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Paramedicine Utilization and Local Services Evaluation (PULSE): a community needs assessment by Wilton Ambulance

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Paramedicine Utilization & Local Services Evaluation (PULSE)

Purpose: To present a detailed retrospective analysis of Wilton Ambulance Service (WAS) EMS call data from the 2025 calendar year. This report outlines key findings regarding patient demographics, system usage patterns, and high-utilizer behaviors. Its primary objective is to provide a strategic and evidence-based foundation for the design and implementation of a new Mobile Integrated Healthcare (MIH) (also called Community Paramedicine) program aimed at improving community health outcomes and optimizing the efficiency of emergency services.

1. Introduction and Background

The Wilton Ambulance Service provides pre-hospital emergency care and transportation to the town of Wilton, New Hampshire and its surrounding catchment area. In recent years, like many communities across the nation, the service has faced increasing demand that is not solely driven by life-threatening emergencies. A significant portion of the 911 call volume is generated by non-urgent issues, chronic disease exacerbations, and social determinants of health, particularly among an aging population. This pattern of utilization places a considerable strain on emergency response resources, diverts ambulance crews from critical incidents, and often results in costly and unnecessary emergency department (ED) transports for patients whose needs could be better met in the community. Recognizing this challenge, the Wilton Ambulance Service has initiated the Paramedicine Utilization & Local Services Evaluation (PULSE) study. The goal of the PULSE project is to analyze local EMS data to develop a targeted, proactive Mobile Integrated Healthcare (MIH) program that will address the root causes of frequent 911 usage,

improve patient quality of life, and create a more sustainable and effective emergency response system.

1.1 Geographic overview of the WAS Catchment Area

The Wilton Ambulance service area encompasses three rural towns in southern New Hampshire: Wilton, Lyndeborough, and Greenfield. Collectively, these towns cover approximately 82.5 square miles (Wilton 25.8mi², Greenfield 26.5mi², Lyndeborough 30.2mi²) of terrain characterized by rolling hills, dense forest, scattered lakes and ponds, and a mix of developed town centers and remote, sparsely populated areas.

Key geographic features impacting EMS response include:

- Road infrastructure: A network of winding secondary roads, many unpaved, which become challenging during winter and mud season (spring) and after heavy rains. Route 101, a major east-west highway, runs through the southern part of Wilton and is a frequent site of high-speed motor vehicle collisions.
- Seasonal weather extremes: Winters bring significant snowfall and ice, leading to unplowed driveways, impassable roads, and increased risks of cold exposure and hypothermia. Summer sees an influx of tourists and recreational visitors, increasing MVCs and heat-related emergencies.
- Remote areas: Large tracts of undeveloped land, state parks, and lakes create challenges for navigation, address visibility, and patient access, particularly in Lyndeborough and Greenfield.

1.2 Catchment Area Demographics

The catchment area is characterized by a predominantly older, rural population. Demographic data from the most recent census reveals:

Town	Population	Population Density	Median Age	% Over 65
Wilton	3,960	155.2/sq mi (U.S. Census Bureau, 2025)	46.8	31% (U.S. Census Bureau, 2025)
Lyndeborough	1,712	46.4/sq mi (U.S. Census Bureau, 2025)	50	29.8% (U.S. Census Bureau, 2025)
Greenfield	1,730	64.2/sq mi (U.S. Census Bureau, 2025)	49.9	25.7% (U.S. Census Bureau, 2025)

Demographic notes:

- Aging population: The percentage of residents over 65 is higher than both the state and national averages. This population is at increased risk for falls, chronic disease exacerbations (CHF, COPD, diabetes), and social isolation.
- Elderly living alone: A significant percentage of households are single-occupant, which is a critical risk factor for falls where no one is available to call for help.

- Seasonal fluctuations: Summer populations increase due to tourism and second-home owners, while winter populations see an influx of visitors to snowmobile trails and winter recreation areas. Holiday weekends see peak MVC and recreational injury risks.

Socioeconomic indicators of catchment area residents aged 65 or older:

Indicator	Wilton	Lyndeborough	Greenfield	NH Average
Median Household Income	\$114,349	\$116,964	\$103,603	\$99,031 (U.S. Census Bureau, 2025)
Poverty Rate	3.9%	3.7%	5.2%	4.4% (U.S. Census Bureau, 2025)
Population Living Alone	27.8%	13.7%	13.4%	25.5%

Limited public transportation and the rural nature of the area mean that many residents, particularly the elderly and low-income, lack reliable access to non-emergency medical appointments and social services.

1.3 Healthcare Infrastructure

Primary Care:

Primary care resources within the catchment area are limited. There are no primary care practices in the three towns. Residents travel to neighboring towns and regional cities to access primary care, including Peterborough, Milford, Amherst, Nashua, and Manchester. Access barriers include:

- Long wait times (often weeks to months) for new patients.
- Limited extended hours or weekend availability.
- Transportation challenges for residents in remote areas.

Hospitals:

Wilton Ambulance transports patients to several regional hospitals, with transport times varying significantly based on destination:

Hospital	Location	Services
Monadnock Community Hospital	Peterborough, NH	Critical Access Hospital
Southern NH Medical Center	Nashua, NH	Level III Trauma
Elliot Hospital	Manchester, NH	Level II Trauma; Stroke Center
Saint Joseph Hospital	Nashua, NH	Level III Trauma; Cardiac Care; Stroke-receiving; Behavioral Health; WAS medical resource hospital
Catholic Medical Center	Manchester, NH	STEMI Receiving Center

Specialty Care:

Specialty services such as cardiology, endocrinology, neurology, and psychiatry are located outside the catchment area, primarily in Nashua, Manchester, and Boston. This requires patients to travel significant distances, which can lead to:

- Missed appointments due to transportation barriers.
- Delays in care for chronic conditions.
- Increased reliance on EMS for non-emergent transport.

Urgent Care and Alternative Sites:

No urgent care centers are located within the catchment area. The closest facilities are in Milford or Peterborough, requiring personal transportation.

1.4 Social Services and Community Supports

The catchment area has limited social service infrastructure. Key resources and gaps include:

Service Type	Availability	Notes
Area Agency on Aging	ServiceLink or regional agency	Provides Meals on Wheels, care coordination, transportation for seniors

Home Health Agencies	Present	Skilled nursing, PT, OT available; wait times may occur
Non-Emergency Medical Transport	Limited	Medicaid NEMT requires advance notice; private transport may be cost-prohibitive
Food Pantries	Present in each town	Limited hours; may require transportation
Senior Housing / Assisted Living	Present in Wilton and Greenfield	Limited number of facilities
Mental Health Services	Severely limited	Few local providers; long wait times for psychiatry
Substance Use Treatment	None in catchment area	Detox and outpatient services in Nashua/Manchester
Mobile Crisis Team	Regional	Available for mental health crises

1.5 EMS System Description

Wilton Ambulance is the primary EMS provider for the three-town catchment area. It is a professional municipal ambulance service. WAS's roster consists of eight paramedics, ten AEMTs, and six EMTs. The WAS fleet consists of two ambulances, typically with one staffed at any given time, and one support vehicle (fly car). WAS is supported by three local fire departments in the catchment area (one in each town). The Greenfield and Lyndeborough departments each have their own non-transport rescue units which serve to assist with technical rescues, and often are first on EMS scenes. These rescue units are volunteer and staffed by EMTs and AEMTs. Medical flights can be requested from UMass Memorial Hospital, DHART (Dartmouth-Hitchcock), and Boston MedFlight for severely sick or injured patients who require emergency care outside the scope of the region's hospitals. Average response times are impacted by the rural geography, with longer travel times to remote areas in Lyndeborough and Greenfield. Weather significantly affects response times, particularly during winter storms and mud season.

This report presents a comprehensive analysis of the "Final Sample" dataset, consisting of 577 recorded EMS incidents from 2025. The data includes detailed information on patient demographics (age, gender, race), incident timing, dispatch reasons, working diagnoses, the level of care provided, and patient disposition. By examining this data, we have identified key trends and high-utilizer cohorts that present a clear opportunity for intervention. The overarching goal of this analysis is to provide the Wilton Ambulance Service and the town stakeholders with the necessary intelligence to design an MIH program that is precisely targeted, cost-effective, and capable of delivering measurable improvements in both patient outcomes and system performance.

2. Methods

2.1 IRB Submission and Approval

Given that this study involves human subject research, a study protocol was created and submitted to the institutional review board (IRB) at the University of Southern Maine in December of 2024. The University of Southern Maine was selected as our IRB given their affiliation with St. Joseph's Hospital, the Wilton Ambulance Service's medical resource hospital. The study was given an expedited review and, after two rounds of corrections, was approved for implementation in February of 2025.

2.2 Sample Source

The analysis was conducted as a retrospective, observational study using data extracted from the electronic patient care reporting system, known as the New Hampshire Emergency Services Reporting (NHESR) system, of the Wilton Ambulance Service. The extracted sample was composed of all 911 calls to which the Wilton Ambulance Service was dispatched from January 1, 2025 through December 31, 2025, thus encompassing the entire 2025 calendar year.

2.3 Data Preparation

The data were cleaned and prepared for analysis. Incomplete records or incidents where no patient contact was made were reviewed but were generally excluded from clinical analysis to ensure the findings reflected direct patient care interactions. WAS mutual aid responses to communities outside of the catchment area (notably Milford) were also excluded from analysis. Motor vehicle crashes (MVCs) were excluded from the analysis, as they fall outside the scope of

the MIH program's target population. Specifically, MVCs are rarely associated with repeat patients or the chronic conditions that the program is designed to address. The original sample recorded 932 calls. After the sample was adjusted according to the aforementioned parameters, 577 calls were selected to be included in the study's final sample for analysis.

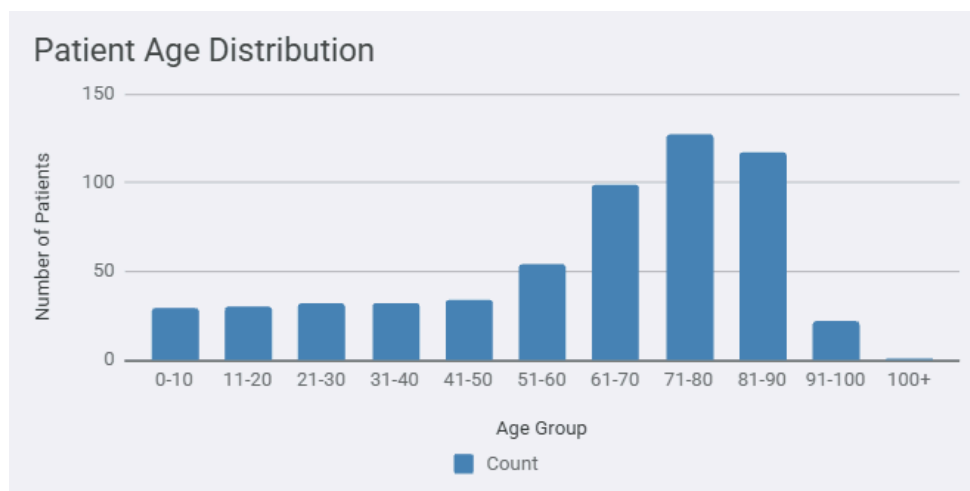
Several key operational definitions were established to guide the analysis. A "High-Volume Caller" was defined as any individual patient, identified by a unique Proxy ID, who generated three or more calls for service during the study period. This threshold was chosen to identify the most frequent users of the 911 system, a group that is often the focus of community paramedicine interventions due to their disproportionate impact on system resources (Riley, 1988). "Low Acuity" was defined as patients who, upon initial assessment by the responding paramedic, were classified as "Status 3 Lower Acuity" or a similar non-emergent disposition. This classification indicates that the patient's condition does not require immediate, life-saving intervention and may be suitable for community-based management or alternative transport pathways.

The analysis focused on several core domains: overall demographic trends, temporal patterns of call volume (by time of day and month), the most common dispatch reasons, and the specific characteristics of the high-volume caller cohort. A particular emphasis was placed on "Falls" and "Lift/Invalid Assists" calls, as initial observations suggested these were significant drivers of system usage and were potentially preventable. Statistical comparisons, such as Fisher's Exact Test, were employed where appropriate to evaluate the significance of associations found within the data, particularly concerning the comorbidity patterns observed in frequent fallers.

3. Results

3.1. Overall Patient Demographics and Temporal Trends

The analysis reveals a patient population that is heavily skewed toward older adults, presenting a distinct demographic profile for the Wilton Ambulance Service. The age distribution of patients shows that the highest concentration of 911 users falls within the 61 to 90-year age range. Specifically, the cohort of patients aged 71 to 80 years old represents the most frequent users of emergency services, followed closely by those aged 81 to 90. This trend underscores the fact that the community is home to a significant population of older adults who are more susceptible to acute illness, falls, and the complications of chronic diseases. While the gender distribution is relatively balanced, there is a slight lean toward female patients, with 303 female patients compared to 272 male patients.



The temporal analysis of call volume provides crucial insights into the daily operational rhythm of the EMS system. Demand is highly concentrated during the daytime hours. Call volume begins to surge sharply at approximately 8:00 AM and remains elevated throughout the

morning and early afternoon. The system consistently reaches its peak operational load between 10:00 AM and 1:00 PM, with the absolute highest number of calls occurring at 10:00 AM. This data strongly suggests that many calls are related to the daily activities of community members and may coincide with standard business hours, when family members or caregivers may be contacting 911 for assistance. Call volume then tapers off significantly in the late afternoon and evening, hitting its lowest point at 11:00 PM. This pattern provides a clear directive for resource allocation, suggesting that an MIH unit staffed during standard daytime shifts would be optimally positioned to intercept the majority of non-emergent calls. Furthermore, an analysis of seasonality reveals a steady increase in call volume throughout the first half of the year, culminating in peak operational strain during the late summer and early fall months. August recorded the highest volume of calls, followed by October and July.

3.2. Clinical Presentations and System Acuity

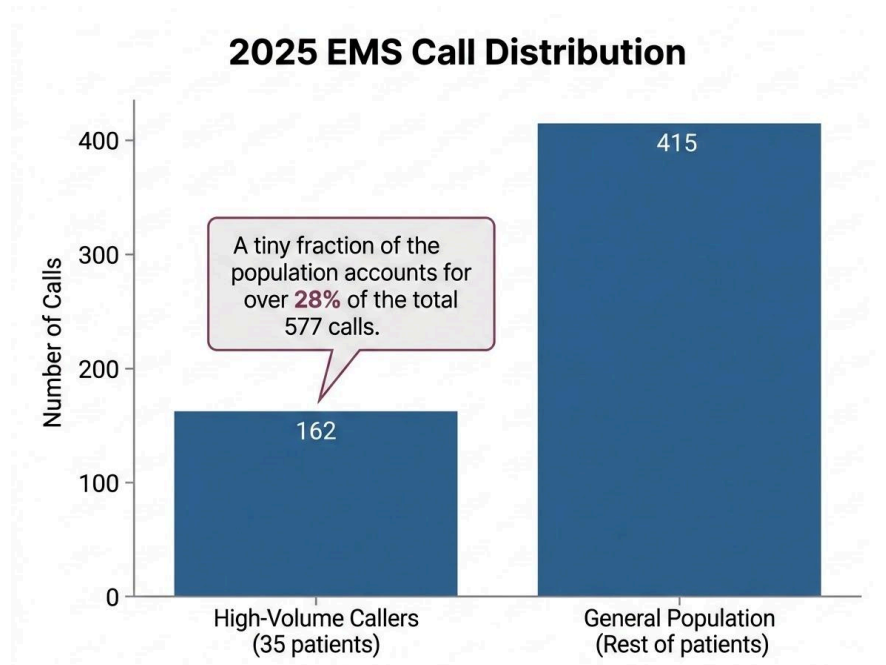
Examining the reasons why citizens call 911 reveals a clear picture of the community's most pressing health concerns. Across the entire dataset, "Falls" stands out as the leading cause for dispatch by a very wide margin, accounting for 95 incidents. This is followed by "Breathing Problems," which accounted for 55 calls, and "Psychiatric / Behavioral / Suicide Attempt," which accounted for 38 calls. Other significant reasons for dispatch include "Pain," "Abdominal Pain/Problems," and "Chest Pain (Non-Traumatic)." However, the prominence of falls highlights a critical vulnerability within the community, particularly among the elderly population.

A critical finding of this analysis is the level of patient acuity, which refers to the severity of a patient's condition. The data reveals that the EMS system is heavily burdened by non-emergent calls. Over 50% of all patients who called 911 were initially classified as "Status 3

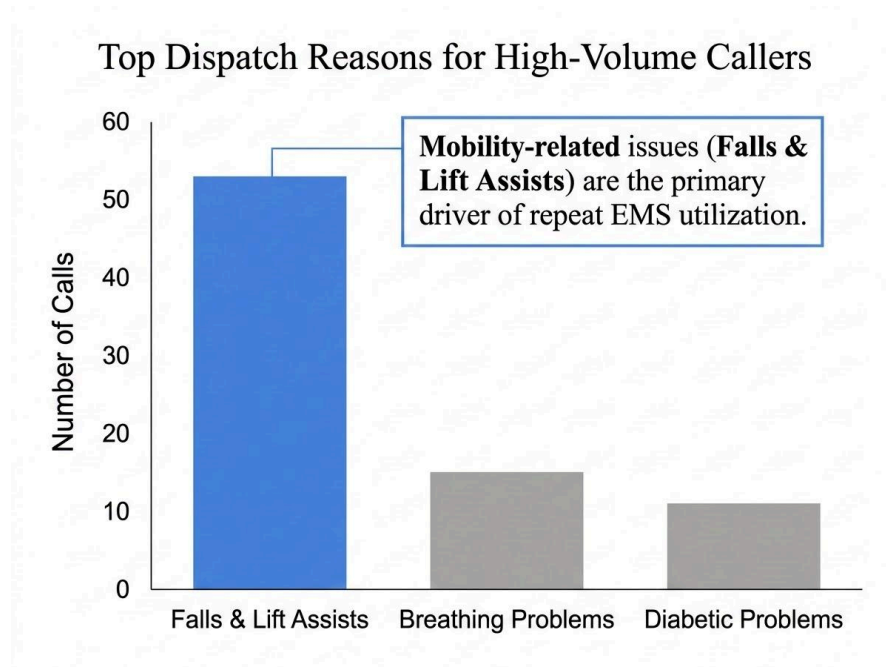
Lower Acuity," indicating that their condition was not immediately life-threatening. In stark contrast, only approximately 7% of patients were classified as "Status 1 Critical," the highest level of acuity representing true emergencies such as cardiac arrest or severe trauma. This disparity illustrates a fundamental mismatch between the emergency nature of a 911 response and the actual clinical needs of a significant portion of patients. Furthermore, roughly 28% of all calls resulted in no transport to a hospital. This high rate of non-transport—which includes patient refusals, treat-in-place scenarios, and canceled responses—further underscores that a substantial portion of 911 calls are for issues that could potentially be managed by alternative community-based resources, reducing the need for both an ambulance and an emergency department visit.

3.3. High-Volume Caller Analysis

Perhaps the most compelling findings of the study relate to the behavior and characteristics of high-volume callers. The analysis identified 35 individual patients who met the stringent criteria of calling the 911 system three or more times during the 2025 calendar year. While these 35 patients represent only a tiny fraction of the total patient population, they generated a staggering 162 calls, accounting for over 28% of the entire system's call volume. This finding aligns with classic "Pareto Principle" observations in healthcare, where a small minority of patients account for a disproportionate share of resource utilization (Discovery Health Intelligence Team, 2025). Among this cohort, the most extreme case involved a single patient who required an EMS response 10 times in a single year, with several others requiring 8 responses each. This level of frequent utilization is not sustainable for the patients or the system.



The clinical needs of the high-volume caller cohort are distinctly different from the general population and are actionable. The top dispatch reasons for this specific group were "Falls," accounting for 35 calls; "Lift / Invalid Assist," accounting for 18 calls; "Breathing Problems," with 15 calls; and "Diabetic Problems," with 11 calls. The combination of "Falls" and "Lift / Invalid Assist" alone constitutes a significant portion of the calls from this group, reinforcing the idea that mobility impairment and home safety are primary drivers of emergency utilization. The presence of chronic conditions like respiratory and diabetic issues suggests a gap in primary care management or medication adherence. This finding provides the MIH program with a clear and targeted list of patients and health issues to address proactively.



3.4. Falls, Lift Assists, and the "Preventable Cascade"

A deep dive into the data regarding "Falls" and "Lift Assists" reveals a cascading decline in health that leads to repeated 911 calls. We identified 88 patients who reported at least one fall or lift assist call during the study period. For these patients, the total number of calls generated was 198. Of particular concern is a core group of just 20 patients who accounted for 115 of these 198 calls, demonstrating that the cycle of falls is not a random event but a recurring pattern for a specific, vulnerable population. The dispatches for this core group resulted in 57 transports to the hospital, 45 refusals, and 13 canceled responses. The high number of refusals and canceled responses indicates that many of these calls were for non-urgent assistance that, while important to the patient, likely did not require an emergency ambulance.

This core group of repeat fallers exhibits a complex medical profile that explains their vulnerability. On average, these patients were taking 8 medications, with one patient taking a maximum of 24. Research indicates that the risk of adverse drug effects and poor self-rated health increases significantly with polypharmacy, particularly for those taking five or more medications (Yoshida et al., 2025). Polypharmacy can lead to dizziness, weakness, and confusion, all of which are direct precursors to falls. This is further supported by the finding that repeat-fall patients were 6.1 times more likely to have diabetes than non-repeat fall patients (45% vs. 7.4%; $p \approx 0.0003$). Diabetes can cause neuropathy (nerve damage in the feet), vision problems, and fatigue, all of which contribute to an increased risk of falling. A stark example of the medication reconciliation gap is one patient who called five times for falls, lift assists, and vertigo, with levothyroxine being their only medication on record. This case suggests either an untreated condition, unrecognized side effects from another medication, or a significant failure in medication reconciliation and management. The "Preventable Cascade" in these cases typically begins with a non-emergent issue like generalized weakness. The weakness leads to a fall, which results in pain, a fear of falling, and a subsequent decrease in mobility, leading to further deconditioning. This cycle inevitably repeats, generating repeated 911 calls and emergency department visits.

The significance of this pattern extends beyond repeat 911 utilization, creating a measurable demand across the regional EMS system. In Wilton, 57.1% of fall-related calls required mutual aid, while 23.8% involved frequent users of the 911 system. Because this high-utilization population is identifiable and associated with potentially modifiable risk factors, these calls represent more than isolated emergencies. They create predictable demand on limited local resources, reduce ambulance availability, and increase reliance on neighboring EMS

agencies. This ripple effect means that recurrent needs within a relatively small patient population can influence system readiness well beyond the individual call. Targeted intervention among recurrent fall patients therefore has the potential to reduce repeat 911 utilization, preserve local ambulance availability, decrease mutual-aid dependence, and improve overall system capacity.

4. Discussion and Program Recommendations

The data paints a clear and urgent picture. The Wilton 911 system is currently acting as a default safety net for a preventable cascade of decline, primarily affecting older adults with chronic conditions and mobility issues. The system is responding to a high volume of calls (over 28%) from a small group of patients who are not predominantly experiencing critical emergencies. Instead, they are frequently using the 911 system for issues related to falls, mobility limitations, and poorly managed chronic diseases. The current reactive model of EMS care addresses these patients on a case-by-case, crisis basis, but it does nothing to solve the underlying problems that are driving them to call repeatedly. This is not only financially unsustainable, but it also fails the patients themselves, who are caught in a cycle of decline, and it places a tremendous burden on frontline paramedics, diverting them from true emergencies.

Mobile Integrated Healthcare offers a transformative solution to this challenge. MIH-CP programs expand the role of paramedics to deliver a broader range of home- and community-based services, including hospital follow-up care, primary care services, medication reconciliation, and health education (Adibhatla et al., 2024). By shifting from a reactive model to a proactive, community-based model, the MIH program can intervene at the root cause of the

patient's needs. The goal is to break the "Preventable Cascade" by providing preventative care, education, and home-based support. The findings of this study allow us to design a program with laser focus, targeting the specific demographics, clinical conditions, and patients that are the primary drivers of system utilization. The following recommendations provide a strategic roadmap for implementing the MIH program.

Program Recommendation 1: Proactive Fall Prevention and Mobility Program

Given that "Falls" and "Lift Assists" are the single largest drivers of calls, especially among high-volume users, the first and most critical priority for the MIH program should be a proactive fall prevention initiative. Research has demonstrated that implementing evidence-based fall prevention models, such as the STEADI (Stopping Elderly Accidents, Deaths, and Injuries) model, through EMS services can be highly effective (Camp et al., 2024). This program should be specifically targeted at the 35 high-volume callers identified in this analysis, as well as any other patient in the community who is referred due to a history of falls. Community paramedics or trained community health workers should conduct in-home safety assessments for these patients. MIH paramedics will identify intrinsic as well as extrinsic causes of falls. While extrinsic causes remain a factor, and age-related muscle weakness and gait disturbances are also pertinent, the latest data suggests the most common causes are polypharmacy and underlying disease processes such as diabetes. The team will provide on-site education and, more importantly, establish clear referral pathways to physical and occupational therapy services. These therapy interventions are critical for addressing the root causes of falls: muscle weakness, poor balance, and gait instability. By improving home safety and patient strength, this program can directly prevent future falls, reduce repeat 911 calls, improve patient confidence and independence, and significantly enhance their quality of life.

Program Recommendation 2: Chronic Disease Management (Diabetes & Respiratory)

The data identifies diabetes and breathing problems among the most common reasons for 911 activation within the high-volume cohort. Although these conditions can often be managed in the community, limited primary care access, medication concerns, inadequate patient education, or delayed recognition of worsening symptoms may lead to preventable deterioration and emergency intervention. The MIH program will establish a structured referral pathway with primary care practices for homebound patients and individuals who require time-sensitive assessment or follow-up that the practice cannot accommodate. The program will also collaborate with their medical resource hospital's discharge team and discharging physicians to provide follow-up for high-risk patients during the vulnerable transition from hospital to home.

Community paramedics may conduct scheduled home visits to complete condition-specific assessments, monitor blood glucose, oxygen saturation, respiratory status, and other relevant clinical findings, perform medication reconciliation, and reinforce discharge and disease-management instructions. When authorized through an established care plan or medical order, personnel may also continue appropriate treatments in the home, provide wound assessment and care, conduct point-of-care laboratory testing, and collect specimens for more complex laboratory studies that cannot be completed in the home. Additional services may be provided based on the patient's clinical needs, program protocols, and coordination with the referring provider.

Findings, treatment outcomes, and concerns will be communicated to the referring clinician, with appropriate escalation when a patient requires additional medical evaluation. This coordinated approach is intended to close gaps between hospital, primary care, and home-based

care; support continuity of treatment; identify deterioration earlier; and reduce avoidable 911 calls, emergency department visits, and hospital readmissions.

Program Recommendation 3: Comprehensive Medication Reconciliation and Review

The high average number of medications found among repeat fallers and the concerning example of a patient with possible untreated side effects strongly indicate a need for a medication reconciliation program. Studies have shown that addressing medication-related needs within MIH-CP programs can lead to a significant reduction in hospital readmission rates (Miller et al., 2025). The MIH program should partner with local pharmacies, primary care physicians, and geriatricians to conduct comprehensive medication reviews for all high-volume callers and any patient identified as being on five or more medications. The goal of this review is to identify duplications, potential adverse interactions, and, most importantly, side effects like dizziness, weakness, or confusion that may be directly contributing to falls and other health issues. Optimizing a patient's medication regimen can have a dramatic impact on their stability and overall well-being.

Program Recommendation 4: Development of Alternative Care Pathways and "Treat-in-Place" Protocols

Given the high rate of "Status 3 Lower Acuity" patients and the fact that roughly 28% of all calls did not result in a transport, the MIH program must develop robust alternative care pathways. This represents one of the most significant opportunities to transform the delivery of EMS in the WAS catchment area. Currently, the default response to a 911 call is to dispatch an

ambulance, assess the patient, and transport them to the nearest emergency department.

However, the data clearly demonstrates that a substantial portion of patients do not require the intensive resources of an ED, and many ultimately refuse transport altogether. This reality calls for a fundamental shift in how low-acuity calls are managed, moving away from a one-size-fits-all transport model toward a flexible, patient-centered approach that matches the level of care to the patient's actual needs.

The foundation of this initiative lies in the development of comprehensive clinical protocols that explicitly authorize community paramedics to treat low-acuity patients on-scene or refer them to a more appropriate healthcare resource. These protocols must be evidence-based, carefully vetted by medical direction, and designed to ensure patient safety above all else. For example, a patient presenting with a minor laceration that has been controlled, a mild allergic reaction that has resolved with over-the-counter medication, or a non-emergent complaint like a medication refill request could be managed entirely on-scene without the need for transport. Similarly, a patient with a simple urinary tract infection, a minor musculoskeletal injury, or a diabetic who simply needs a blood glucose check and dietary counseling could be referred to their primary care provider or an urgent care center for follow-up. The key is to empower paramedics with the clinical judgment and regulatory authority to make these decisions, supported by clear guidelines that define when on-scene treatment or referral is appropriate and when transport remains the standard of care.

To operationalize this recommendation, the Wilton Ambulance Service must establish formal partnerships with local healthcare providers, urgent care centers, primary care practices, and community-based service organizations. These partnerships are essential for creating a seamless referral network that ensures patients receive timely and appropriate follow-up care.

For instance, a community paramedic could directly schedule a same-day or next-day appointment with a partnering urgent care clinic for a patient with a non-emergent complaint, transmitting the patient's assessment data and vital signs electronically to facilitate continuity of care. Alternatively, for patients with chronic conditions, the paramedic could refer them to a partnering primary care practice for medication management or a community health worker for social services support. These referral pathways must be supported by robust communication systems, including secure messaging platforms, shared electronic health records where feasible, and clear protocols for handoff and follow-up.

The development of these alternative care pathways offers multiple significant benefits. First and foremost, it reduces unnecessary hospital costs by diverting non-emergent patients away from the ED, where they often face long wait times and receive care that is far more expensive than what is available in community-based settings. Emergency department visits for low-acuity conditions cost significantly more than primary care or urgent care visits, and they contribute to ED overcrowding, which has been shown to negatively impact patient outcomes for those with true emergencies (Adibhatla et al., 2024). By keeping non-emergent patients out of the ED, the MIH program can help alleviate this strain and ensure that hospital resources are preserved for those who truly need them.

Second, this initiative keeps ambulance units available for true emergencies. When a paramedic crew is tied up transporting a low-acuity patient to the ED, they are unavailable to respond to a subsequent cardiac arrest, stroke, or major trauma. This delay can have life-threatening consequences. By preemptively utilizing MIH units for non-emergent cases, the primary 911 ambulances can remain in service and ready to respond to the most critical

incidents, thereby improving overall system performance and reducing response times for high-acuity emergencies.

Third, and perhaps most importantly, alternative care pathways provide patients with more appropriate and convenient care. For a patient with a minor illness or injury, the ED is often an overwhelming, stressful, and time-consuming environment. Being transported by ambulance to an ED can be frightening, disruptive to daily routines, and costly, even for patients with insurance. By offering care on-scene or referring the patient to a nearby urgent care or primary care provider, the MIH program can deliver care that is more convenient, less intimidating, and better aligned with the patient's actual needs. Patients are more likely to follow through with a referral to a familiar primary care provider or a convenient urgent care than they are to accept a lengthy ED visit, potentially leading to better adherence to treatment plans and improved long-term health outcomes.

To implement this recommendation successfully, the Wilton Ambulance Service will need to engage in extensive stakeholder engagement and education. This includes working closely with the local medical community to ensure buy-in and trust, as well as educating the public about the MIH program and its alternative care options. Community members need to understand that calling 911 does not always mean an ambulance ride to the hospital and that staying at home with appropriate care or being referred to an urgent care can often be a better choice for their health and well-being. This public education effort will be critical to the success of the program, as patient expectations and perceptions of emergency care will need to evolve alongside the new service model. Ultimately, by investing in these alternative care pathways, the Wilton Ambulance Service can build a more responsive, efficient, and patient-centered

healthcare system that serves the community more effectively while reducing the strain on emergency resources.

Program Recommendation 5: Staffing and Resource Allocation

Finally, the operational model of the MIH program must be aligned with the demands of the system. The temporal analysis clearly shows that peak call times are during the day, between 10:00 AM and 1:00 PM. Therefore, the MIH unit should be staffed during standard business hours to maximize its efficiency and capacity. It also provides the optimal time for conducting scheduled home visits for wellness checks, as the patients are likely to be at home. This strategic scheduling ensures that the MIH unit is a complement to, rather than a replacement for, the existing emergency response system.

5. Conclusion

The PULSE analysis has successfully identified a significant opportunity to improve both community health and the efficiency of emergency services in the Wilton Ambulance Service Catchment area. The data unequivocally shows that a small cohort of high-volume callers, primarily older adults with mobility issues and chronic conditions, is responsible for a disproportionate share of the EMS workload. By shifting the focus from a reactive, emergency-only response to a proactive, community-based MIH program, the Wilton Ambulance Service has the potential to implement targeted interventions that directly address the root causes of these preventable calls.

This report aims to provide a roadmap for that transformation. By prioritizing fall prevention, chronic disease management, medication reconciliation, and alternative pathways for

healthcare access, the proposed MIH program is designed to break the cycle of preventable decline, improve the health and safety of our most vulnerable residents, and ensure that our paramedics are available to respond to the true emergencies they are trained and equipped to handle. This initiative is a necessary and forward-thinking step toward a more resilient, equitable, and sustainable healthcare system for the entire community.

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