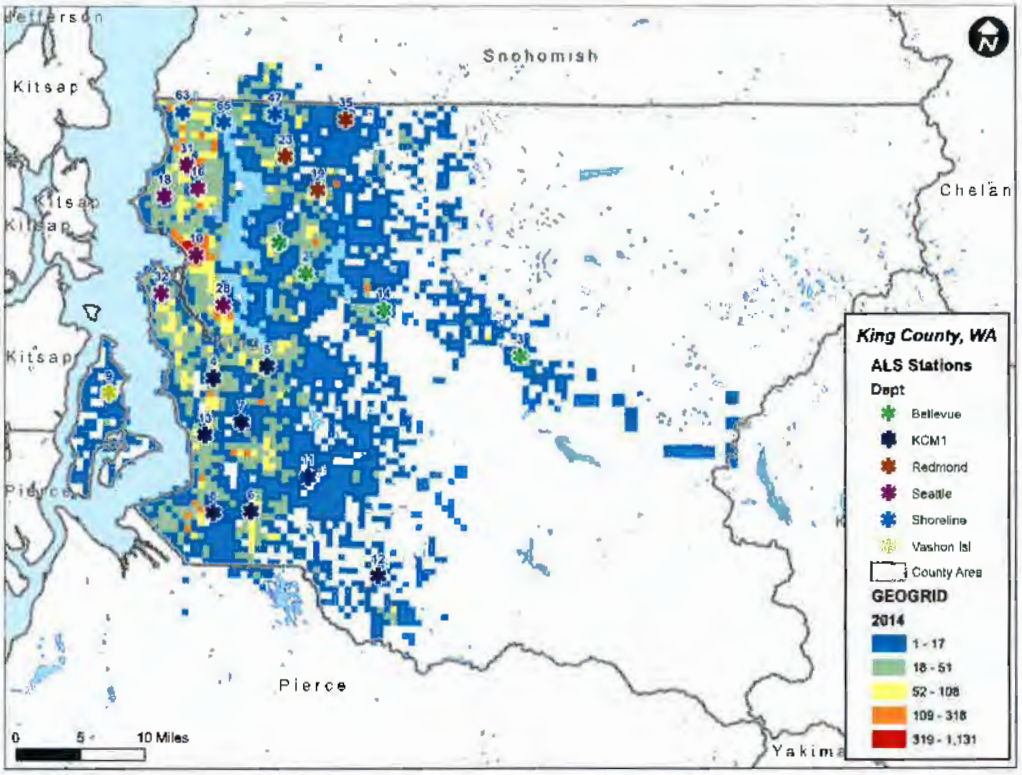

Exhibit 13: 2014 incident density with medic unit locations

Exhibit 13 shows the resulting number of incidents within each grid box when the incident data was joined to the geographic grid. This map demonstrates that heavier volumes of activity mostly exist nearby the ALS medic unit stations and coincide with population and infrastructure.

Travel time is impacted not only by driving speed but also distance from the station, weather, construction, traffic congestion, and physical and manmade barriers that will delay the units from reaching the scene. Once on scene, the patient could be several stories up within a building, on the far end of an industrial or commercial facility, or within a maze of hallways within a residential facility leading to an extended patient contact time.

While travel time is somewhat variable, we conducted a geographic analysis using station locations and the actual average street network speeds to create a model of expected response times.

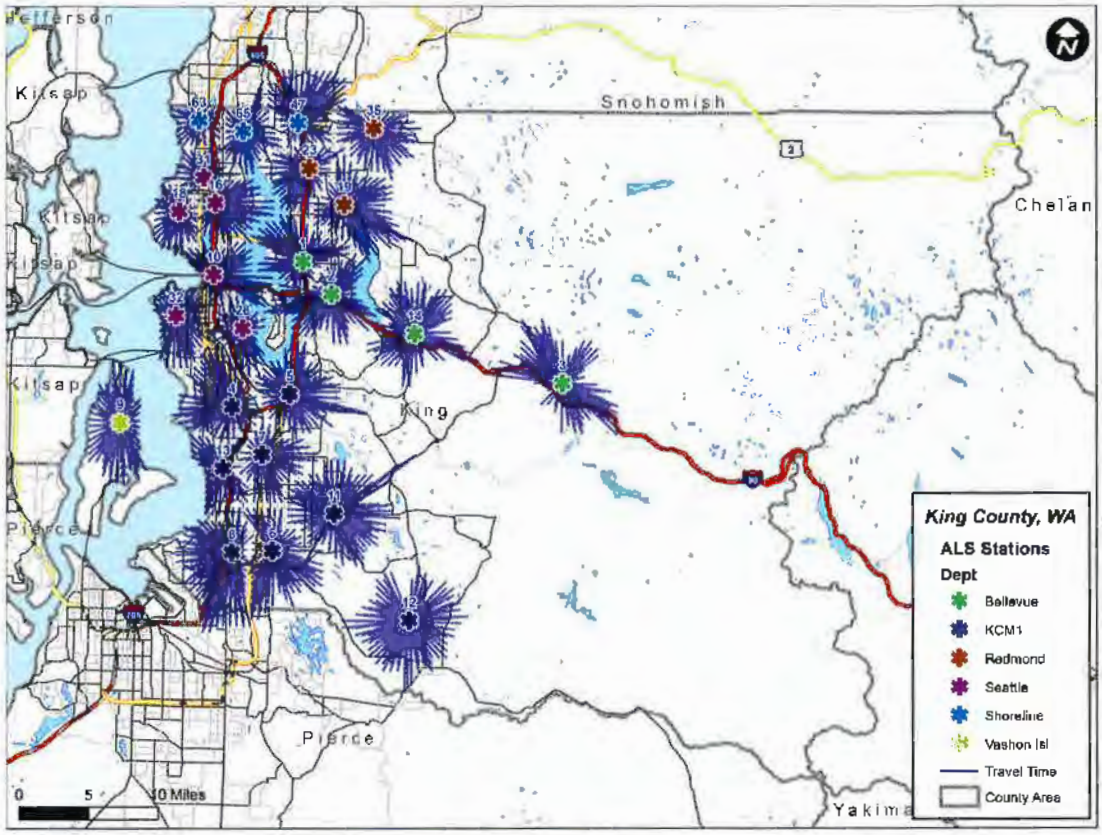

Exhibit 14: 10-minute drive time coverage map

Exhibit 14's geographic analysis model shows the coverage for up to a 10-minute drive time from each ALS medic unit station. This depicts the "average" coverage for the required response times. The 2016 EMS Division's Annual Report reports that ALS Agencies (not including Seattle Fire Department) reached nearly 80% of incidents in less than the 10-minute standard (averaging 8 minutes), and 94% of incidents in less than 14 minutes. Thus the ALS agencies are meeting their response time requirements for the current level of demand with the current number of ALS medic units.

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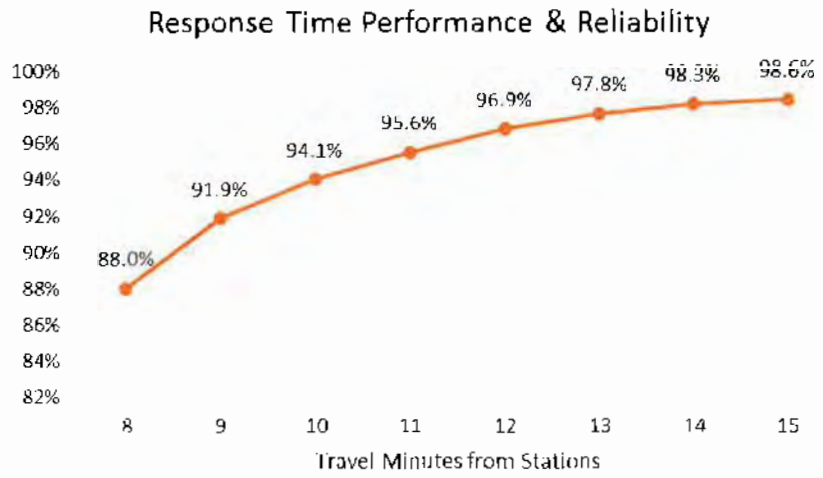

Exhibit 15: Response time reliability graph

Exhibit 15 shows that the current number of ALS medic units (26) are capable of achieving the goals of the EMS Division. This analysis should be monitored into the future as any variance of the result compared to the goal may require station moves, unit standby at other locations, or additional units within existing stations.

Key Findings

- The level of utilization among KCEMS ALS agencies is low compared to industry standard benchmarks.
- Seattle Fire Department stands out as a productive urban system while KCM1 is a productive suburban system.
- KCEMS ALS agencies are meeting their response time requirements with the current number of ALS medic units.

EMS ECONOMICS

The next criteria for determining the optimal number or range of ALS agencies are the economics. For the public benefit in King County we chose to evaluate the economy of scale and economy of scope; and to consider alternative models.

An economy of scale for EMS occurs when the cost per UH decreases while the number of responses increases. This occurs where there are high fixed costs and constant marginal costs, or when there are low fixed costs and declining marginal costs. The inputs are unit hours and the outputs are responses.

Closely related to the question of economies of scale is the issue of economies of scope. Whereas economies of scale relate primarily to the efficiencies associated with the level of production of a single product type, economies of scope relate to efficiencies that accrue from combining processes or activities in the production of multiple outputs (Abbott, Malcolm, and Bruce Cohen. "Productivity and efficiency in the water industry." *Utilities Policy* 17.3 (2009): 233-244). This speaks directly to the regional services provided by the EMS Division.

KCEMS ECONOMY OF SCALE

As described above, an economy of scale for EMS occurs when the cost per UH decreases while the number of responses increases. Although six agencies are too few to determine statistical significant correlations, the data show that the cost per capita decreases $18.05 (p= 0.22), the cost per response decreases $353.42 (p-value 0.05), and the cost per transport decreases $1,055.73 (p= 0.14) for each additional medic unit operated by an agency - even though the cost per unit hour may increase slightly at $3.15 (p= 0.2) per unit hour for each additional unit operated.

For every medic unit operated by an agency the:		p-value
Cost per capita decreases	$18.05	0.22
Cost per response decreases	$353.42	0.05
Cost per transport decreases	$1,055.73	0.14
Cost per unit hour increases	$3.15	0.2

Exhibit 16: Economy of scale cost changes

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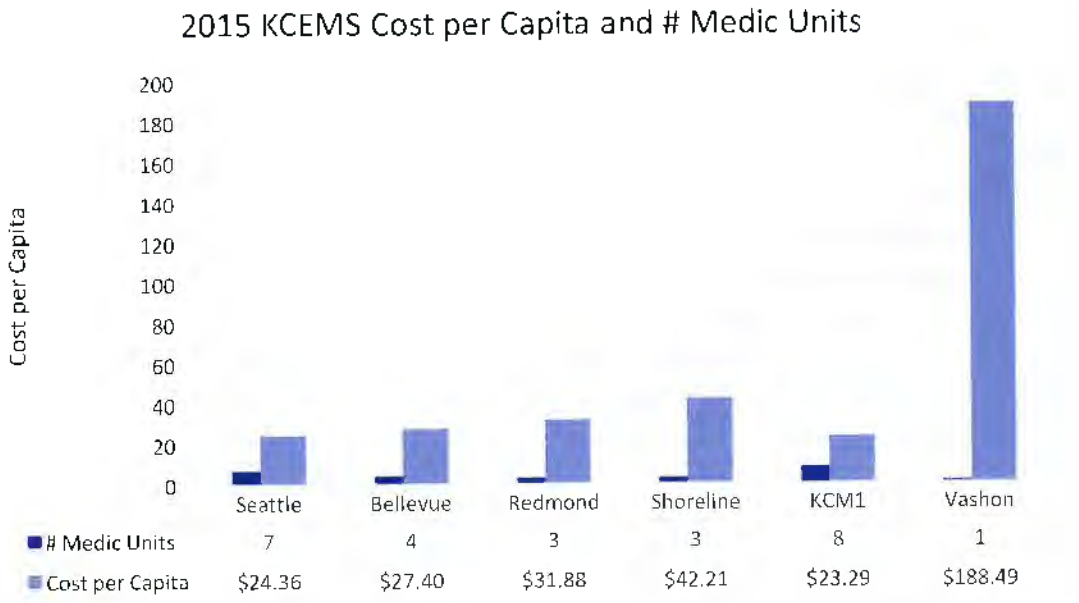

Exhibit 17: Differences in cost per capita between ALS agencies

The single largest contributor to the ALS agency budgets is personnel salary and benefits. All ALS agencies are in a negotiated salary environment; thus there is little variation both in total salaries and in ratios of salary per unit hour. Salaries and benefits comprise 80-90% of ALS agency costs and would also vary by number of AL S medic units. KCM1 salary and benefit costs per medic unit are significantly lower when compared with the other ALS agencies.

This demonstrates an appreciable economy of scale. It was not within the scope of this study to complete a detailed ALS agency costing study, but such a study could uncover why there are cost per capita differences between Shoreline and the other agencies.

Agency	# Medic Units	Salaries & Benefits per UH*
Vashon	1	$209.56
Redmond	3	$215.14
Shoreline	3	$228.84
Bellevue	4	$203.72
KCM1	8	$190.99

Exhibit 18: ALS agency medic units and salaries & benefits per unit hour

*Seattle Fire Department was unable to provide a breakdown of its costs sufficient to identify the salary & benefit costs for the department.

To maximize economic efficiency a manager seeks the greatest UHU from the lowest cost per UH. In rural areas, there may be no opportunity to improve productivity. In rural areas management of the UH cost is the most important issue for economic efficiency. Although labor is the largest cost of all ALS agencies at 80-90% of expenses, even small improvements in decreasing costs for supplies, capital items and medications, may make a noticeable difference in the UH cost.

In urban areas higher volume and productivity are even more powerful than UH cost in reducing the cost per incident and cost per transport. For this reason, many systems buy more expensive and reliable equipment and pay their paramedics higher wages to work in a more productive environment, often using variable staffing and fluid deployment.

Agency & # Medic Units	2015 ALS Costs	ALS Responses	ALS Transports	Cost per response	Cost per transport	Annual Unit Hours	Cost per UH	Cost per Capita
VIFR 1	$2,063,247	506	150	$4,078	$13,755	8,760	$236	$189
SFD 3	$6,801,262	4,394	2,241	$1,548	$3,035	26,280	$259	$42
RFD 3	$6,349,125	3,723	1,019	$1,705	$6,231	26,280	$242	$32
BFD 4	$8,604,502	5,382	2,171	$1,599	$3,963	35,040	$246	$27
SFD 7	$16,812,533	19,897	6,484	$845	$2,593	61,320	$274	$24
KCM1 8	$17,472,315	17,214	4,185	$1,015	$4,175	70,080	$249	$23

Exhibit 19: Economy of scale comparison data

Exhibit 19 VIFR 1=Vashon Island Fire & Rescue, SFD 3 = Shoreline Fire Department, RFD 3 = Redmond Fire Department, BFD 4 = Bellevue Fire Department, SFD 7 = Seattle Fire Department, KCM1 8 = King County Medic One.

A large factor in calculating the cost per unit hour is the cost data itself and how the ALS agencies determine their costs. Because the ALS agency funding allocation is fixed and reimbursement-based, all ALS agencies receive the same allocation, except for KCM1 which receives complete cost recovery rather than an allocation. KCM1 has the lowest per capita cost, while Vashon has the highest due to the economies of scale of 8 units versus one.

Exhibits 18-22 demonstrate the relationship that the number of ALS medic units has on the costs of operating the system when looking at a number of factors.

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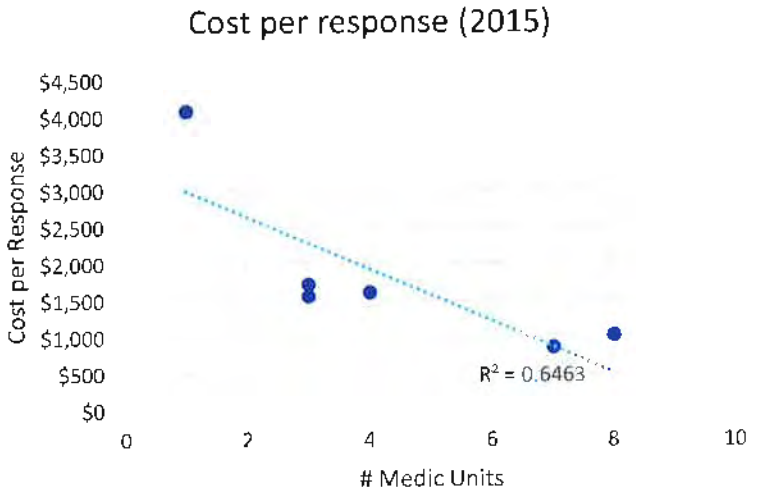

Exhibit 20: 2015 Cost per response by number of ALS medic units

Exhibit 20: 2015 Cost per response by number of ALS medic units shows the decreasing cost per response by increasing the number of ALS medic units.

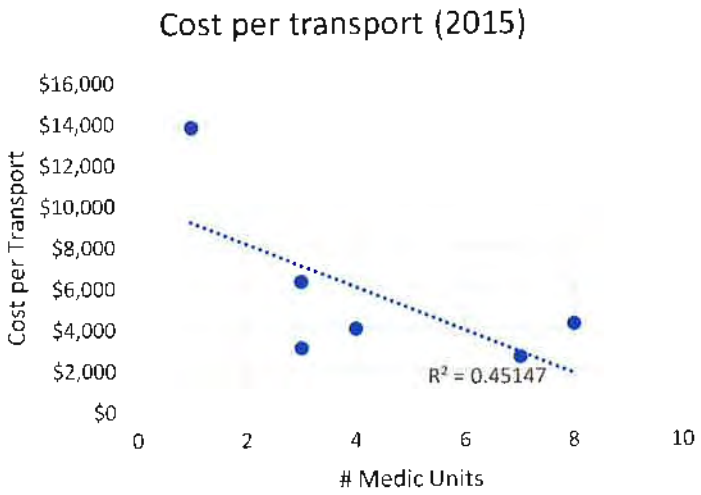

Exhibit 21: 2015 Cost per transport by number of ALS medic units

Exhibit 21: 2015 Cost per transport by number of ALS medic units shows the decreasing cost per transport by number of ALS medic units.

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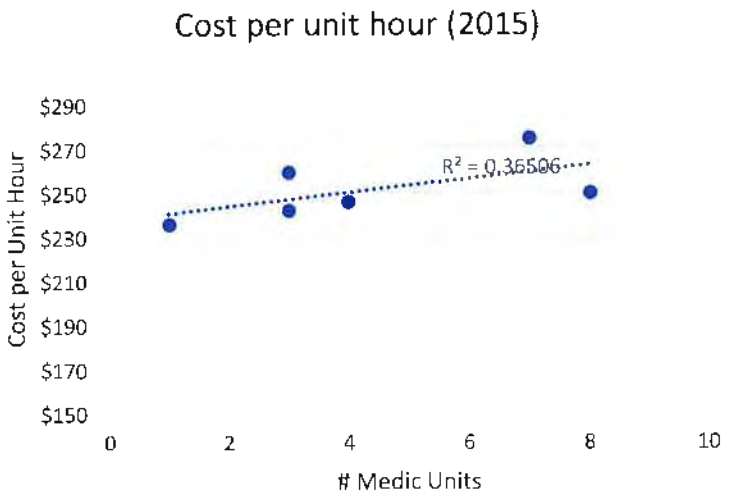

Exhibit 22: 2015 Cost per unit hour by number of ALS medic units

Exhibit 22: 2015 Cost per unit hour by number of ALS medic units shows the slightly increasing cost per unit hour for additional ALS medic units.

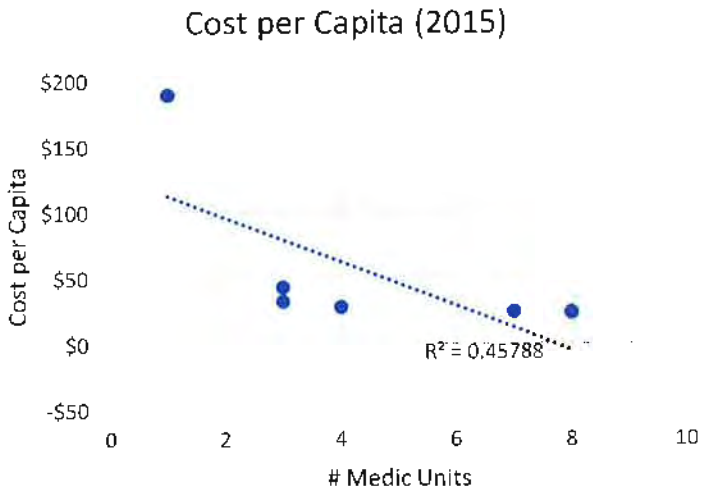

Exhibit 23: 2015 Cost per capita by number of ALS medic units

Exhibit 23: 2015 Cost per capita by number of ALS medic units shows the decreasing cost per capita by increasing the number of ALS medic units per ALS agency.

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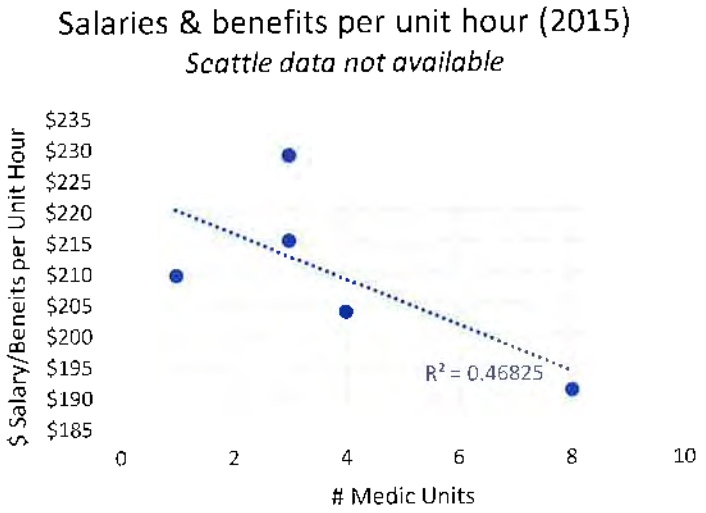


Exhibit 24: 2015 Cost of salaries & benefits per unit hour by number of medic units (not including Seattle Fire Department)

Exhibit 24: 2015 Cost of salaries & benefits per unit hour by number of medic units (not including Seattle Fire Department) shows the decreasing costs for salaries and benefits for additional ALS medic units.

These findings are consistent with key informant perceptions, most of whom thought single unit ALS agencies as both economically and operationally inefficient. Vashon Island Fire and Rescue was frequently brought up to illustrate this point. Like several rural areas of King County, Vashon procured an ALS medic unit based on response time needs, rather than call volume. According to respondents, however, high costs and staffing difficulties have proved insurmountable obstacles for continued program feasibility. Vashon is in the process of transferring ALS medic units to another ALS agency. The optimal ALS medic unit volume suggested by informants often matched the current number in their own jurisdiction. Several cautioned, however, that too many ALS medic units could weaken interpersonal bonds between BLS and ALS practitioners, which are seen as important in providing congruent care.

In reviewing operations, we considered ALS medic unit productivity compared to number of responses, number of transports, population density, and the number of ALS medic units. We learned that:

1) Although KCEMS is medically homogenous, its operations and costs vary by agency. There is variation between the ALS agencies and ALS medic units that comprise KCEMS. The ALS agencies have the latitude and exercise discretion to design the agency according to their internal needs. This variation may erode efficiencies.

2) Response rate describes busy-ness.
   The number of responses a single ALS medic unit or single ALS agency experiences is the sole factor used to determine how busy that unit or agency is. Oversight to more accurately compare responses between agencies by adding filters for other related productivity measures would improve the measure.

3) The fewer the number of responses, the more likely the ALS medic unit is to transport. The higher the number of responses, the less likely the ALS medic unit is to transport.
   It was not within our scope to determine why these phenomena exist. They deserve further study.

4) The denser the population of an area, the busier the ALS medic units.
   Population density increases response requests. Various temporal, environmental, sociological and geographical affects are influenced by density.

5) The number of ALS medic units is not correlated to the number of responses.
   The service area for each ALS medic unit was established based on factors which were significant at the time. The changing factors of population density, traffic volume, and frequency of events drawing people to such an area during specific days or times may have changed.

6) A denser population does not result in a greater number of ALS medic units.
   The system does not deploy ALS medic units based on the population density.

The two most significant independent factors of economic efficiency of the KCEMS system are 1) the salaries and benefits costs and 2) the administrative and operational support necessary for each ALS agency to maintain. Reducing the number of ALS agencies while increasing the number of ALS medic units operated by each agency (total number of medic units remaining unchanged), will reduce redundant administration and operational support and will lead to the most effective means of increasing the economic efficiency of KCEMS.

Key Findings

- KCEMS system costs are greatly reduced by having fewer ALS agencies operating more units per ALS agency.
- Salaries and Benefits comprise the largest portion of the cost of the KCEMS system. Although controlled by labor agreements, there is significant variability between ALS agencies.

KING COUNTY STAKEHOLDER PERSPECTIVES

This section briefly outlines interview findings on the two primary research questions regarding: the optimal number of ALS agencies and units and a process for responding to changes in ALS configuration. Where appropriate, qualitative findings have also been provided throughout this report to further illustrate key points and provide context for the quantitative analysis.

OPTIMAL NUMBER OF AGENCIES

Overall, stakeholders expressed satisfaction with the existing number of ALS agencies in the county. This view was particularly strong among current ALS agencies. Responses among contract agencies included caveats about wanting more ownership in the system, such as local jurisdiction branding on medic units and decision-making about resource allocation (e.g., BLS training).

Though satisfaction with the current ALS agency configuration was high, representatives from both ALS agencies and contract organizations acknowledged that a reduction in agencies would increase system efficiency. Zone 1 was most frequently cited, with suggestions of up to an 40% efficiency benefit through consolidation. Decreasing redundancies in management (e.g., Medical Service Officer (MSO), Medical Service Administrator (MSA), chiefs) and administrative overhead were repeatedly mentioned as ways to produce savings.

Respondents suggested that ALS agency consolidation also offered benefits beyond economics, such as:

- More seamless service integration through a reduction of jurisdictional boundaries.
- Reduced barriers experienced by new paramedics from contract jurisdictions who currently lose their seniority and home department when required to become ALS agency employees.
- Increased range of environments through which paramedics could rotate with ALS personnel from rural jurisdictions gaining skills practice in busier urban areas, while rural settings offer recuperation time for others.
- More informal training and quality assurance opportunities provided by paramedics to contract department BLS staff, something that is more readily available to ALS agency EMTs.

Those suggesting consolidation were quick to point out, however, that merging ALS medic unit service areas would be extremely difficult. Politically, agencies were well established and invested in the current service configuration. Some fire-based agencies expressed that dual role paramedics provide benefits to the fire department in addition to their role as a paramedic.

Organizationally, different operational systems and labor representation would make integration challenging (e.g., departments on different work schedules). Several respondents warned that decreasing the number of ALS agencies could impede innovation as smaller departments were seen as more agile and responsive to change, as well as better able to tailor services around community needs. Overall, the challenges of service consolidation seemed

formidable to many. In fact, several respondents quipped that despite advantages, they don't see mergers happening in their lifetime.

OPTIMAL NUMBER OF ALS UNITS PER AGENCY

Most respondents were satisfied with current numbers of ALS medic units. Adequate response time was typically cited to support these views. Respondents reported that multiple ALS medic units (at least 3 to 6) allowed for adequate backfill of staff to cover absences related to vacation, training, and injury.

Still, key informants in all zones expressed divergent opinions about exceptions to acceptable ALS medic unit numbers. Most notably, Zone 5 (Seattle) reported potential benefit of a third ALS medic unit to service the downtown area. Seattle reportedly reaches Status 0, with no ALS medic units available, on a bi-weekly basis. This situation draws in the city's north and south ALS medic units, leaving outlying areas with slower service. Rural jurisdictions in Zone 1 and 3 also reported challenges of long response time.

The needs of rural communities highlighted concerns regarding system equity. KCEMS applies an urban, rapid response EMS model to the county's outlying regions. However, response times in those isolated areas tended to be longer and receive less EMS backup compared to urban centers. Respondents shared stories of BLS staff choosing to transport to the hospital over requesting ALS support because of delayed wait times and conversely paramedics first on scene, needing to wait for BLS before going back in service.

REGIONAL PROCESS FOR RESPONDING TO CHANGES IN THE ALS CONFIGURATION

While not all stakeholders directly addressed the question of a change process during the interview, many expressed satisfaction with the current EMS Division role in overseeing ALS service levels and looked to the EMS Division as the lead agency in facilitating a change process moving forward. With regard to criteria for change, the use of county EMS data (e.g., call volume, response time, heat maps) provided by the EMS Division was highly valued. Respondents agreed that change should be based on science and system needs. Several stakeholders asserted, however, that statistics alone should not constitute the only evaluation criteria for system change. A jurisdiction's motivation for staffing an ALS medic unit, their knowledge and availability of required resources and oversight, and the jurisdiction's potential for success were additional factors offered for consideration.

How the change process should be structured was less articulated among respondents. One suggestion was to employ a similar process as was currently used for the King County EMS levy. The levy process invites input from ALS stakeholders and utilizes working groups. Opinions as to who should be at the table were split between current ALS agencies only or all interested stakeholders, with answers typically reflecting the stakeholder's particular affiliation. Several respondents favored including elected officials, as done with levy proceedings, to help build

consensus, elevate discussion beyond EMS operations, and move the change process forward. Employing a facilitator was also mentioned. Transparency was seen as an important element of any change process.

OPPORTUNITIES AND CHALLENGES FOR CHANGE

Organizational change is a complex process requiring attention to the multiple factors of culture, politics, and the environment to ensure success. Stakeholders raised several important considerations in regard to pursuing change.

KCEMS CULTURE, LOYALTY, & PRIDE

Respondents in the various stakeholder groups hold the KCEMS system in high regard. Many cited excellent performance outcomes, especially cardiac survival rates, and its international reputation. KCEMS' success was attributed to a variety of factors including strong EMS leadership, a common paramedic training platform, and tiered system of care. Allegiance to the KCEMS system was particularly strong among ALS agency personnel, many of whom 'grew up' in the system and expressed deep loyalty and pride. Many respondents expressed the sentiment that "commitment to Medic One as a system is without reproach".

System loyalty presents both challenges and opportunities for system change. Impassioned loyalties can foster resistance, as evidenced by the number of respondent comments about the system working and not needing to be fixed. Also organizational success can breed isolationism and elitism, closing minds to ideas about how the system could be improved. Similarly, we heard stories about past evaluations that, despite good evidence, failed to produce change. Recently, a regional fire authority study in the north end produced recommendations that were never implemented because elected official couldn't decide on funding. South King County also was involved in a study earlier that failed to produce results. The consultant at that time was reported as saying that while the study questions were answered, the real issues were not.

Challenges also offer opportunities. KCEMS stakeholders have considerable investment in the EMS system and ensuring its ongoing excellence. Stakeholders also uphold the KCEMS mission of serving the public as "what we're all about". When managed well, these commitments can be mobilized in building continued system success.

BALANCING DATA AND POLITICS

As noted previously, stakeholders value a change process guided by data. The EMS Division has an established reputation for providing quality data to monitor system performance and anticipate upcoming needs. Having a well-respected data monitoring system in place provides the analytic foundation necessary for a well-orchestrated change process.

Data alone do not transform systems, however, people do. The politics associated with system change within KCEMS have been described as highly charged. "Elephants in the room", "political football" and "holy grails" capture some of the sentiments describing the current

political climate. Attending to the various stakeholder perspectives will be essential to successfully moving any change process forward. Respondents looked for assistance from people outside the EMS system, including elected officials and facilitators, to help moderate a multi-stakeholder process.

LEVY

The King County EMS levy was one of the most commonly raised topics during interviews. Such attention is understandable given the levy's role as the primary funding source for ALS agencies within the county. Every six years, voters in King County are asked to fund the Medic One system with the levy. However, prior to it even going to the people for a vote, the levy must be approved for the ballot first by each city council of city over 50,000 and second by the King County Council.

As the region has grown, new cities have gained populations large enough to participate in levy deliberations and their presence has shifted the balance of power in decision-making. For newcomers, this shift represents an opportunity to address needs of their communities. For longtime participants (e.g., Seattle, Bellevue, Redmond, Shoreline), the change poses a threat not only to the status quo, but potentially to the levy itself - a concern expressed by many regarding the recent deliberation process.

Key Findings

- KCEMS stakeholders are satisfied with the processes and trust the capabilities of the EMS Division staff to facilitate and manage the system as a regional, integrated, and tiered system.
- There are numerous benefits to agency consolidation in addition to the cost savings. Although difficult to quantify, they are felt to be important by most stakeholders.
- There was not unanimous consent as to the ideal number of medic units as long as it was greater than one.
- The ultimate decisions will need to be based on a multitude of factors and balanced with the needs of the entire system.

ANSWERING THE QUESTIONS

#1 IDEAL NUMBER OR RANGE OF ALS AGENCIES TO MEET THE REGION'S CURRENT AND FUTURE NEEDS

To determine the number of units needed to adequately serve the public need and demand for service requires a complex analysis of incident level of service, location of existing stations, geography and the ability to reach these priority incidents within a specific response time standard.

To consider the demand for and the capability of the ALS agencies to meet it, we considered the questions: 1) what are the performance requirements by which the need can be measured? And 2) are there enough agencies to meet those needs?

ALS agencies are meeting and in some cases exceeding their response time requirements throughout the county. By meeting the demands of the system, these ALS agencies are demonstrating an adequate number of ALS medic units and personnel are in place today.

Across the region, the ALS medic units are arriving on average in 8 minutes. When the incident processing and chute times are included this total response time averages 10 minutes and also meets the performance standards set by the EMS Division. From this we conclude the current system has enough ALS agencies and ALS medic units within each agency to meet the medical needs of the county.

We also found the current ALS agency configuration with multiple, decentralized agency operations makes responding to changes in the configuration a slow and expensive process. A configuration change is currently necessary as Vashon Island Fire & Rescue has asked to relinquish its ALS medic unit.

We also conducted interviews with an array of stakeholders including ALS providers, fire districts chiefs, medical directors, dispatch personnel, and elected officials. These individuals provided first-hand knowledge and insights about agency and unit configurations. Key informants were nearly unanimous in saying that "the fewer providers the better" for greater economy of scale, but also generally said the ideal number of units per agency is the same number that their agency already has.

What this does not consider is the economic impact. Considering the number of ALS medic units operated by an ALS agency, there are significant economic advantages to a single ALS agency. There are demonstrable economies of scale from a single ALS agency operating all of the ALS medic units in the county. In the future, should there continue to be more than one ALS agency operating ALS medic units, it is clear that more ALS medic units are more advantageous than fewer ALS medic units and that it is untenable to only operate a single ALS medic unit. It may be unrealistic for any ALS agency to operate fewer than three ALS medic units in order to

maintain the capacity to absorb and respond to logistical, staffing, equipment, and system demand issues.

From an efficiency and financial perspective, the optimal number of ALS providers countywide is one. However, that change is not likely to be politically feasible in the near future. Fewer agencies benefit from greater economies of scale. Standardization, reduction of duplication, and portability of paramedics from one agency or area to another can improve the operations, finances and performance of the system as a whole. Rather than reducing the total number of agencies, partners may want to consider an intermediate approach based on these principles that achieve those benefits and may be acceptable in the short term, such as a move towards consolidating agencies operating in Zone 1.

The answer: One ALS agency should operate the entire ALS system in King County, maintaining the current number of ALS medic units.

#2 A PROCESS FOR PROVIDING REGIONALIZED ALS AND MODELS FOR THE FUTURE

Stakeholders also provided advice during interviews about developing a regional process that can be used in the event changes in the ALS agency configuration are required in the future. Most informants trust the EMS Division to facilitate such a process. Stakeholders viewed both quantitative (e.g., call volume, response time) and qualitative (e.g., geography, a jurisdiction's motivation, knowledge and availability of required resources and oversight if interested in providing an ALS unit) data as valuable in informing the change process and both should continue to be used in the future.

Several stakeholders noted the usefulness of elected officials as part of proceedings to build consensus, elevate the discussion beyond EMS operations, and to move the process forward. A process similar to that employed for levy deliberations was offered as a possible structure.

Future plans are built on forecasts that are greatly impacted by industry, the economy, housing prices, and migration patterns. The EMS Division's levy planning cycle needs to consider scenarios far into the future that are not known today and may not be predictable. The same is true for designing the system, including ALS medic unit placement, paramedic supply management in the context of retirements, and changes in educational technologies that could enhance the substantial training provided in the county to paramedics, EMTs, dispatchers, and others.

PROCESS RECOMMENDATIONS

We recommend the EMS Division continue to periodically and proactively review the system's medic units and capacity. Evaluation and realignment should be conducted as situations arise, such as any time a provider relinquishes oversight or a need for system realignment is identified by the EMS Division (e.g., failure to meet key performance measures, agency withdrawal, significant changes in incident volumes by zone, or by other factors).

Elements of evaluations should include but not be limited to:

- A clear determination of community need
- A consensus process
- Clear selection criteria for stakeholder inclusion in the consensus process
- Impartial facilitation; and,
- Expert consultation to identify barriers/facilitators for success

A Central Region EMS and Trauma Council policy adopted in 2012 requires requests for geographic expansion or contraction of ALS or BLS service and requests for new ALS or BLS service within King County be subject to the approval of the King County Medical Program Director (MPD) and must be authorized by the Central Region EMS & Trauma Care Council. The MPD and the Central Region Council should be fully informed through access to the business case.

Prior to initiating any formal changes to support a new ALS agency in taking over an existing ALS medic unit or coverage area, we strongly suggest the leadership of that agency communicate with and attempt to develop a proposal jointly with the existing provider. This will avoid the perception that a hostile takeover is being made and will allow the affected organizations to collaborate on a viable proposal for the EMS Division to consider.

Proposals for an agency to take over ALS geography from another ALS agency, or to become a new provider must include a business case. The business case must include a detailed description of the meetings and attempted resolution of issues with existing provider(s) and why they were not successful. It must also contain the costs for each levy cycle that include the balancing factors such as how it will impact adjoining agencies negatively, or positively. The agency must discuss what their value added proposition is and what any existing ALS agency would relinquish. The proposals should focus on how the change or addition makes the system better or fixes an existing problem.

If an entity submits a request for consideration as a new ALS provider, then balancing the metrics of the need and the impact on the existing providers should be heavily considered. An approach that mimics the Washington State Department of Health Certificate of Need (CON) process identified in Chapter 246-310 WAC should be used. Specifically, the determination of need described in WAC 246-310-210 can be adapted for KCEMS needs with little difficulty and it already incorporates the concepts of social justice and equity. Specifically, the hospital bed need methodology should be consulted for appropriateness of definitions and process modeling. The specifics could be determined jointly through an existing or a new EMS advisory committee to the EMS Division.

If an agency wants to withdraw then a pre-determined process must be activated to determine if the operation of the medic unit goes up for bid or the bordering agency is forced to take it

over, with clearly defined parameters of the minimum number of units that that should be under an agency's purview.

Future plans are built on forecasts that are greatly impacted by industry, the economy, housing prices, and migration patterns. The EMS Division's levy planning cycle needs to consider scenarios far into the future that are not known today and may not be predictable. The same is true for redesigning the system, including medic unit placement, paramedic supply management in the context of retirements, and changes in educational technologies that could enhance the substantial training provided by the EMS Division to paramedics, EMTs, dispatchers, and others.

The ultimate decision in creating EMS system change will need to be made by the system stakeholders that have ownership in the outcomes: leaders and decision makers from throughout the region, the EMS Division, its many EMS partners, and the public. Many issues do not have easy or quick solutions and may require further analysis and consultation.

[Continued on the next page]

THE PARAMEDIC FOUNDATION

The Paramedic Foundation (TPF) is a Minnesota non-profit corporation and is tax-exempt under section 501(c)3 of the Internal Revenue Code as an IRS designated 170(b)(1)(A)(vi) public charity. It has no employees but is overseen by five volunteer directors. A Board of Advisors comprised of 14 professionals from across the country are also able to be contractually engaged as needed for specific projects. TPF headquarters are located in St Cloud, Minnesota, with an office and office staffing donated by a large non-profit Minnesota and Wisconsin based paramedic service.

TPF has formed the project team and assignments based on the requirements of this project. The project was led by Nikiah "Nick" Nudell, MS, NRP a paramedic and the Chief Data Officer for TPF.

TPF and its subsidiary (PrioriHealth Partners, LLC) have a long history of performing statewide EMS, critical access hospital and rural EMS evaluations and consultations for dozens of EMS systems across North and South America, Australia, and the Near-East. TPF also completed an ambulance rate rebasing analysis for the North Dakota Medicaid agency which resulted in the Governor including enhanced reimbursement in his budget the following year. TPF is the only EMS consulting firm that has ever completed a Medicaid ambulance rate rebasing study in any state.

TPF specializes in evaluating integrated medical communities and are unsurpassed in our experience working with communities that rely on levies for program support. We know that each program, community, and system require unique and thoughtful considerations that do not favor cookie-cutter solutions for obtaining superior medically oriented, patient centered, outcomes. In this manner, TPF's sub-contractors are all seasoned EMS professionals averaging over 30 years' experience in EMS.

Nick Nudell, MS, NRP grew up in King County and was first trained in CPR by Shoreline Fire Department in the 1980s. He recently completed a US Secretary of Transportation appointment to the National EMS Advisory Committee, where he served on the Affordable Care Act sub-committee. He has over 16 years' experience as a paramedic, data analyst, project manager and nationally-recognized quality improvement expert with over 20 years of experience using quantitative data. In his doctoral studies he is developing deep learning algorithms to support mobile public services (police, fire, and EMS) in quality improvement and service delivery. Mr. Nudell has worked professionally with hundreds of local and state EMS agencies and the National Highway Traffic Safety Administration to analyze the data generated from out-of-hospital clinical encounters and has served as a subject matter expert on data collection, analysis, reporting, and use for many private and public organizations. He is the Project Manager for the EMS Compass Initiative, a US Department of Transportation cooperative agreement that he was the chief architect of, to design an evidence-based process for developing national EMS performance measures.

Davis G. Patterson, PhD, is a sociologist with more than two decades' experience conducting quantitative and qualitative research in health and human services, with a focus on informing policy on improving patient access to healthcare. He is the Deputy Director of the WWAMI Rural Health Research Center, co-investigator in the Center for Health Workforce Studies, and a research assistant professor at the University of Washington, Seattle. Dr. Patterson has conducted numerous studies of prehospital EMS, including the rural component of the NHTSA-funded *EMS Workforce for the 21st Century: A National Assessment*, a CDC-funded study of EMS cardiac and stroke capabilities and practices, a HRSA-funded study of prehospital EMS personnel in rural areas, and a NHTSA-funded study, *Quality Review of Emergency Medical Service Performance Meosure Data*.

Fred Morrison is recently retired as the CEO of Eagle County Paramedic Services (ECPS) located in Edwards, Colorado. After moving to Eagle County in 1986, he worked in the fire service and rose through the ranks at ECPS to become CEO in 2006. Mr. Morrison has a BS in Business Administration from Colorado State University with concentrations in both finance and management; paramedic training from Swedish Medical Center (Denver); and a certificate in Ambulance Service Management from the American Ambulance Association. Appointed by the Colorado Governor to the State Emergency Medical and Trauma Advisory Council, he is currently serving as Chair.

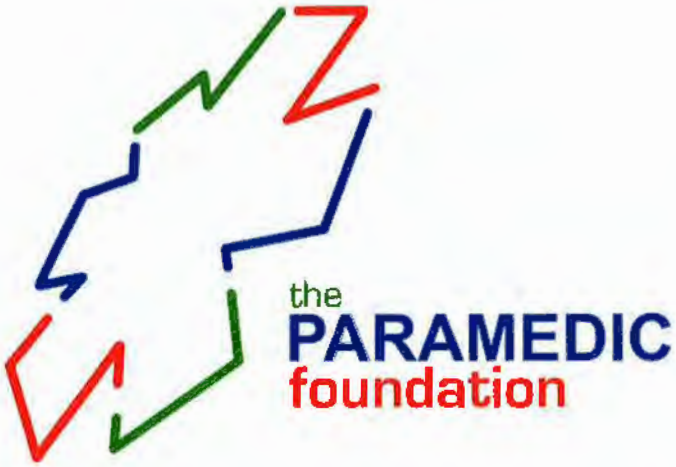
Paul Anderson, MS, NRP has invested his entire career in EMS, providing direct patient care and filling leadership roles. As a Chief Operating Officer he provided vision and direction for a paramedic service responding to 82,000 calls per year in multiple states. He worked extensively with governmental entities with a focus on developing and sustaining initiatives which strengthen paramedic services. He has been involved in a variety of projects with The Paramedic Foundation.

David Shrader has more than 40 years of experience in medical transportation services, including extensive executive management and various clinical, teaching, supervisory and management roles for private, public and voluntary ground and air agencies. He began his career as an EMT and subsequently filled roles as Paramedic Training Officer, Flight Medic, SWAT Medic (and law enforcement officer), Technical Rescue leader, Operations Manager, Director in a public service and then COO and CEO at various private companies. While working as the COO of a large medical transportation company, his responsibilities included operations in Seattle, Tacoma and Spokane. David also served as a firefighter and Deputy Chief of his local Fire Department.

Robert McNally, MS brings 20 years of public safety experience as a firefighter/paramedic, manager, and trainer. He has been recognized twice for his service to the community. He graduated magna cum laude with Bachelor's Degree in Public Administration and has a Master's degree in Urban and Regional Planning from the University of North Carolina at Charlotte. His focus was to apply Geographic Information Science (GIS) technology to public

safety and homeland security issues. Robert also worked as a research associate for a homeland security project grant funded by the Defense Intelligence Agency and the Special Warfare branch of the US Navy while attending the University. His thesis on critical infrastructure protection planning was recognized as exemplary research by a statewide geographic association.

Andrea Corage Baden, PhD, MPH is a medical sociologist specializing in qualitative methodologies, including individual and group interviews. Andrea has had a long career in the health field, first as a provider, including a Seattle EMT, and then as a researcher focusing on health disparities and equity. Currently Andrea works as a research consultant in the Center for Health Workforce Studies at the University of Washington.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Otoe County Nebraska

2013 EMS Assessment

PrioriHealth Partners, LLP.

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THESE VOLUNTEERS HAVE ALL COMPLETED CERTIFIED RED CROSS FIRST AID STANDARD COURSES

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Frequently Used Acronyms

The Emergency Medical Services field makes frequent use of acronyms that may not be familiar to many persons. To reduce confusion for the purposes of this report the following acronyms are defined as:

ALS	Advanced Life Support (i.e. EMT-I/AEMT or paramedic level service)
BLS	Basic Life Support (i.e. EMT/EMR level service)
CAH	Critical Access Hospital
CAAS	Commission on the Accreditation of Ambulance Services
CAMTS	Commission on the Accreditation of Medical Transport Systems
DHHS	Nebraska Department of Health and Human Services
DPAT	Nebraska Department of Property Assessment & Taxation
EMD	Emergency Medical Dispatch (pre-arrival instructions for 911 calls)
EMR	Emergency Medical [First] Responder
EMS	Emergency Medical Services
EMT	Emergency Medical Technician certified by DHHS
EMT-I/AEMT	EMT certified by DHHS at the Intermediate level (ILS)
EMTS	Emergency Medical Transport Service
eNARSIS	electronic NE Ambulance and Rescue Service Information System
NCEMSC	North Central EMS Cooperative
NRS	Nebraska Revised Statutes
OCC	Otoe County Commissioners
OCEMTS	Otoe County EMTS
Paramedic	Paramedic certified by DHHS (ALS)
PIER	Public Information, Education, and Relations
PSAP	Public Safety Answering Point
SNF	Skilled Nursing Facility

Introduction

On Thursday, May 18, 1967 Otoe County Rescue Service became operational as a non-profit organization that was "organized to meet the need for rescue services in Otoe County. It consisted of an eastern division headquartered at Nebraska City, and a western division, headquartered in Syracuse." Since that time emergency services in Otoe County have changed and advanced following the technological and educational evolution that has moved modern emergency medical services (EMS) from simply "Rescue" to providing advanced life support services. Otoe County today faces the common challenges of how to continue to provide prompt, experienced, compassionate and highly trained medical personnel on its responding ambulances.

Over the last four decades EMS in most rural communities has been heavily subsidized by volunteers who donate their time to undertake the required education and training to ensure preparedness for the role of responding to, treating and transporting sick and injured members of their communities. In the last decade, due to many socioeconomic, financial and demographic factors, volunteerism in many communities has declined, outmigration from rural communities has increased and the intensity of need among those rural residents who stay have increased.

In 2003 an assessment was provided by the State of Nebraska to Nebraska City in order to address their increasing call volume and demand for services. The recommendations included adding paid paramedic staff to their existing services and the result has received great praise from the residents of Nebraska City and the surrounding towns.

This year, PrioriHealth Partners, LLP was requested by the Otoe County Mutual Aid Association, in cooperation with the Otoe County Board and the State of Nebraska's Emergency Medical Services/Trauma Program, to conduct an assessment of the EMS system in Otoe County. Funding for this project was provided through the Federal Office of Rural Health and the Nebraska Office of Community and Rural Health. An important goal of the project is to make recommendations about how the EMTS services should be organized, where they belong within the local government structure, and to provide some funding options.

The goal of this project is to provide a comprehensive assessment of the countywide EMS system in Otoe County and to obtain knowledgeable and actionable recommendations for improvement. The project focused on the out-of-hospital portion of the EMS system, which provides response and medical transportation as well as the burden that interfacility (hospital, nursing home, assisted living, etc.) transportation places on these services.

Specifically, the project looked at the:

- design of the system;
- historical foundation and development of the system;
- system's organizational structures;

- leadership, administration and management;
- response reliability and operations;
- finance;
- staffing and personnel;
- clinical care (including medical oversight and direction); and
- quality assurance processes.

The citizens of Otoe County helped organize a three-day assessment from March 27-29, 2013, that included input from members of the community including but not limited to Burr, Douglas, Palmyra, Nebraska City, Syracuse, Talmage and Unadilla. This report represents an independent assessment and set of recommendations from content and systems experts from and contracted by PrioriHealth Partners, LLP.

PrioriHealth Partners conducted interviews of over 40 citizens of Otoe County, including elected local public officials, public safety agency representatives, healthcare providers, the media, local business owners, and numerous EMT staff. This provided a broad view of the impressions, realities and perceptions of a cross section of both the providers and users of EMS across the County. It revealed the issues, strengths and weaknesses of the present system, a historical perspective on the development of the system, and some thoughts toward the future needs and opportunities.

Data used for analysis in this report was collected through:

- site visits to Nebraska City and Syracuse;
- a review of key documents;
- a review of available operational and response data;
- three days of interviews with more than 40 community and service members from eight different communities.

The interviews included individuals from:

- EMS providers and organizational leadership;
- local governmental officials;
- residents;
- public safety, fire and emergency management officials;
- school officials;
- business and farm owners;
- medical and hospital staff;
- regional health and EMS officials; and,
- local users of EMS.

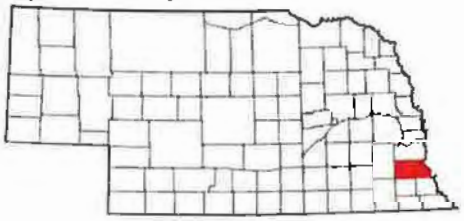
Availability of quantitative data was limited and many of the issues involved in the Otoe County EMS system are rooted in local practices, opinions, beliefs and traditions. This assessment sought to go beyond gross measurements and understand the subtleties of the local issues and challenges. To that end, the assessment and report draw generously

on qualitative data, including the observations, experiences, reflections and opinions of the key informants.

The PrioriHealth team evaluated the themes and trends in the data looking specifically for opportunities that presented themselves in current utilization patterns and thinking of how to design and allocate service distribution more effectively. Throughout the evaluation special attention was paid to the unique challenges and opportunities facing all of Otoe County. The final recommendations are intended to be an extension of the existing trends, data and thought that was borne out in the evaluation process. Therefore these recommendations are specific to the unique history, personalities and system characteristics of Otoe County.

About Otoe County

Otoe County is 619 square miles with a population of 15,740 and an average density of 11 people per square mile. Nebraska City is the county seat with just under half of the county population (7,289) and is also home of the National Arbor Day Foundation. The rich farm and pastureland of this area of the state make it home to ranching and other agricultural industry and the median household income is $45,295 with only 8.10% of the population living below the poverty line as compared to 10.8 % statewide. The population of the county has remained stable for the last 10 years and the percent of its population over 65 is 18.3% as compared to 13.5% statewide. The eastern border of the county is defined by the Missouri River and is adjacent to Fremont County, Iowa to the east. Just southeast is Atchison County Missouri. Southern bordering counties in Nebraska are Nemaha and Johnson, Lancaster County boarders the west and Cass County directly north.



There are six highways that cross the county with Nebraska Highway 2 bisecting the county from east to west connecting Nebraska City to Syracuse, the next most populated town (1,942). U.S. Highway 75 is on the eastern side of the county and connects Auburn in Nemaha County to the south, Nebraska City and Plattsmouth in Cass County to the north. The primary hospitals in the area are both 18-bed critical access hospitals, St. Mary's Community Hospital in Nebraska City and Community Memorial Hospital in Syracuse. The table below shows a lower number of hospital beds per population in

Otoe County compared to the rest of Nebraska but a higher number of long-term care beds (assisted living facilities) per population than the average across the state.

Table 1: Selected Health Care Facility Beds-to-Population Ratios for Otoe County and Nebraska

	Otoe County	Nebraska
Number of hospital beds per 1,000 population	2.3**	5.6*
Number of long term care bed per 1,000 elderly population (65+)	116.5*	80.6*

*Source: The Nebraska Health Information Project 2001 Databook, Nebraska Center for Rural Health Research, University of Nebraska Medical Center.
**Source: Hospital Roster (4/11/2003), Nebraska Department of Health and Human Services

According to an economic development profile performed by Nebraska Rural Health Works and the Nebraska Center for Rural Health Research in 2005, there were 1,488 jobs related to healthcare, 16.4% of the county's total employment, earning a total of $36.24 million accounting for 19.6% of the county's total income. Otoe County is designated by the state as a health professional shortage area in the specialties of family medicine, general surgery, internal medicine, pediatrics, OB/GYN, psychiatry, occupational therapy and physical therapy and it is federally designated as a mental health professional shortage area.

Otoe County EMS System

For the past 46 years, volunteers throughout Otoe County have provided dedicated and unselfish service to their neighbors. Today there are seven distinct emergency medical transport agencies that provide responses to medical emergencies within the county. There is one non-transporting entity that covers the coal-fired power plant. The village of Otoe, when available, has a quick response team that operates under the license of Syracuse Rescue. The dedicated men and women of the following services are all volunteer using EMTs: Burr EMTS; Douglas EMTS; Palmyra EMTS; Talmage EMTS; and, Unadilla EMTS. The remaining two services: Nebraska City Fire & Rescue Department has both part-time paid EMTs and three paid paramedics; Syracuse EMTS uses only volunteers including four volunteer paramedics. Average annual call volume between the EMTSs ranges from 7 to 329, except for Nebraska City, which had over 1,000 calls last year. Calls for help are received by the enhanced 9-1-1 (e911) call center managed by the Otoe County Sherriff's Office out of Nebraska City.

Traditionally known in Nebraska as "Rescue" or referred to through association to the ambulance itself, EMTS' are relatively new but rapidly expanding in scope, education, clinical and functional competencies and demand for services. This is true in both urban and rural areas; however, rural emergency medical care has evolved in a unique manner.

EMTS' vary widely across the county and generally show a progressive attitude toward modern emergency medical care. According to the Nebraska Rural Health Works study, Otoe County also has a higher professional-to-population ratio than the state for actively licensed EMS professionals: 8.25 (emergency medical technician (EMT) Basic, EMT Intermediate, paramedics and first responders) per 1,000 population as compared to 4.85 for the state.

Many of the out of hospital emergency care providers described being on the brink of closure with many calls for service not getting an immediate response, thereby causing great risk to lives on almost a daily occurrence somewhere in the County. The public of Otoe County was found to be generally supportive of the EMTSs and complimentary to those volunteers who make a solid effort to serve, but are largely unaware of the precarious situation that they are in.

Individual citizens across Otoe County have taken on a tremendous burden of volunteering as EMTs in support their local communities for over four decades. These volunteers have missed family events, coerced their employers to let them leave work at a moments notice, and shared grief with their friends and neighbors while providing high quality service to them. However, times have changed and as the population grows, the time commitment has become unmanageable and is anticipated to only get worse. At least half of the residents of Otoe County are currently at risk of losing their local EMTS as it is currently provided due to diminishing interest in volunteering and increasing career demands. While some citizens surveyed expressed a vague knowledge of some difficulty of services to provide adequate daytime coverage most were not aware of the severity of the issues. They were also generally unaware of the level of care provided, basic or advanced, that was being provided by the EMTS in their particular hometown.

The total number of EMTS report forms submitted to the state during the 2012 calendar year was 1,451. Of these all but eight reports were submitted to the electronic Nebraska Ambulance and Rescue Service Information System (e-NARSIS) with Palmyra submitting none of their eight reports (Palmyra submitted paper reports). Nebraska City Fire and EMTS responded to 1035 (71.3%) of the requests for service in the county and Syracuse EMTS had the next highest number of responses at 329 (22.7%).

Reports filed by service with e-NARSIS 2012

EMTS	Number	Percent of total
Burr	7	0.5%
Douglas	15	1.0%
Nebraska City	1035	71.3%
OPPD*	9	0.6%
Palmyra	8	0.6%
Syracuse	329	22.7%

Talmage	25	1.7%
Unadilla	23	1.6%
Total	***1451***	*100%*

*Omaha Public Power District operates a non-transporting response unit in Otoe County.

EMTSs must be available 24 hours per day, and for all seven days of the week. This is irrespective of running only one call a week or 3 calls in one day. The "readiness" factor must be there for all that provide "time-critical" emergency medical response, care, treatment and transport. Having only a very few calls can create "rust out" for those members on high alert for calls that do not come very often, and too many calls per person can create "burn out" for the volunteer that must still report to a salaried job and to family needs.

Like many rural areas in the United States, changes in socioeconomic conditions, demographics and healthcare are presenting significant challenges to the EMS system in Otoe County. A desire to ensure that Otoe County has a sustainable, high quality EMS system going forward motivated county leaders with assistance from the State Office of EMS to seek outside help in learning more about these challenges. Of particular concern was the challenge of ensuring Otoe County has enough personnel to meet local 9-1-1 emergency response needs and meet the interfacility medical transport needs that are a part of an increasing regionalization of healthcare and medical specialties.

Over the last ten years the Emergency Medical Services/Trauma Program of the Public Health Division of the Nebraska Department of Health and Human Services has sought to help local communities address EMS challenges. To that end, the program has assisted communities in obtaining funds to finance EMS assessment and development projects and obtain the help of experts who are experienced and knowledgeable in the current challenges faced by rural EMS systems.

Recommendations:

The state engaged PrioriHealth Partners, LLP for an assessment in Cass County that occurred around the same time as the Otoe County assessment. We found the EMS system issues in both counties to be remarkably similar. Each county has exactly one full time EMTS, the balance of the county served by volunteer EMTs, paramedics and nurses in just a couple of configurations. Both counties have a large part of the citizenry that commutes to either Omaha or Lincoln to work. County residents seek healthcare services in a similarly divided way. Those close to an existing in county clinic or hospital choose local care and those more distant to an in-county facility, where commuting is common, choose medical care in one of the urban areas.

Both counties are struggling to attract and maintain volunteer ambulance staff, to the point where the citizens cannot expect the closest EMTS to respond to their 9-1-1 call at

all, and in some cases enduring extended wait times because the back-up systems are ineffective.

We have conducted a number of assessments in Nebraska, and because the recommendations are always tied to local circumstances, they are different in almost every case. However, when it comes to Cass and Otoe counties, the local circumstances are largely similar. After considering a number of options that included doing nothing, or splitting Otoe County into three distinct geographic segments, among others, we believe the same fixes are appropriate to both counties.

Our recommendations are based on our experience in a number of states and throughout Nebraska, but it is up to the county to adopt them, adopt some of them, adopt a modified set, or do something completely different. We are submitting Otoe County recommendations almost identical to the recommendations we made to Cass County. We believe there would be a lot of synergy if Cass and Otoe counties formed a joint powers board and established one multi-county service. However, because the decisions of what to do will be decided locally, we are providing recommendations that are solely directed to Otoe County.

We believe the leadership at all levels in the county, from the first responders to the county commissioners, is at the right place, right now, to make a bold and effective change that will benefit Otoe County for decades to come. There are some pockets within the county where trust is not strong, but generally, based on our experience with other counties in Nebraska, the local change agents are in the right places and the county board has the right mix of personalities to lead a successful transition.

1. **All existing Otoe County EMTS' should become a consolidated unit of Otoe County government.** We considered a number of options related to a future structure for the various Otoe County EMTS', among them, changing nothing. There is increasing demand on volunteer services in other parts of the county we recommend that Otoe county introduce paid paramedics into the western end of the county, providing for advanced life support coverage in addition to the well established and trained volunteer services, and reflecting a movement back to the original structure established in 1967.

   Ultimately, we concluded that the system is currently so unstable that we are recommending that Otoe County consolidate the various EMTS' into one county department. We recognize that this recommendation is fraught with complexity because the various EMTS' are organized so differently and include both paid and volunteer services, those that are part of a fire and emergency medical transport department and those that are separate and free standing.

Otoe County should adopt a county EMTS ordinance in order to create a single organizational unit for the EMTS'. We recognize that we are proposing a fairly unfriendly method to reach the goal, but believe it is necessary for the future safety of the citizens of and visitors to Otoe County to move quickly and definitively. In this structure, it does not necessarily mean that any of the existing EMTS' would cease to function.

On the contrary, the services could continue to operate much the way they have in the past as long as volunteers are available, except the administrative functions and capital assets would be consolidated, and response would be coordinated. In addition, the county could impose one or more consistent methods of assuring that a EMTS will respond when summoned by the public – such as requiring the simultaneous dispatch of two agencies to calls in areas that historically get no response.

All out of hospital emergency care providers would be under one insurance plan so they could respond to a call anywhere in the county. For example, an out-of-hospital emergency care provider in Syracuse could assist with a call in Palmyra when visiting Palmyra and not be concerned about liability, worker compensation issues or patient protocols. This structure would also lead to decreasing fragmentation and differing options setting inconsistent policy, and would allow the providers to speak with one voice.

To accomplish this goal, the county should create the position of the "Chief Paramedic" for the combined Otoe County EMTS (OCEMTS) operation. This position would be responsible for working with each of the rural fire boards to assure the all requirements of NRS 35-508 are addressed, coordinate centralized administrative functions such as state licensure and training, provide for asset/supply management, and be a mentor for the local "assistant chiefs". The position should be filled using a structured job posting with relevant education and experience requirements, and salary commensurate with the job description and in line with other county administrative positions. Other duties that should be included in the job description are coordinating quality improvement with the medical director; facilitating recruitment and retention; budgeting; data management; public relations/marketing; coordination between OCEMT5 and the towns and county, hospitals and clinics; and, helping to cover daytime requests for service.

The rates established for ambulance service should be constructed to cover costs if possible, considering any policy to write-off deductible and co-pays. Often times we see public ambulance services set their rates by canvassing the surrounding providers. 5etting rates according to a survey is not defensible to the public and runs a liability risk from a federal point of rate

setting. Rates should be reflective of cost, and reduced or offset by a positive determination on a specific method of applying taxpayer funds, such as those received from the rural fire protection districts and any other district created by the county.

The county should construct a write-off policy for co-pay and deductibles for insured patients. The federal Medicare program has a policy that requires "reasonable" attempts to collect co-pay and deductible from patients with Medicare coverage. Reasonable attempts to recover deductible and co-pays from insured patients should also be made. The Office of the Inspector General of the federal Department of Health and Human Services has issued several advisory opinions that do allow public ambulance providers to substitute local taxes for Medicare deductible and copays, but there is no mandate to do so.

OCEMTS should have two rate schedules; one for residents of Otoe County and another for non-residents. As a matter of good public policy, Otoe County taxpayers should not subsidize non-residents, such as the transient population using the major highways. Creating two distinct rates, each applied to a specific class of patient (resident, non-resident) is allowable under federal regulations, as long as all members of the class are treated similarly (a resident with Blue Cross is charged the same rate as a resident with Medicare, a non-resident with Blue Cross is charged the same rate as a non-resident with Medicare). Their legal residence address being the sole distinction between them. Otoe County should not subsidize ambulance service for non-residents and any subsidy for residents should be based on a well-considered affirmative plan that can be adjusted year to year. The billing company used by the county should be able to help produce an accounting defensible cohesive plan based on the last several years of actual experience.

2. **Otoe County should appoint an independent board to oversee OCEMTS.** Otoe County should establish an OCEMTS EMS Board to create a distinct identity for OCEMTS and distinguish the function of corporate governance separate from operations. This community board of directors will manage the corporate activities, plan for long-term financial viability and create a buffer of appropriate oversight between staff and the County Board. The board should be comprised of no more than six volunteer citizens that includes the expertise of a physician; banker or accountant; executive director of a primarily volunteer non-profit organization; a citizen who is not now, nor has ever been, a EMTS member in the county; and two elected officials - one from the county and the other representing the rural fire protection districts. Otoe County should provide the resources of the county attorney to write a corporate charter, corporate constitution, and bylaws to reflect the structure of an external governing body.

3. **Otoe County should pursue an EMS Taxing District under Nebraska law 13-303 to fund additional the additional paramedics.** If it is possible to combine operations between Otoe and Cass counties, the joint powers board should pursue an EMS Taxing District.

   The county should consider the creation and use of an EMS taxing district as allowed under Nebraska law. Nebraska state statute 13-303 allows each county to provide emergency medical services as a governmental function and that "Any county board of counties and the governing bodies of cities and villages may pay their cost for such service out of available general funds or may levy a tax for the purpose of providing the service". Following additional requirements, Otoe County may establish an EMS Taxing District with a levy that, "shall be in addition to all other taxes and shall be in addition to restrictions on the levy of taxes provided by statute, except that when a fire district provides the service the county shall pay the cost for the county service by levying a tax on that property not in a fire district providing the service". This discussion is not intended to be construed as legal advice and the County should consult with legal advisors regarding the specific provisions of Nebraska law to generate adequate funding for an effective EMS System.

   The county should also consider using the Nebraska law regarding the establishment of a "hospital district", which doesn't necessarily have to include a hospital, but can be used for other health purposes, such as funding EMTS services.

4. **Integration with the hospitals should be increased.** While we met with representatives from the hospitals in Nebraska City and Syracuse and they are generally supportive of the ambulance services, integration should be increased to the benefit of both OCEMTS and the hospitals. Whenever possible joint training between paramedics and nurses should occur, there should be focused efforts on mixing eNARSIS data with hospital data, and ambulance staff should participate in "grand rounds" like activities including the review of care to patients admitted to the trauma registry, STEMI activations, and the like.

   "We want to feel like we're part of them, too." – Physician's Assistant

   It is not clear to us if the hospitals in Otoe County have a complete appreciation for how meeting their patient transfer needs stresses the local ambulance services. Unless the hospitals decide to take on the cost and risk of providing their own transport service, they need to realize that the ambulance services have additional readiness costs to serve them when they

needed. The ambulance service must have enough staff in reserve to call in for immediate service, or to place on immediate pager call, while an ambulance is completing an interfacility transport. The ability to respond to 9-1-1 requests cannot be superseded for interfacility transport.

The ambulance services in Nebraska City and Syracuse must respond to changes in population creating more 9-1-1 volume. They must also deal with the inability of some of their neighboring services to respond, especially during normal working hours. In order to serve the public, the ambulance service will need to grow staff before reimbursement can pay for it. It is possible that over time the hospitals may have to take responsibility for obtaining interfacility transport, perhaps by providing it themselves or by contracting for services from outside the county (which may cause delays in response).

As parallel health care providers, we believe it essential that there be a very strong bond between the Otoe County ambulance services and hospitals. The government is now starting to reward or punish hospitals for specific care outcomes and the outcome of the discharged patient is influenced, maybe statistically heavily, by the quality of the care provided at the scene of an emergency and in transit. EMS care as it relates to emergency department care is no longer about delivering a live patient to the emergency department, it is about how choosing appropriately between endotracheal intubation or CPAP affects the length of patient stay, hospital acquired infections, the risk and cost of a failed airway placement, whether the CAH can keep the patient or has to transfer them, the patient's satisfaction score and the amount and kind of rehabilitation necessary. This is the part we're not sure the hospitals have yet grasped.

It is essential that when the county or a local government is considering an issue involving the ambulance services that, as a heavy user, the hospitals are at the meeting and included in discussion. The hospitals should also include representatives of the ambulance services in appropriate meetings they conduct. While providing the minimal acceptable care might happen without this sort of integration, in order to positively affect patient care (and outcome scores), the hospitals and ambulance services need to act like, and be viewed like, they are joined at the hip.

5. **Otoe County, alone or with Cass County, should employ a single physician medical director for OCEMTS.**
   Otoe County should contract for or establish a county position of medical director. A centralized medical director function can assure a consistent quality of care throughout the county. The contract or position description should include performance provisions and provide compensation based on

time required to perform the duties. The minimum level compensation should include at least 8 hours of physician time per month, and at that rate would require approximately $6,923 [96 hours @ $72.11 per hour (based on $150,000 annual salary/2080 hours) + $1,400 for travel/meetings] per year. This is a small investment in a quality EMS system that can be effective and reduce the risk of lawsuits, improve pre-hospital care and integrate medical oversight.

A standardized medical director's job description should be developed and implemented in consideration of the Nebraska EMS Statutes, Rules and Regulations[1]. The EMS medical director should develop a medical supervision plan. The medical director (and any surrogates) should complete both the Nebraska specific and the national medical director's course within 24 months of appointment. The medical director should receive basic awareness level training on e-NARSIS and develop enough competence with the system to run various reports. The medical director's contract should include conducting a skills competence evaluation at least annually.

The roles and expectations of medical directors should be defined in writing, and they should be compensated for providing the service. The EMS/Trauma Program at DHHS has or can obtain template or model contracts. The EMS medical director's written agreement with the EMS agency(s) should include the following responsibilities:

a. Approving the planned deployment of personnel resources.
b. Approving the manner in which licensed EMS personnel administer first aid or emergency medical attention without expectation of remuneration.
c. Documenting the review of the qualification, proficiencies, and all other EMS agency, hospital, and medical clinic affiliations of EMS personnel prior to credentialing the individual.
d. Documenting that the capabilities of licensed EMS personnel are maintained on an ongoing basis through education, skill proficiencies, and competency assessment.
e. Developing and implementing a program for continuous assessment and improvement of services by licensed EMS personnel under their supervision.
f. Reviewing and updating protocols, policies, and procedures at least every two (2) years.
g. Developing, implementing and overseeing a Medical Supervision Plan
h. Collaborating with other EMS medical directors, hospital supervising physicians, and medical clinic supervising physicians locally, and in other counties, to ensure EMS agencies and licensed EMS personnel have

[1] See http://dhhs.ne.gov/publichealth/Pages/crl_rcs_ems_ems.aspx#RulesandRegulations/Statutes.

protocols, standards of care and procedures that are consistent and compatible with one another.

i. Designating other physicians or Qualified Physician Surrogate[2] to supervise licensed EMS personnel in the temporary absence of the EMS medical director.

The EMS medical director should have a written agreement with each EMTS (implemented through county ordinance, if necessary) that authorizes the medical director to:

a. Provide explicit approval for licensed EMS personnel under his supervision to provide medical care. Licensed EMS personnel may not provide medical care without the explicit approval of an EMS medical director.
b. Credential licensed EMS personnel under his supervision with a scope of practice. This scope of practice may be limited relative to the scope of practice authorized by the State but may not exceed the scope of practice established by the State.
c. Restrict the scope of practice of licensed EMS personnel under his/her supervision and withdraw approval of licensed EMS personnel to provide services when such personnel fail to meet or maintain proficiencies established by the EMS medical director or the Nebraska DHHS.

The medical supervision of licensed EMS personnel should be provided in accordance with a documented Medical Supervision Plan (MSP) that includes direct, indirect, on-scene, educational, and proficiency standards components. The EMS medical director is responsible for developing, implementing, and overseeing the MSP. However, non-physicians can assist the EMS medical director with the indirect medical supervision of licensed EMS personnel.

If it is not politically or financially possible to have a single agency serve Otoe County or a joint powers entity serving both Otoe and Cass Counties, we recommend that Otoe County do the following:

1. **EMTS in Otoe County should go "Back To The Future" and once again have western and eastern coordination of EMTS', with paramedics responding to all calls.** All of the EMTS' in the western third of Otoe County, and most of

[2] See NRS Title 172 Chapter 12 section 12-002 definitions. "Qualified Physician Surrogate means a qualified, trained medical person designated by a qualified physician in writing to act as an agent for the physician in directing the actions or renewal of licensure of out-of-hospital emergency care providers."

the rest in the county, are distressed because of their inability to staff the service. These will have to be paid positions in order to ensure acceptable level of stability.

There are three natural healthcare service areas that have evolved in the county. The eastern third has a full-time paid paramedic service provided by NCFR and the residents tend to obtain healthcare in Nebraska City. The middle third has an availability based volunteer paramedic service from Syracuse EMTS and the residents tend to obtain healthcare in Syracuse. The western third has all volunteer EMT service and the residents tend to obtain healthcare in Lincoln with paramedic coverage provided by Lincoln Fire and Rescue or from Cass County.

Otoe County should fund Syracuse EMTS to employ their existing paramedics and to add paramedics to serve the western part of the county, in addition to the greater Syracuse area. In the beginning, or whenever appropriate, the paramedics assigned to the western part of the county should be a single paramedic responding in a first response vehicle, so that the remaining volunteer EMTs or drivers in the existing EMTS' can continue to be used until such time that the service stops operating.

If this option is selected, it should include automatic response by Nebraska City paramedics to support calls toward the town of Union and the rest of the northeast corner of Otoe County.

2. **Otoe County should pursue an EMS Taxing District under Nebraska law 13-303 to fund additional the additional paramedics to serve the western part of the county and for payment for medical direction services.** In addition to funding paramedics in the western sector, Otoe County should prepare for the eventual need to provide financial support to Syracuse and Nebraska City for new or additional paramedics as their circumstances change.

   The county should consider the creation and use of an EMS taxing district as allowed under Nebraska law. Nebraska state statute 13-303 allows each county to provide emergency medical services as a governmental function and that, "any county board of counties and the governing bodies of cities and villages may pay their cost for such service out of available general funds or may levy a tax for the purpose of providing the service." Following additional requirements, Otoe County may establish an EMS Taxing District with a levy that, "shall be in addition to all other taxes and shall be in addition to restrictions on the levy of taxes provided by statute, except that when a fire district provides the service the county shall pay the cost for the county service by levying a tax on that property not in a fire district providing the service." This discussion is not intended to be construed as legal advice

and the County should consult with legal advisors regarding the specific provisions of Nebraska law to generate adequate funding for an effective EMS System.

The county should also consider using the Nebraska law regarding the establishment of a "hospital district", which doesn't necessarily have to include a hospital, but can be used for other health purposes, such as funding EMTS services.

3. **Otoe County should contract for or establish a county position of medical director.** A centralized medical director function can assure a consistent quality of care throughout the county. The contract or position description should include performance provisions and provide compensation based on time required to perform the duties. The minimum level compensation should include at least 8 hours of physician time per month, and at that rate would require approximately $6,923 [96 hours @ $72.11 per hour (based on $150,000 annual salary/2080 hours) + $1,400 for travel/meetings] per year. This is a small investment in a quality EMS system that can be effective and reduce the risk of lawsuits, improve pre-hospital care and integrate medical oversight.

   A standardized medical director's job description should be developed and implemented. The EMS medical director should develop a medical supervision plan. The medical director (and any surrogates) should complete both the Nebraska specific and the national medical director's course within 24 months of appointment. The medical director should receive basic awareness level training on e-NARSIS and develop enough competency with the system to run various reports. The medical director's contract should include conducting a skills competence evaluation at least annually.

   The roles and expectations of medical directors should be defined in writing, and they should be compensated for providing the service. The EMS/Trauma Program at DHHS has or can obtain template or model contracts. The EMS medical director's written agreement with the EMS agency(s) should include the following responsibilities:

   1. Approving the planned deployment of personnel resources.
   2. Approving the manner in which licensed EMS personnel administer first aid or emergency medical attention without expectation of remuneration.
   3. Documenting the review of the qualification, proficiencies, and all other EMS agency, hospital, and medical clinic affiliations of EMS personnel prior to credentialing the individual.

4. Documenting that the capabilities of licensed EMS personnel are maintained on an ongoing basis through education, skill proficiencies, and competency assessment.
5. Developing and implementing a program for continuous assessment and improvement of services by licensed EMS personnel under their supervision.
6. Reviewing and updating protocols, policies, and procedures at least every two (2) years.
7. Developing, implementing and overseeing a Medical Supervision Plan
8. Collaborating with other EMS medical directors, hospital supervising physicians, and medical clinic supervising physicians to ensure EMS agencies and licensed EMS personnel have protocols, standards of care and procedures that are consistent and compatible with one another.
9. Designating other physicians to supervise licensed EMS personnel in the temporary absence of the EMS medical director.

The EMS medical director should have a written agreement with each EMTS (implemented through county ordinance, if necessary) that authorizes the medical director to:

i. Provide explicit approval for licensed EMS personnel under his supervision to provide medical care. Licensed EMS personnel may not provide medical care without the explicit approval of an EMS medical director.
ii. Credential licensed EMS personnel under his supervision with a scope of practice. This scope of practice may be limited relative to the scope of practice authorized by the State but may not exceed the scope of practice established by the State.
iii. Restrict the scope of practice of licensed EMS personnel under his supervision and withdraw approval of licensed EMS personnel to provide services when such personnel fail to meet or maintain proficiencies established by the EMS medical director or the Nebraska DHHS.

The medical supervision of licensed EMS personnel should be provided in accordance with a documented Medical Supervision Plan (MSP) that includes direct, indirect, on-scene, educational, and proficiency standards components. The EMS medical director is responsible for developing, implementing, and overseeing the MSP. However, non-physicians can assist the EMS medical director with the indirect medical supervision of licensed EMS personnel.

4. **EMTS rules, or by imposition of a city requirement where the city operates the EMTS, should require completion of leadership training for the candidates of the office of "chief".** The purpose of the DHHS EMS/Trauma Program's EMS Leadership course is to jumpstart role shifts in leadership that develops quality leadership and contributes to the recruitment and retention

of local EMS members. Students develop leadership skills by participating in facilitated class discussions, associated class activities and homework assignments.

About PrioriHealth Partners, LLP

PrioriHealth Partners, LLP is an established national emergency medical service consulting firm that specializes in rural EMS system assessment and design so is uniquely qualified to provide this assessment and resulting recommendations. Each partner and consultant has a broad background in rural EMS issues as providers, administrators, regulators, and consultants. PrioriHealth has significant experience in assessing and developing EMS systems with a particular focus on emergency medical service policy and finance in rural states and geographies as well as developing EMS leaders and CQI processes in small to medium sized ambulance services. Past projects completed by PrioriHealth partners and consultants include but are not limited to:

- Performed the North Dakota statewide EMS payment rate-rebasing project.
- Conducted numerous EMS organizational assessments at the regional, county, and city level.
- Conducted statewide rural EMS assessments including financial implications resulting in recommendations for state action.
- Developed and assisted in the implementation of rural EMS system designs for counties and regions.
- Developed or contributed to the development of state EMS systems, trauma systems, Quality Management Plans, public health plans, and the reassessment of these plans.
- Developed the budget model spreadsheet for the Rural EMS & Trauma Technical Assistance Center. This tool passed the clearance process and was adopted by the US Department of Health and Human Services. We have instructed ambulance services in using the tool in the states of North Dakota, Montana, Minnesota, Indiana, Michigan, Louisiana, Nebraska and Colorado.
- Performed cost-based charge analysis for ambulance services in Minnesota and Montana.
- Led the strategic planning of contemporary systems for providing health care to the citizens of rural areas throughout North America and Australia including tribal nations.

The remainder of this report provides general information that may be useful for the Otoe County board and will be useful for the OCEMTS governing board. It contains largely the philosophies we embraced when making the specific recommendations in the report.

Objectives for the Otoe County EMS System

The reader should consider the balance of this report in context with the following five "hallmarks for ensuring high-performance emergency ambulance service" (American Ambulance Association. Community Guide to Ensure High-Performance Emergency Ambulance Service. McLean, VA, 2004). These are:

Hallmark 1- Hold your emergency ambulance service accountable
Hallmark 2- Establish an independent oversight mechanism
Hallmark 3- Account for all service costs
Hallmark 4- Require system features that ensure economic efficiency
Hallmark 5- Ensure long-term high performance

Nebraska Regulation

In Nebraska, as in most states, EMTS is not a service whose provision by local government is mandated by law. The amount of EMTS and the level of care provided is a local issue that is often a product of historical precedent and local initiative.

The Nebraska State Legislature has enacted a number of statutes designed to protect the health and safety of persons in Nebraska. Monitoring the performance of Nebraska EMS agencies and personnel is the responsibility of the DHHS Division of Public Health, Licensing and Regulatory Affairs. Ambulance services are also licensed and regulated by DHHS. Ambulance services are inspected randomly and as often as annually by DHHS for compliance with minimum equipment standards. DHHS also oversees EMS education and licenses EMS providers including: Emergency Medical Responders, EMTs, EMT-Is, AEMTs, and paramedics to provide specific scopes of practice. The licenses of personnel are renewed by DHHS every two years upon each provider completing specific continuing education requirements.

Another service provided by DHHS is a data collection system called the electronic Nebraska Ambulance and Rescue Service Information System (e-NARSIS). This data collection system is used by EMS agencies statewide.

DHHS also provides a medical direction course for physicians serving local emergency medical services the opportunity to become better aware of their responsibilities as a Physician Medical Director for a local service. The training provides medical directors with the opportunity to share experiences as a PMD, to receive the PMD manual for reference and to learn about their role as a PMD.

National History of EMS

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 pre-hospital emergency medical services, especially in rural areas where trauma injuries and deaths were (and remain) most prevalent.[3] 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."[4] 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.

Modern emergency medical services (EMS) has kept pace with technological and knowledge advancements in medicine. The care provided by paramedics is fast becoming the standard of care throughout the country. These highly trained men and women are able to provide advanced life support medical interventions and stabilization that is especially needed in the rural communities where response and transport times are extended due to the geographic distances. Of equal importance in rural response mechanism are those many EMT trained personnel who volunteer their time to help in these emergency medical situations. Every community deserves an organized, efficient, sustainable and reliable system supported by EMS, fire departments, EMTS' and law enforcement to ensure appropriate health, safety and security for its residents and visitors.

Added to the pressure on rural communities, there has also been an increase in regionalization of specialized, hospital and health system-based medical services such as cardiac, trauma, stroke and burn care to name a few. Local rural hospitals typically are providing basic services and more complex and specialized interventions are being done at the urban centers. This increases demand on EMTS personnel to transfer long distances for these specialized services. In some areas, rural health clinics and hospitals

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[3] 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.

[4] "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.

have closed, creating more reliance on local EMTS as a healthcare safety net in both emergent and non-emergent medical situations.

Rural EMS Challenges in Nebraska

The Rural and Frontier EMS Agenda for the Future expresses the following vision for the future of EMS systems such as that found in Otoe County:

"The rural/frontier EMS system of the future will assure a rapid response with basic and advanced levels of care as appropriate to each emergency, and will serve as a formal community resource for prevention, evaluation, care, triage, referral and advice. Its foundation will be a dynamic mix of volunteer and paid professionals at all levels, for and determined by its community."

Fulfilling this vision requires the application of significant federal, state, and local resources as well as committed leadership at all levels to address such issues as:

- Ability to provide timely public access and deployment of resources to overcome distance and time barriers
- Adequacy of communications and other infrastructure
- Adequacy of data collection to support evaluation and research
- Adequate reimbursement and subsidization
- Appropriate methods of care and transportation in remote, low-volume settings
- Assurance of on-line and off-line medical oversight
- Effective quality improvement
- Staff recruitment and retention
- The role of the volunteer

Community Expectations

The presence of an EMTS in town does not mean that the service is well integrated into the community or the healthcare system. Members of the community at large, and even its leaders, often do not understand the type and level of care that EMTS provides. While citizens may expect an advanced level of care in their community because of film and television images of EMTS, these expectations are rarely discussed. Tourism and the migration of residents from urban/suburban locales to rural/frontier areas may also import expectations of urban levels and type of EMS response.

The lack of an accurate understanding of what local EMTS is providing, what other options exist, and what the community's cost would be for such options is a barrier to community integration of EMS. Many rural/frontier services have come to the brink of extinction, or have closed their doors, before a community discussion has taken place. In other communities, where such discussions have been held, communities have diverted scarce local tax dollars to preserve a more rapid, local advanced level of care.

Regardless of outcome, the community's ability to understand, know options for, discuss, and choose the type and level of care it wishes to have and fund, a process of "informed self-determination", is important to the community integration of EMS.

Consumers may subconsciously expect advanced levels of EMS care, but have little idea of the level of care actually provided in their community. If there is a discrepancy between the two, they do not realize it nor seek an opportunity to participate in determining the level of care to be afforded. The concept of "informed self-determination" (citizens being informed of, and selecting among alternative levels and type of EMS response and their attached price tags) when implemented in several frontier towns in Maine resulted in selection of paid, paramedic staffing despite significant cost increases.

Where a single rural/frontier service might be unable to sustain basic or advanced levels of care, or assure certain business, operations or clinical functions, multiple services have demonstrated the ability to regionalize or otherwise cooperate to do so. Regionalizing has enabled them to share services such as alternative forms of advanced life support intercept, medical oversight, billing, quality improvement, and to seek financial support on a greater geographic basis such as a county or regional tax district. Rural and frontier settings such as Otoe County have limited and shrinking local health care resources (e.g., physician practices, hospitals); and these are separated from other sources of care by geographic and organizational barriers.

The Role of the Volunteer

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 health care resources."[5] 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."[6] 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, "providing adequate access to care presents a daunting challenge given the distances required to provide care and the limited assets available."[7] 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.[8]

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

[6] EMS in Critical Condition: Meeting the Challenge. International City/County Management Association IQ Report. Volume 37/ Number 5, 2005.

[7] Future of Emergency Care: Emergency Medical Services at the Crossroads. Institutes of Medicine of the National Academies. 2006. p. 48.

[8] EMS Workforce for the 21st Century: A National Assessment. National Highway Traffic Safety Administration: Office of Emergency Medical Services. 2008. p. 59.

EMTS agencies that are dependent on volunteers for staffing and fund-raising for revenue have found advancement difficult. It is a challenge to assure the timely response of a basic life support ambulance in these settings. In the current era of preparing public safety for effective response to manage natural disasters and other events, the reality of rural/frontier EMS is that the infrastructure upon which to build such a response is itself in jeopardy.

Volunteer and other rural/frontier EMTS providers often lack preparation with which to best serve certain community groups and members such as children, the elderly, minority groups, migrant/immigrant workers, farm/ranch families, and persons with disabilities. Volunteer EMTS agencies provide a vital community service and an opportunity for social membership, community service fulfillment and recognition, self-improvement and diversion for their members.

The need for primary care involving cycles of episodic hospitalization increase as rural and frontier populations age. As a community's local health resources disappear, the more that community calls upon its EMTS providers not only for traditional care and transportation to distant resources, but a range of informal care, evaluation, and advice as well. This expectation is sometimes managed in concert with the informal arrangement with local primary care providers and sometimes not, may extend beyond the generally basic life support scope of practice of local EMTS.

The Rural ALS Paradox

The further a patient is from an emergency medicine facility, the more the patient benefits from the higher levels of local emergency medical intervention. As hospitals close and outpatient services are less available to offer sophisticated resuscitation care, dependence for such interventions falls upon local EMTS.

Paradoxically, advanced life support (ALS) levels of EMTS care are less likely to be available in the rural/frontier setting. This "rural ALS paradox" or "paramedicine paradox" results because comprehensive ALS services are difficult to establish and maintain in systems that experience insufficient call volume to meet high fixed costs and to enable advanced providers to be paid and retain their skills.

Providers in distant hospitals and referral centers often have limited connection with rural/frontier EMTS providers who bring patients to them. Rural and frontier EMTS providers are often volunteers who provide emergency medical care and transportation and then return to home, work, or another non-EMTS setting. They know their patient's condition, environment and needs at the time of the emergency call, but this information and other opportunities for clinical feedback or consultation by distant hospital staff may be lost as time and distance from the call increase.

Air Medical Services

Air Medical services are vital in rural areas not only to whisk critically ill or injured patients from the scene or local hospital to specialty centers, but as the sole source of advanced life support in many areas. Many air medical services report back to local EMTS on their patients and fill a feedback void that specialty centers may leave. Other air medical services represent an additional "step-removed" in patient information and feedback flow between local EMTS providers and distant medical centers. This may become more pronounced as improved Medicare Air Medical service reimbursement brings more providers (sometimes in an uncoordinated/ unregulated fashion) into the EMTS continuum. In addition, there may be increased requests to use air medical services for rural/frontier patient access to time-dependent specialty interventions (e.g., emergency cardiac catheterization and angioplasty for chest pain patients). Otoe County is well served with one air medical provider in Lincoln, two aircraft in Omaha and one in St Joseph, MO.

Leadership for Survival

Service chiefs of volunteer agencies find themselves in their positions for a number of good reasons, but not often because of their leadership and management experience or training. As a result, they and their services vary greatly in their ability to successfully integrate paid compensation into traditionally volunteer work, paid staff into an organization with volunteers, and ALS personnel into a largely BLS environment. The more successful an agency is at accomplishing these types of integration, the more likely it will survive.

Otoe County Challenges

Rural and frontier EMTS providers are acutely aware of the challenges that they face. The Otoe County Commissioners are also keenly aware of many of these challenges. This report is intended to arm the providers and commissioners with information about future directions in which their services and systems might best head to assure their survival, advancement and growth. It is also, more importantly, targeted to locally underscore the fragility of the entire Otoe County EMTS system; to identify the barriers to success and to propose solutions and highlight successful practices that they must consider in their spheres of influence.

Financial Challenges for Rural EMTS in Nebraska

Under Medicare, reimbursement for EMTS is tied to the transportation regardless of the need to provide emergency medical care. Managed Care Organizations (MCOs) have in some cases sought to limit access to EMTS for their beneficiaries by narrowing the definition of "medical emergency" and the need for "emergency care" to an after-the-fact medical review determination, rather than a patient-centered decision as would be made by a "prudent layperson" at the time of the event. Some MCOs also have instructed patients to call their primary care physicians prior to dialing 911, which may unnecessarily delay needed emergency care.

Many services have experimented with subscription programs. Some have been abandoned when state insurance rules interpreted that they may constitute illegal insurance programs, when they require the billing of non-subscribing patients as well, or when Medicare requirements for documentation of fees became too complex for smaller services. The bill balance after all insurance has paid an air ambulance company can amount to thousands of dollars. As a result, optional membership programs have been developed by many of the national providers in areas where they would be the normal requested service. The company providing the aircraft in both Omaha and St Joseph have such a program called OmniAdvantage.

It is normal for a service in an isolated community to have a 30 percent to 50 percent "no transport" rate in a state that runs a 10 percent to 20 percent rate overall. It is also normal for members of such a service to provide episodes of informal evaluation, advice, and care that are never reflected in an EMTS patient/run record. These anomalies preclude billing where only patient transports are considered by the payer as a reimbursable service.

Volunteers and Billing

Many volunteer services have considered patient billing as contrary to the community-service nature of their operation. Others simply have had no expertise or infrastructure for collecting fees or maintaining the necessary business functions. Others have charged nominal fees for their services that have no relationship to cost. The absence of any billing and nominal charges among many providers in a geographic region caused Medicare and other reimbursement mechanisms, which are based on an average of the billed charges for all providers in that region ("prevailing charges"), to be artificially low. Where patient billing has been pursued in rural and frontier areas, low reimbursement rates and the relatively low volume of calls have historically generated inadequate revenue to underwrite full-time preparedness.

Currently, EMTS service providers that do bill have at least two major choices for doing so.

1. They may use a billing service, which could charge $15 to over $30 per invoice processed; this is a $5,000 to $10,000 annual cost for a small service with no guarantee of return. Other billing services charge based on a percentage of amounts billed or actually received. Using a billing service still requires a service chief or other service representative to review patient/run records and other materials submitted to the billing service.
2. Using internal staff or county employees whose primary job is unrelated to EMTS to perform billing functions.

A number of computer assisted billing services are available, with a range of accessibility considerations for rural/frontier providers. Some software packages are installed on a local computer while others are web-based applications. Computer assisted billing services may cost thousands or tens of thousands to install and implement and

hundreds or thousands in annual maintenance fees, plus the cost of a computer with adequate processing power. At least one web-based service is now available which significantly reduces the initial cost to under a few thousand dollars and half that in subsequent years. It uses a Medicare form quality review function to reduce the frequency of denials.

Medicare as a Rural Payer

Recent efforts by the federal government to overhaul the Medicare reimbursement system for ambulances have removed some of these historical under-reimbursement influences, and have attempted to account for the greater per-call expense of providing care in rural and frontier areas. But this work stopped short of placing a cost figure on the provision of rural/frontier EMTS care and reimbursing at that level.

Medicare now provides enhanced reimbursement for air medical interfacility transports that originate in rural areas when the sending provider simply certifies medical necessity for the flight. Yet similar interfacility transports by ground, while deemed "appropriate" from a Medicare safety standpoint, are still subjected to retrospective medical necessity determinations for reimbursement purposes, and are inadequately reimbursed. Furthermore, the transfer of rural/frontier patients from specialty treatment centers back to local hospitals where family access is improved is not covered by present Medicare reimbursement practices.

While Medicare has recently provided increased rates of mileage reimbursement for rural ambulance services, these are tied to definitions of "rural" that do not include some rural areas and, overall, do not cover the fixed and other costs of maintaining the EMTS safety net infrastructure in rural/frontier areas. The issue of responsibility for maintaining this infrastructure has not been resolved.

Managing Personnel Costs

Historically, rural and frontier services have kept their costs low by employing volunteers to provide a fairly austere set of basic life support services. Equipment and training support comes from community fund-raising and/or modest requests for local governmental subsidy. Volunteer EMTS providers have been increasingly challenged in their staff recruitment and retention efforts. As public and professional expectations of EMTS increase, it will become more complex and difficult to support a volunteer EMTS.

There is a natural progression that EMTS agencies go through as service requests increase:

- Services start paying stipends.
- Services employ a part- or full-time manager
- Services employ part- or full-time staff at those times when it is most difficult to attract volunteers (typically Monday – Friday during normal business hours)
- Services provide and pay for EMT-I and Paramedic levels of care when they are not available on a volunteer basis.

This, in turn, places greater pressure on volunteer service leaders to employ more sophisticated business practices such as patient billing; reimbursement; staff employment (subject to complex requirements of the Fair Labor Standards Act) especially where volunteer staff are mixed with paid staff, and to request government subsidies.

Critical Access Hospitals

The impact of closure of rural/frontier hospitals has been addressed by Congress in part by the establishment of Critical Access Hospitals. Other than reimbursement provisions for ambulance services attached to those hospitals, there has been no federal, and limited state, focus on maintaining a safety net of "critical access ambulance services". Pressure on Congress to address the rural problem in EMTS reimbursement and financing is countered by concerns over reducing reimbursement for urban services in a federal health policy that resists increasing the overall EMTS patient care reimbursement pot. Surveys of state EMS directors in 2000 and 2004 placed financing among the top four most important issues for rural EMTS.

Resource Management

Agency coordination and current knowledge of system resources is essential to maintain a coordinated response and appropriate resource utilization within an effective EMTS system. A data collection system is in place that can properly monitor the utilization of agency resources; data is available for timely determination of the quantity, quality, and utilization of resources. The agency is adequately staffed to carry out coordination of responses and activities. Agency management requests technical assistance both proactively and as needed. The agency receives coordinated and ongoing support at the local, regional and state levels, obtaining both technical expertise and financial support. There is a formal program to recruit and retain EMTS personnel, including volunteers. A system of critical incident stress management is used.

Education and Training

EMTS personnel can perform their mission only if adequately trained and available in sufficient numbers within their agency. The agency has a mechanism to assess current manpower needs and establish a comprehensive plan for stable and consistent EMTS training programs with effective local, regional, and state support. The competence of all out-of-hospital emergency medical care personnel is assured on an ongoing basis.

Agency management provides quality leadership through participation in management courses. The agency management, in conjunction with state and institutional support, assures that EMTS personnel have access to specialty courses covering topics such as trauma life support, cardiac care and pediatric patients. Personnel maintain a working knowledge of the Critical Access Hospital (CAH) designation and its potential impact on the EMTS system.

Transportation
Safe, reliable ambulance transportation is a critical component of an effective EMTS system. The transportation component of the local EMTS plan includes provisions for uniform coverage, including a protocol for air medical dispatch, rendezvous and a mutual aid plan. This plan is based on an ongoing, formal assessment of transportation resources, including the placement and deployment of all out-of-hospital emergency medical care transport services. There is an identified ambulance placement or response unit strategy, based on patient need and optimal response times. The agency has a mechanism for modification, upgrades or improvements based on changes in the environment (i.e. population density). The agency maintains emergency vehicles in a constant state of readiness through routine maintenance, inspections and inventory control. The agency assures emergency vehicle operator competency.

Funding and Policy
To provide a quality, effective system of emergency medical care, each EMTS agency must have in place a consistent, established funding source to adequately support the activities of the agency. This agency has the authority to plan and implement an effective EMS system, abiding by State and local rules and regulations for each recognized component of the EMS system (certification, licensure, standardized treatment, transport, communication and evaluation, services and establishment of medical control). There is a consistent, established funding source to adequately support the activities of the agency and other essential resources which are necessary to carry out the duties as determined by local authority.

The agency operates under a clear management structure with standard operating procedures. The public has a well-defined, easily accessible mechanism for identifying and commenting on policy governing the EMTS system. The role of any local /regional EMTS agencies or councils who are charged with implementing EMTS policies is clearly established, as well as the relationship between agencies. Supportive management elements for planning and developing an effective EMTS system include the presence of a formal EMTS medical director, and an EMTS Advisory Committee or equivalent for review of EMTS medical care issues. The EMTS Advisory Committee has a clear mission, specified authority and representative membership from all disciplines involved in the implementation of EMTS systems.

Facilities
It is imperative that the seriously ill or injured patient is delivered in a timely manner to the closest appropriate facility. The agency participates in a formal system of identifying the functional capabilities of all health care facilities that receive patients from the out-of-hospital emergency medical care setting. This determination is free of political considerations, updated on a regular basis and includes stabilization and definitive care. The agency makes determinations about patient destination in accordance with clinical protocols that address patient conditions of all types, including patients requiring

specialty care (such as severe trauma, burns, spinal cord injuries and pediatric emergencies), and when necessary, on-line medical direction.

All facilities to which the agency might transport proactively notify transport organizations or their communications centers when diversion is necessary. Hospital staff routinely participates in telecommunications with prehospital care providers and other hospitals when requested to facilitate patient care information and destination determinations. The health care facility assists with logistical support of the EMS system and provides feedback to the agency medical director regarding the patient care provided by the transporting agency. EMTS providers maintain an understanding of the capabilities of area healthcare facilities.

Communication

A reliable communication system is an essential component of an EMTS system. The agency is responsible for utilizing a communication system that is compatible with their local dispatch agency and area hospitals. There is a common statewide radio system that allows for direct communication between all providers and facilities to ensure that receiving facilities are ready and able to accept patients and maintain patient and provider safety. Consultation with specialty and definitive care facilities is readily available. Minimum standards for dispatch centers are established, including protocols to ensure uniform dispatch and standards for dispatcher training and certification. The center provides certified Emergency Medical Dispatchers (EMD) with a system of priority dispatch. There is an established mechanism for monitoring the quality of the communication system, including the age and reliability of the equipment.

Public Information, Education and Prevention

To effectively serve the public, each agency must develop and implement an EMTS public information and education program. Consistent, structured programs are in place to enhance the public's knowledge of the EMS system, appropriate EMS system access, bystander care actions and injury prevention. The EMS system actively supports programs that are directed at both the general public and EMTS providers. The agency enlists the cooperation of other public service agencies, with local and state support, in the development and distribution of these programs, and serves as an advocate for change that result in injury/illness prevention.

Medical Direction

Physician oversight is critical to all aspects of the EMS system, including the Communications Center that provides patient care outside the traditional confines of a clinic or hospital. The role of the agency medical director is clearly defined, with legislative authority and responsibility for EMS system standards, protocols and evaluation of patient care. Physicians are consistently involved and provide leadership at all levels of quality improvement programs. Medical directors receive feedback from the healthcare facility regarding the patient care provided by the EMTS agency and utilize the information as a quality improvement tool. Medical directors are responsible for maintaining policies and procedures incorporating standard treatment protocols.

Medical directors are knowledgeable in EMS system design and development. All physicians providing on line medical direction have comprehensive knowledge about the local EMS system. The availability of on line medical direction is assured by the agency on a formal basis.

System Integration

The delivery of quality patient care requires that EMS components are clearly integrated with the overall health care system. Under the authority of the Medical Director, development and implementation of integration efforts includes triage/transfer guidelines and destination determination for patients based on age and presenting condition, data collection, and quality improvement methods for optimal care. These guidelines and protocols are developed through a multi-agency, multidisciplinary consensus driven process. Information and trends from data collection should be reflected in community public education and injury prevention programs. Collaboration and planning among all area agencies and institutions with an interest in enhancing the health care system results in coordination of resources on behalf of all participants. Safe, effective and timely inter-facility transports occur as a result of interagency communications and coordination procedures.

Quality Improvement

A comprehensive improvement program is needed to effectively plan, implement and monitor the EMS system. The agency is responsible for evaluating the effectiveness of services provided to victims of medical or trauma related emergencies, therefore the EMTS agency should be able to state definitively what impact has been made on the patients served by the system. A data collection system (i.e., eNARSIS or equivalent) exists that captures the minimum data necessary to measure compliance with standards and this data is regularly provided to the EMS office. Pre-established standards, criteria and outcome parameters are used to evaluate resource utilization, scope of services, effectiveness of policies and procedures, and patient outcome.

A comprehensive, medically directed quality improvement program is established to assess and evaluate patient care, including a review process (how EMTS system components are functioning) and outcome. The quality improvement program should include an assessment of how the system is currently functioning according to the performance standards, identification of system improvements that are needed to exceed the standards and a mechanism to measure the impact of the improvements once implemented.

Medical directors participate in a formal evaluation process with the health care facility to discuss the patient care provided by the EMTS agency. This information is provided to the agency as part of an ongoing quality improvement program. Patient data is collected and integrated with available emergency department and trauma system data; optimally there is linkage to databases outside of EMS (such as crash reports, trauma registry, medical examiner reports and discharge data) to fully evaluate quality of care.

The evaluation process is educational and quality improvement/system evaluation findings are disseminated to agency providers. The agency assures that all quality improvement activities have confidentiality protection and are non-discoverable.