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Emergency Medical Services in Hinesburg, VT

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Background

- The Emergency Medical Services—including medical first response and ambulance transport—were developed and funded by the Department of Transportation in 1970
- High quality EMS has proven mortality benefit in cardiac arrest, STEMI, trauma, seizures, and respiratory compromise (Myers 2008)
- There are 4 levels of EMS provider:
  - EMR (emergency medical responder): minimal training, CPR/AED, oxygen. Most police, fire.
  - EMT-B (emergency medical technician—basic): some additional training and administration of oxygen, aspirin, nitroglycerin, naloxone. Most volunteers.
  - AEMT (Advanced): some additional training and administration of IV fluids and some additional emergency drugs. The highest level provider in most rural volunteer areas.
  - Paramedic: 1-2 years of school to include basic clinical decision-making, ACLS protocols, intubation, benzodiazepines, opioids, and many other emergency drugs.
- While fire and police are considered an "essential service" in all 50 states, EMS is considered essential/required in only 11. Vermont is not one of these (Edwards 2019).

The Problem

- Hinesburg has roughly 350 medical 911 calls annually (Hinesburg Fire Department data)
- Hinesburg Fire Department currently provides first response, with St. Michael's Fire & Rescue (25 mins away in Colchester) providing ambulance transport

In June of 2020, the town of Hinesburg will lose its contract with St. Michael's Fire & Rescue, leaving the town without an ambulance.

- The town is trying to decide how to provide medical coverage. They had hoped to hire a consulting firm for assistance, but costs were exorbitant. The current options, likely to go to town wide vote:
  - Allow Hinesburg Fire to operate an ambulance in town
  - Contract with Richmond Rescue to provide ambulance transport

Cost of EMS

- Sweeping review of EMS costs shows significantly higher startup than estimated (Lerner 2012)
- Most ambulance services are financed by medical billing (Knott 2008; Lerner 2012), with tax base filling in the gaps
- Bigger picture
  - All states need to recognize EMS as an essential service (NAEMT position paper 2019)
  - SIREN Act: congress passed in 2018, still unfunded. Creates grant program for rural EMS agencies.
  - In the absence of federal funding, EMS systems have become fragmented and state-dependent (Knott 2008)
  - Insurance reimbursement does not cover costs, shifting financial burden to municipalities. State disperses $9,000 annually to each EMS district, of which there are 13 (VEMSAC Report)

Cost Considerations

- Hinesburg Town Ambulance (est. >$100K annually + startup)
  - Anonymous donor willing to purchase ambulance for the town (still requires annual repairs, expected to be expensive in VT climate)
  - Self-loading stretcher required by state regulations (est. $50K)
  - Costs of headquarters, 2-3 paid employees, volunteer training and retention (est. $800+/volunteer ***in 1992*** by Brudney)
  - Low call volume means insufficient billing via insurance reimbursement, passing costs on to taxpayers
- Richmond Rescue (est. $70K annually, no startup)
  - Offered contract $15/resident (~$70K annual) + transport billing
  - Hinesburg First Response could continue in its current role with no additional cost

Community Viewpoints

- "I have the utmost respect for Hinesburg First Response…I grew up there, my folks are still down there, and it's nice knowing Hinesburg First Response is there." – Miles Lamberson, Richmond Rescue President and former Hinesburg EMS member
- "Of our 340 calls, I would guess 30% might meet the requirements for an AEMT." – Hinesburg EMS member who wishes to remain anonymous
- "It's very political. But there's a huge difference between first response and transporting patients. "Hinesburg has maybe five sufficiently trained volunteers." – Local EMT who wishes to remain anonymous
- 'Moving to a low volume, centralized system feels like moving back in time." – Local EMT who wishes to remain anonymous
- "There is training and recruitment, but a lot of the volunteers with interest want to work somewhere there's an ambulance." – Renae Marshall, Hinesburg town administrator
- "So the plan really doesn't rest with me—it rests with the town…it hasn't yet been determined." – Laurel Plante, MD, VT District 3 EMS Medical Advisor
- St. Michael's Rescue declined to comment

Community Viewpoints

- I found that locals fit into one of two camps: turn Hinesburg First Response into a transporting agency, or contract with Richmond Rescue. I had no luck getting those in the former to comment. Those in the latter category wouldn't go on record, but were eager to express their frustration. Hinesburg First Response does not have the staffing, training, or experience to run an ambulance service. Furthermore, costs are exorbitant and cannot be recouped with billing given the low call volume.

Intervention

- Literature review on the clinical benefit and monetary cost of EMS
- Interviews and budgeting with town government officials, EMS personnel, and local physicians
- Presentation of this information to:
  - UVMMC Family Medicine at Hinesburg
  - Hinesburg Town Administrator Renae Marshall

Ultimately, the goal of this project is to be able to make a recommendation on this issue to Hinesburg town government.

Results: Response Times

- Despite being ~25 mins from UVMMC, time from 911 call to hospital arrival averages over 1 hour
- An ambulance based in Hinesburg would have a short response time. Projected scene times are unclear.
- A Hinesburg ambulance would likely reduce volunteer availability and thus decrease first response
- While response times are often used as a quality metric in EMS, numerous studies have shown they seldom effect clinical outcome (Myers 2008)

Rescue Service	Number of Calls	Response	Total Time Travel	Time to Scene	On Scene	Total Time
Shelburne	26	0:03:50	0:15:08	0:18:30	0:12:19	1:09:35
Charlotte	112	0:02:46	0:12:50	0:15:33	0:14:32	1:29:55
Richmond	92	0:02:56	0:13:26	0:16:18	0:14:14	1:23:46
Williston	58	0:01:15	0:11:02	0:12:16	0:13:05	1:10:22
St. Michaels (3 Yr only)	725	0:01:21	0:20:46	0:22:07	0:12:21	1:04:12

Hinesburg Fire Department. "An Overview of Emergency Medical Services in Hinesburg."

Results: Volunteer Retention and Training

- Most rural communities across the US depend primarily on volunteer EMTs for ambulance staffing and report difficulty with recruitment/retention (Haug 2012; VEMSAC Report)
- Current volunteer corps in Hinesburg is insufficient to staff even a BLS ambulance
  - Per Hinesburg Fire: 2 AEMT, 11 EMT-B, 11 EMR
  - Per other local EMTs: 1 AEMT, 4 EMT-B, unknown number of EMR regularly responding to calls
- Most cite altruism as their primary motivation, and word of mouth as their method of recruitment, with school/job fairs a close second. Volunteerism is a significant source of pride (Haug 2012).
- It is generally accepted but understudied that professional EMS agencies and those with higher call volumes provide better clinical care than lower volume/volunteer agencies (Brudney 1992; Myers 2008)
- Richmond trains at least twice monthly, Hinesburg once (and per multiple anonymous interviewees many of these sessions are fire-based, not clinical)

Given low call volume, lack of transport experience, and lack of ALS providers, a Hinesburg-based ambulance would almost certainly provide a lower level of medical care than Richmond Rescue, which can provide trained paramedics

Evaluation and Limitations

- Prior to presentation, 3 of 8 clinic staff stated they were familiar with this issue
- Following presentation of this information in a more expanded format than is provided here, clinic staff were surprised that this issue was still up for debate
- Some clinic staff expressed interest in attending town meetings to discuss this. I requested they let me know if they wound up speaking about this issue. I am unable to attend these meetings as I will be on away rotations.
- Unfortunately, this issue is extremely political. I spoke with doctors, paramedics, and EMTs who were eager to comment but refused to go on the record. While they forwarded budgets and personal letters, they were unwilling to have these shared. Thus, this project loses some credibility.

Future Projects

- Many highly qualified medical professionals are committed to providing a high level of prehospital care to the citizens of Hinesburg. In such a small town, however, they prefer not to speak out for fear of offending their neighbors. There is unlikely to be any change without someone speaking out in a public forum.
- Volunteers are a valuable resource but are not adequately trained or financially supported to provide reliable medical care. Additional research is needed to clarify the role of volunteers in a field with increasingly high clinical standards (Brudney 1992; Knott 2008; Myers 2008)
- With rural ambulance services struggling, regionalization provides a more organized corps of EMTs/paramedics, and is more financially sound. This would likely provide improved access to ambulance services in Vermont, but requires extensive research.

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