Hamilton Paramedic Service 2016 Annual Report

Michael Sanderson
Chief, Hamilton Paramedic Service
5/1/2017

"My job as a paramedic is to save a life, and sometimes it means just holding a hand…"

Hamilton Paramedic, FTP

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Message from the General Manager, CES

As General Manager of the Community and Emergency Services (CES) Department, I am pleased to receive the 2016 Hamilton Paramedic Service Annual Report.

Through the direction of City Council, the CES Department is responsible for many programs and services which directly impact the health and safety of the residents in Hamilton. Through clinical excellence, operational and logistical efficiencies and collaborative partnerships, our Paramedic Services continue to provide the highest quality of care to residents/visitors during a health crisis.

With investments made by City Council and through the tireless dedication of our paramedics, we are proud to ensure continuous service to our patients despite ever increasing call volumes. In addition to this, our paramedics continue to enhance patient satisfaction through a variety of initiatives such as Community Paramedicine which provides clients an alternative path to traditional health care, in an effort to decrease paramedic transports to hospital.

The importance of volunteerism has led paramedics to become directly involved in community events and initiatives. A community garden developed on the site of one of our paramedic stations produced over 1,500lbs of food in 2016 which is used by community agencies to support the nutritional needs of those requiring assistance. The annual Becel Ride for Heart supports paramedics and survivors of sudden cardiac arrest to raise funds to purchase Automated External Defibrillators for City of Hamilton public buildings. And during the Christmas season, our Superintendents and Paramedics partner with City Kidz and in 2016 alone raised $5,385 and two full ambulances of toys in 6.5 hours! These are just a few examples of how our paramedics are not only dedicated to the care they provide, but are also involved our community.

As the population and the number of seniors increases the paramedic services, with the support of City Council, will continue to meet the call for help whenever required. Please join me in thanking Chief Sanderson, his management team, both OPSEU and CUPE union representatives and all the paramedics and staff of the Hamilton Paramedic Service for their dedication and the high quality of medical assistance provided to residents and visitors.

Respectfully,

Joe-Anne Priel, General Manager
Community and Emergency Services Department

Message from the Chief, Paramedic Services

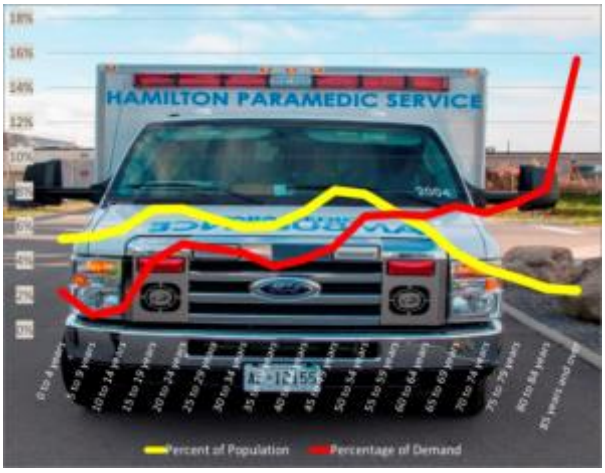
On behalf of all of the very dedicated and talented men and women of the Hamilton Paramedic Service I am very pleased to present our 2016 Annual Report. As always I am grateful for the feedback and input received over the past year, and prior years, from all areas of our service – our paramedics, our supervisors, our support staff, and our managers - as we work together to continually improve the services we provide to our public and the enabling support we provide to our paramedics.

I would be remiss if I didn't also mention the sage guidance and support of our General Manager, Joe-Anne Priel. Her leadership and backing through some difficult processes have been invaluable and I personally will miss her as she moves forward into retirement.

Major highlights for our service during the year included:

- Implementation of Phases 2 and 3 of the 2015 Council approved staffing enhancements;
- Reduction of employee injuries and lost time following full implementation of the Power Stretcher and Power Load systems in every ambulance;
- Successful completion of the extensive Ministry of Health Ambulance Service Review process;
- Implementation of the Canadian Mental Health Commission (CMHC) Road to Mental Readiness (R2MR) with every employee receiving training;

Our paramedics handled more than 79,000 responses to 911 calls over the year – a demand increase of 7% over the prior year and a cumulative increase of 35% over the past seven years. This rate of service demand increase is higher than community population growth can explain and must instead be attributed to an increasingly aging population, socio-economic factors, and an increasing reliance on care in the community or home for patients with complex health care histories or issues.



Of significant note is that census results indicate the fastest growing segment of the population we serve is those individuals over the age of 65. Provincial projections have included an estimate that 25% of the provincial population will be in this category by the year 2021. While this age group currently represents around 16% of our City population last year they accounted for 45% of the demand placed on our service. One in every four ambulance responses last year was to a senior citizen aged 80 or older, a 4% segment of our total City population.

In combination what this means is that as the percentage growth of senior population continues to accelerate, and ever increasing levels of care are being provided in community settings, the demands being placed on our service will continue to grow at much higher rates than either inflation or community growth. To address this challenge our business plan activity for the coming fiscal year includes development of a medium (5 year) and long range (10 year) plan to provide advice, and seek direction, on resource requirements to manage the demand.

Despite the increasing call volume pressures, and despite the increase in lost response capacity over the last three months of the year due to increasing hospital offload delays, we were successful in achieving an overall improvement in response time performance across the City. This achievement is in no small part due to the dedication and commitment of our paramedics who routinely went from finishing one call to proceeding on another, often missed meals, and often performed unwanted end of shift overtime to ensure the public received exceptional paramedic service.

On the business process and measurement side of the equation we were successful in reducing the time lost to illness, reducing the amount of modified work that was required to be performed, and reducing the average amount of overtime required to be performed per full time equivalent employee. Our vehicles travelled more than 1.7 million kilometres with improved reliability while simultaneously reducing vehicle operating costs. While work remains to be done in all of these areas we are meeting or exceeding comparative peer benchmarks in these areas.

As we move forward to 2017 our attention will continue to be focussed on concrete activities to improve service delivery, and contain service cost to the taxpayer. In particular we will:

- Continue alternative response and Community Paramedic activities to reduce service demand, particularly amongst those community members who most frequently require our services;
- Work with our health system partners to reduce hospital offload delay frequency and duration, thereby improving resource availability and reducing the mounting pressure on our paramedics;
- Continue internal efforts to ensure alignment of the resources available to us with the demands being placed on our service capacity;
- Continue the implementation and development of the principles of a Just Culture and collaboration

I look forward to another year of supporting our paramedics in the delivery of excellent patient care and the provision of a valued public service across our community. I believe we have a clear focus on the cultural pillars that incorporate the values of our organization and we will continue to fulfil the expectations placed upon us.
Respectfully

Michael Sanderson, Chief
Hamilton Paramedic Service

Our Service

Formerly known as the Regional Municipality of Hamilton-Wentworth, the City of Hamilton (COH) is a single tier municipality that was amalgamated in 2000 from the existing lower tier municipalities of:

- City of Hamilton
- City of Stoney Creek
- Town of Ancaster
- Town of Flamborough
- Town of Dundas
- Township of Glanbrook

The 2011 Statistics Canada census estimated the population of the COH to be approximately 519,949. With a land area 1,117.23 square kilometres, population density is estimated to be 464.4 people per square kilometre (Statistics Canada, 2012) and is divided by the Niagara Escarpment.

Diagram 1 – Age Distribution

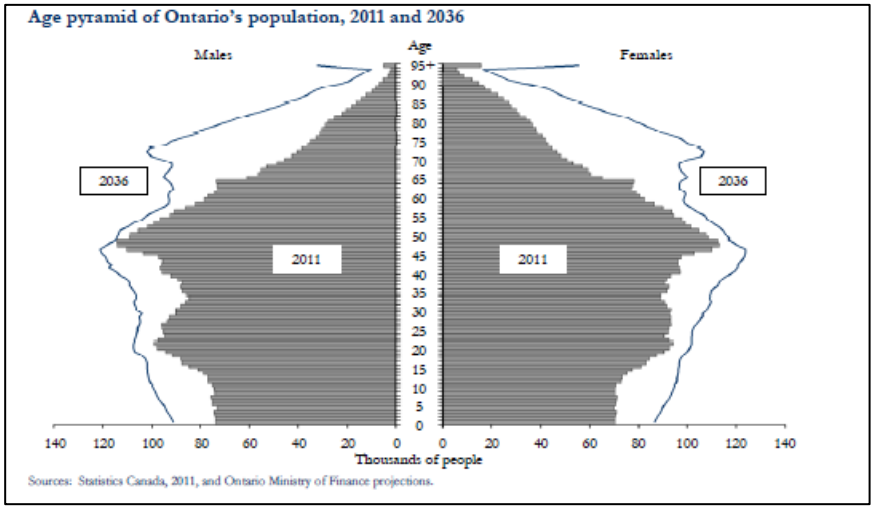
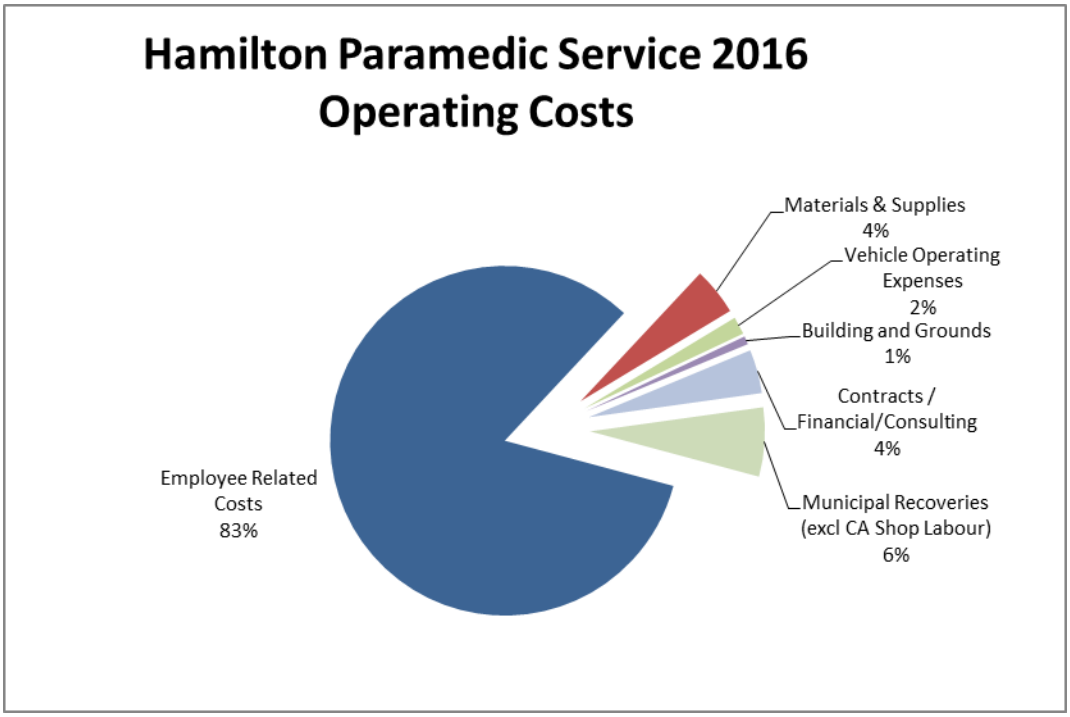


Diagram 1 outlines the anticipated age group distribution in Ontario over the 2011 through 2036 period. In the 2011 Census it was identified that the COH had a higher than average percentage of population age 65 and over, and we have noted that the frequency of ambulance utilization increases at a higher rate within that age group. The "grey tsunami" projected by the Ontario Ministry of Finance can be expected to impact service demand significantly over the next 20 years.

In accordance with the Services Improvement Act (1997) the City of Hamilton is the "designated delivery agent" for all land ambulance services in a manner compliant with the Ambulance Act. As the designated delivery agent the City has sole responsibility for the operation of ambulance services within the City. To fulfil this responsibility the City operates the Hamilton Paramedic Service (HPS). Under various Regulations and directives pursuant to the Ambulance Act all functions and elements of the HPS are highly regulated including vehicles, facilities, staffing, qualifications, procedures, reporting, and interactions. Oversight of delegated medical procedures performed by our paramedics is provided by a physician appointed by the MOHLTC.

Financial

While service demand levels were up 7% over the prior year, and financial challenges came forward from various operating lines during the year, after Provincial Revenue, grants, operating revenue, and approved capital, our overall 2016 Tax Levy costs were approximately $192,000 under budget.



With more than 79,000 unit responses to patients over the year our gross average cost per response was $542.44. As demonstrated in the chart about 83% of our costs are directly related to employee salaries, wages, and benefits.

In any ambulance operation most costs are fixed based on production capacity, with marginal operating costs typically being materials, supplies, and vehicle operating expenses. For 2016 these marginal operating costs equated to only 6% of our total expenditures, an average of just $32.63 per response.

In 2016 our operating fleet consisted of 64 vehicles, including ambulances, support, response, supervisory, and administrative vehicles. These vehicles travelled over 1.7 million kilometres during the year at an average fuel, maintenance, and repair cost of 62 cents. The benefits achieved through corporate fuel purchasing arrangements and utilization of the Hamilton Fire Department vehicle maintenance capacity combined effectively to keep running costs below expectations while maintaining high reliability.

Our Employees

Organizational Structure

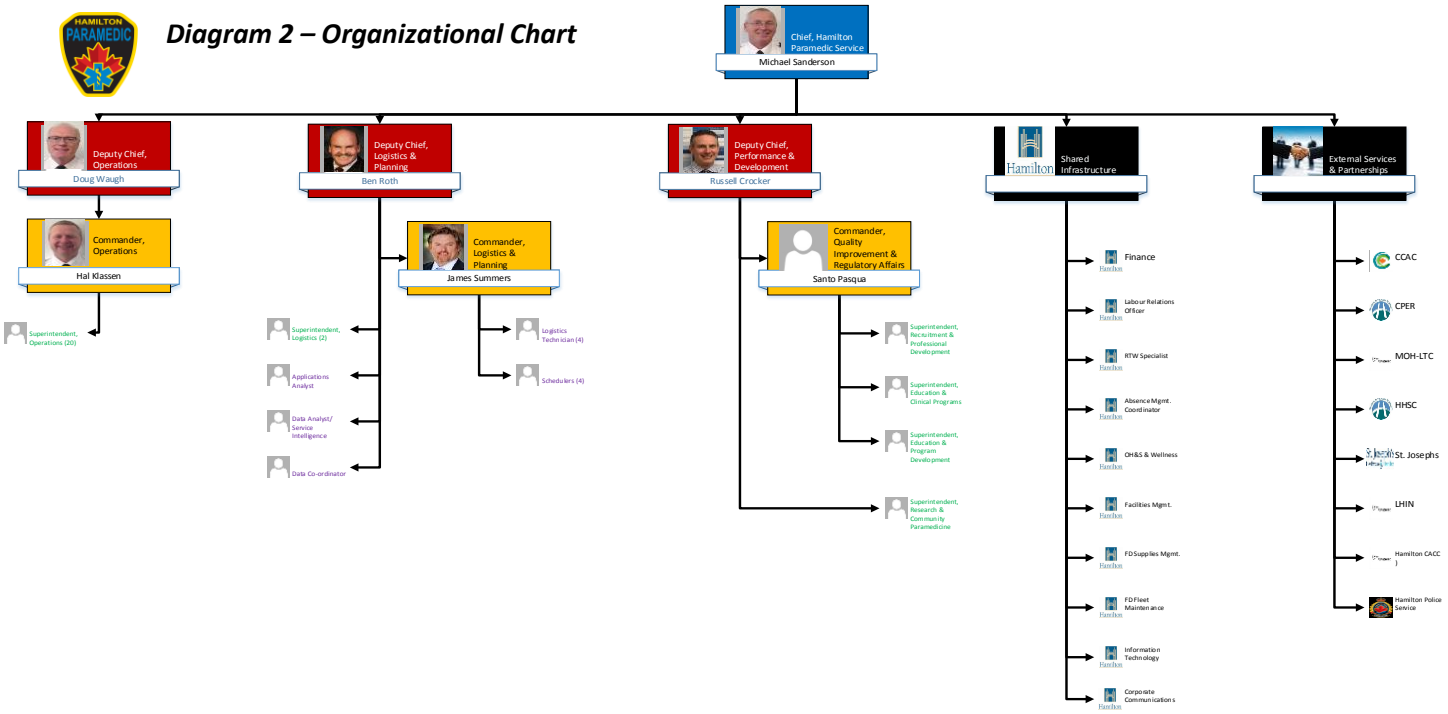
The City of Hamilton through its Culture Pillars recognizes that employees play a vital role in the services we provide to our residents. As a hybrid service, HPS combines the responsibilities of public safety and the health care system, to assist in the prevention, safety and wellness of COH residents/visitors.

To assist with the planning and operationalization of this complex model, HPS is comprised of the following sections to create its division:

- Office of the Chief
  - Strategic vision, direction, and planning
- Operations Section
  - Provides oversight on matters of deployment and resource utilization
- Logistics Section
  - Provides support to all sections through procurement and asset management
- Performance and Development Section
  - Ensures regulatory compliance and quality improvement

Diagram 2 provides an overview of the organizational structure currently being utilized by Hamilton Paramedic Service.

Diagram 2 – Organizational Chart



Employee Overview

HPS employs a total of 362 staff including senior management, administrative support, supervisors and paramedics. Utilizing a combination of full-time, permanent part-time and casual employees, HPS staffs ambulances, emergency response units (ERV's) and community paramedic programs 365 days a year. Front line paramedics that are responsible for providing patient care, account for 88.9% (322) of staff employed by HPS. For further staffing breakdowns, please refer to *Diagram 3*.

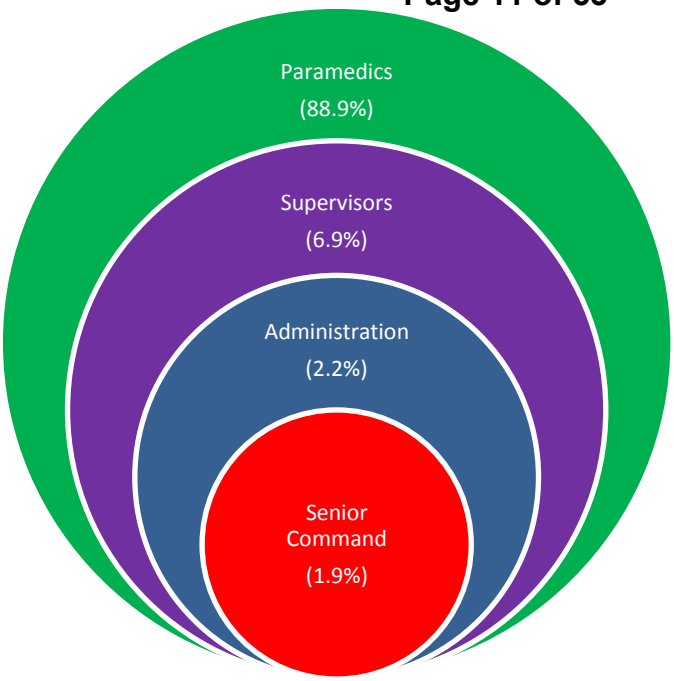


Diagram 3 – Employee Breakdown

In the Province of Ontario, paramedics are not a regulated health care profession under the Regulated Health Professions Act. As a result, they receive authorization by a physician otherwise known as a Medical Director to perform controlled medical acts classified under the College of Physicians and Surgeons of Ontario (CPSO). For further information regarding these controlled acts, please refer to the following link:

http://www.cpso.on.ca/Policies-Publications/Policy/Delegation-of-Controlled-Acts

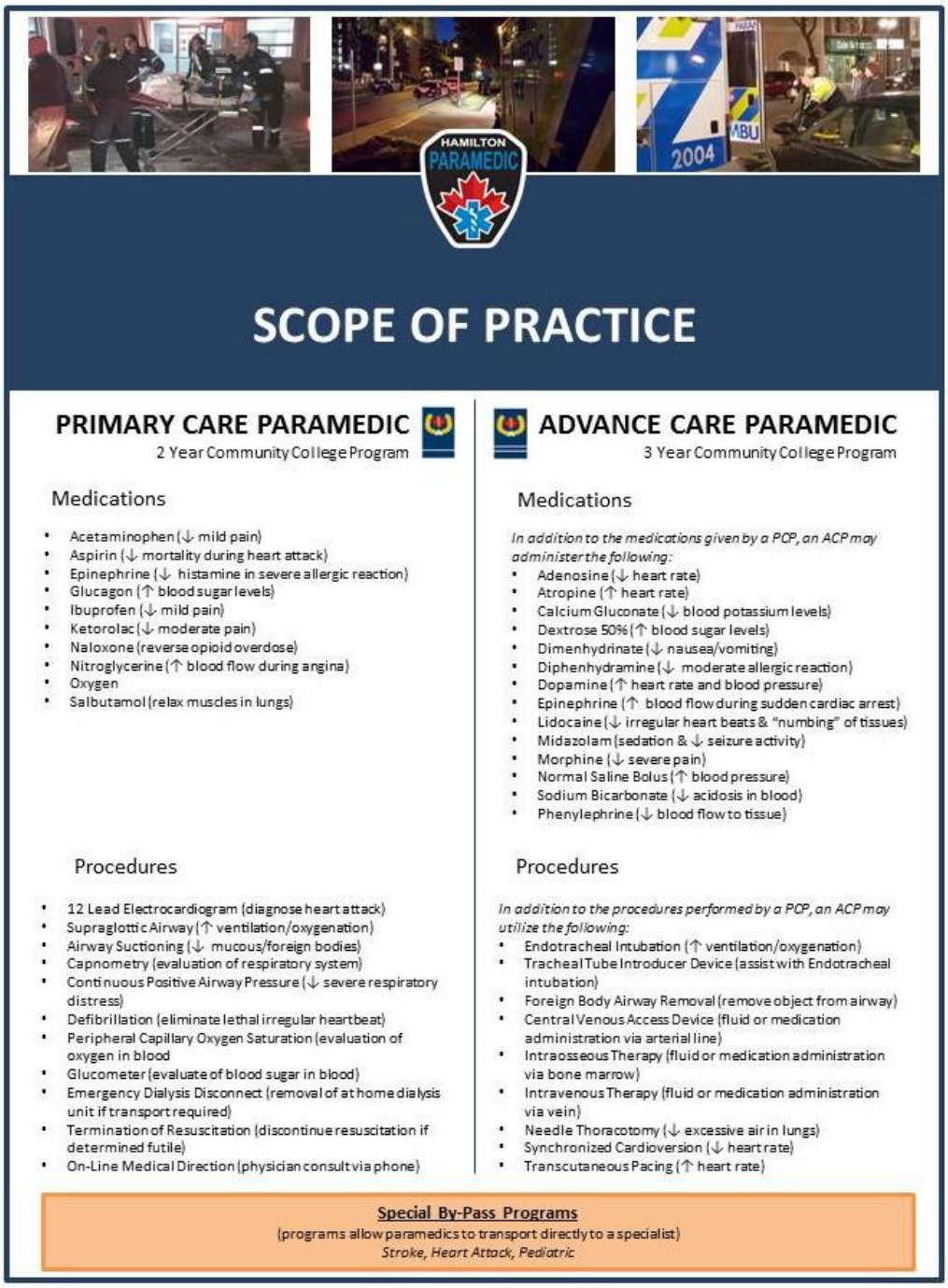
As the selected vendor by the MOHLTC, The Centre for Paramedic Education and Research (CPER) is a division of Hamilton Health Sciences Centre (HHSC) and responsible for providing paramedics in the City of Hamilton certification in controlled acts. Under the medical direction of Dr. Michelle Welsford, CPER provides initial and ongoing certification using the following Clinical Pillars to ensure excellence in patient care:

1. Clinical Education
2. Quality Improvement
3. Research
4. Innovation

Scopes of Practice

As a partnership between HPS and CPER, both primary and advance care paramedics are provided the necessary training and certification to provide patient care to the residents/visitors within the City of Hamilton. *Table 1* highlights the scopes of practice for both a Primary and Advance Care Paramedic.

Table 1 – PCP and ACP Scopes of Practice



Primary Care Paramedics (PCP) have seen an expanded scope of practice over the past several years. Delegated medical acts are medical procedures normally delegated by a physician for the paramedic to perform. For a PCP these centre around treatments for sudden cardiac arrests, heart attacks, respiratory/diabetic emergencies, allergic reactions, opioid overdoses and pain control

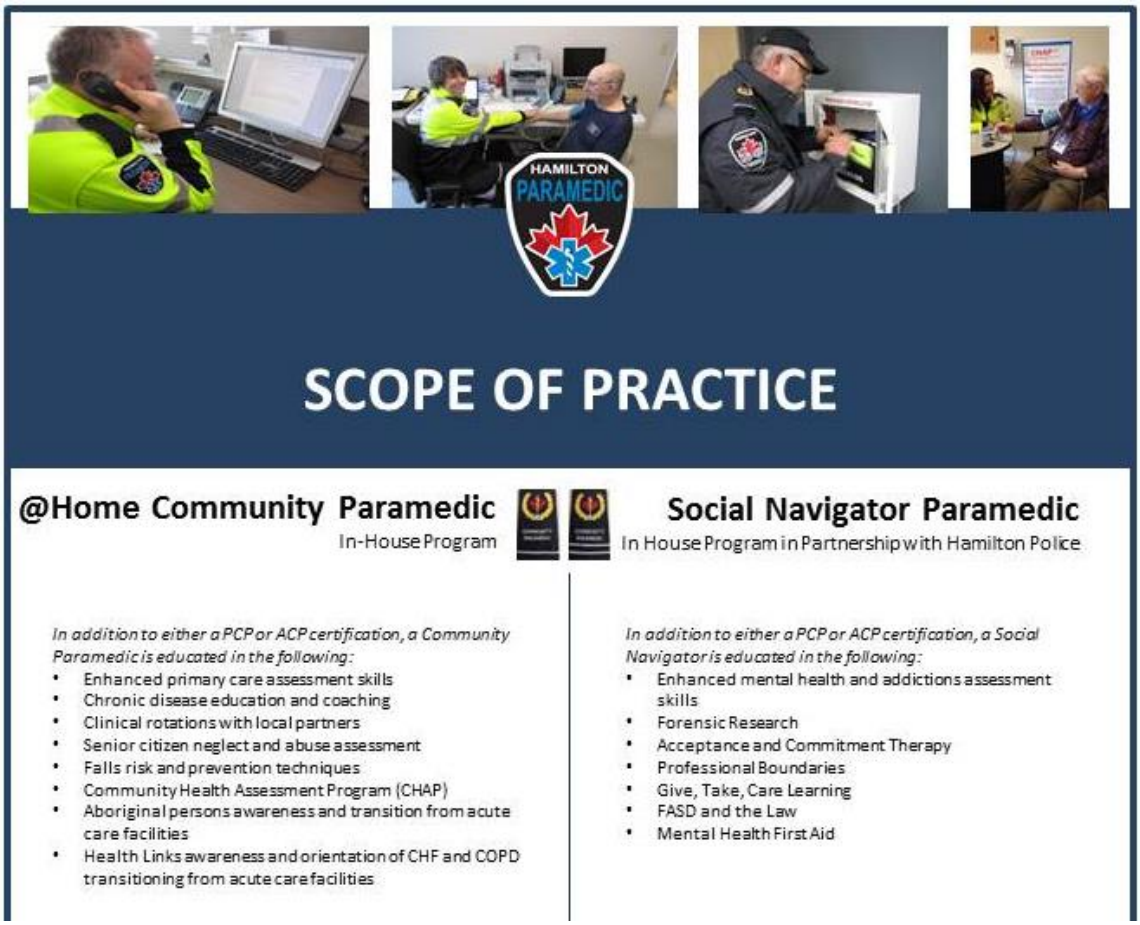
In addition to the delegated medical acts of a PCP, Advance Care Paramedics (ACP) are able to perform an additional 19 delegated medical acts. These procedures and medications allow the ACP to treat more complex medical and traumatic illnesses and injuries that fall outside the scope of practice for the PCP.

Most of these controlled medical acts are performed autonomously by the paramedic through a "medical directive" without direct contact to a physician. These medical directives provide guidelines and parameters to paramedics of how they may use delegated medical acts to treat patients. Should

the patient's condition fall outside these medical directives, a paramedic may contact a physician via phone and request to proceed with medical procedures outside these parameters.

During the past 15-20 years, paramedic services around the world have increasingly become a frontline health care resource to citizens for low acuity illnesses. The reliance on their services has resulted in a cohort of patients known as "high-users" that utilize paramedic services on a continual basis. In 2016 alone, 965 patients were identified of having used HPS services greater than 5 times for a total of 8,092 events. When comparing this to the total number of unique 911 events in 2016 (64,675), these patients accounted 12.5% of calls. As a result, HPS in partnership with Hamilton Police Service, MOHLTC, Local Health Integration Network (LHIN), McMaster Family Health Team and a variety of other community groups, initiated the Community Paramedic Program. The objective of this program was to ensure "high-user" patients were receiving the right community resources in their home and as a result would become less reliant on HPS. Community Paramedics in addition to being certified as a PCP or ACP received additional education and training that is summarized in *Table 2*:

Table 2 – Community Paramedics



System Overview

2016 Response Summary

Events in 2016

64,675

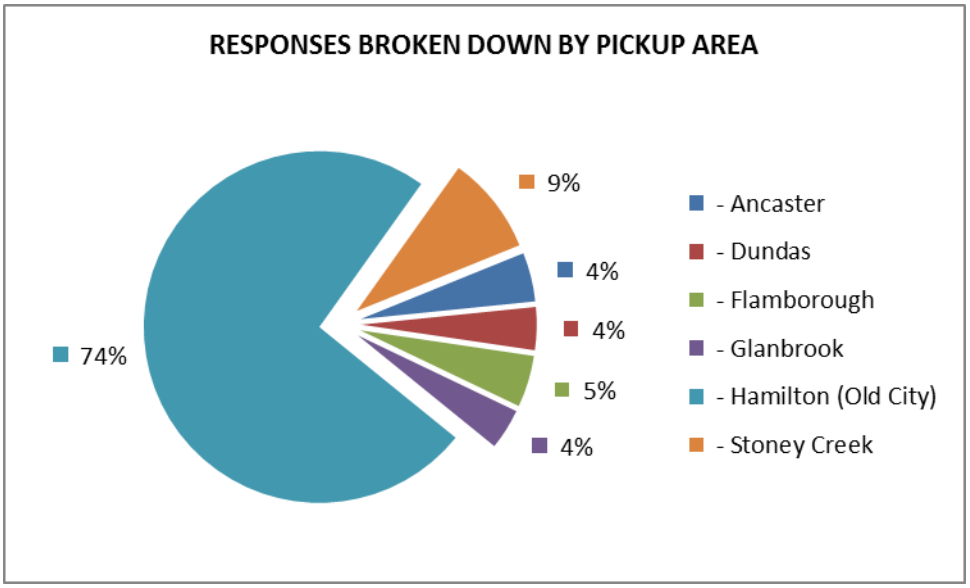
Responses in 2016

79,150

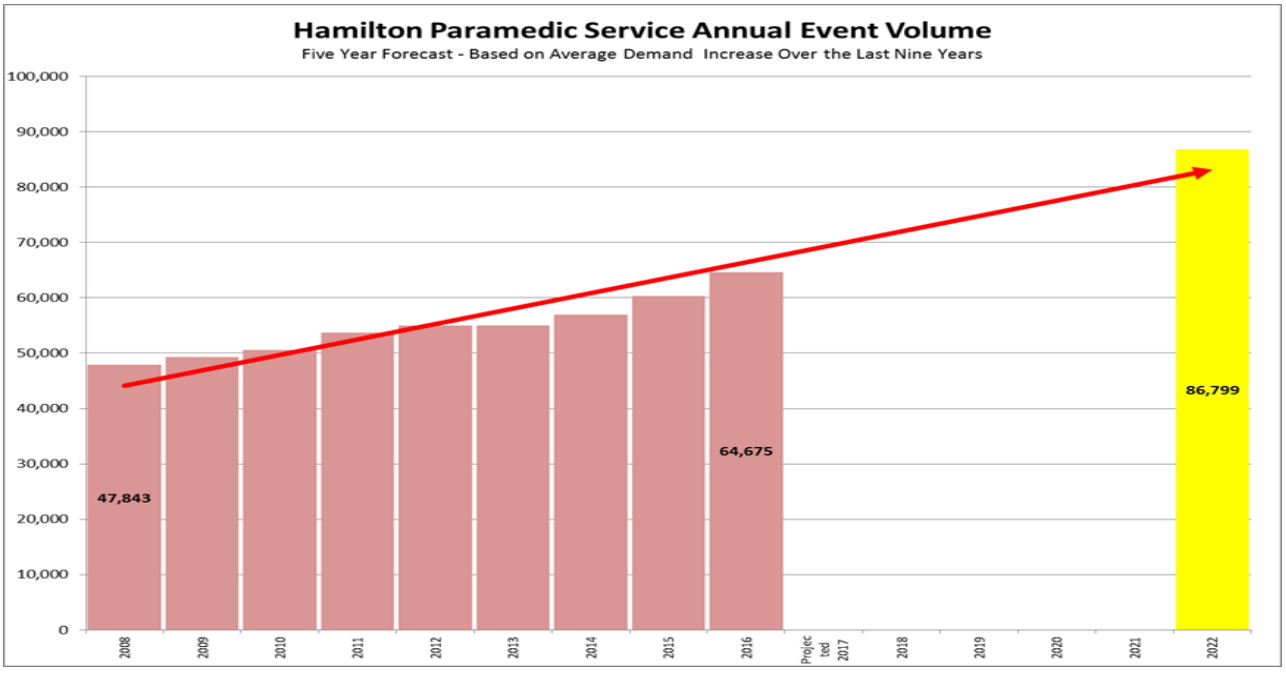
Transports in 2016

49,610

Two aspects of demand volume require some additional mention. First, as can be expected in a very large municipality that blends rural, urban, and metro population densities, the demand for service is not equally distributed across the city. Instead, there are areas of the city with much higher call volume density which in turn consume a large part of our resources. Resources and response capacity within our deployment plan are distributed to balance both the geographically anticipated call volumes while trying to maintain acceptable response times in lower populated areas.



The second aspect that draws attention is the growth in the number of 911 events requiring ambulance responses. These have increased an average of 5% a year over the past seven years, with the growth in demand accelerating over the past two years. Continuation along the present growth curve, which is likely based upon the patient population and other demand drivers, would result in additional demand in the area of 20,000 events over the next five years. Our pending multi-year operational plan will be addressing this and other issues.



2016 Response Time Compliance

In accordance with O. Reg. 257/00 the MOHLTC has required every ambulance service to establish, and publicly report on, a response time performance plan. Rather than reporting on how long it took for an ambulance to arrive at the scene of an incident that was dispatched as an emergency the mandatory public reporting is based on the condition of the patient as assessed by the paramedic after arrival on the scene. This reporting is published by the MOHLTC and available for review at:

http://www.health.gov.on.ca/english/public/program/ehs/land/responsetime.html

In reviewing 2016 CTAS performance response times, data was collected using the MOHLTC Ambulance Dispatch Reporting System (ADRS). To assist with compliance, HPS utilizes a deployment plan that is configured to ensure resources are maximized when call volumes are at their heaviest. In addition to this, ambulances are complimented with Paramedic Response Units (PRU's), a single person vehicle that allows for a rapid response, ensuring that a paramedic resource is on scene prior to ambulance arrival. *Diagram 4 & 4b* summarizes HPS compliance in regards to the approved 2016 performance plan.

"In 2016 HPS was fully compliant with the "Hamilton Paramedic Service Response Time Performance Plan Target -2016"

Diagram 4 – 2016 COH Target Response Times

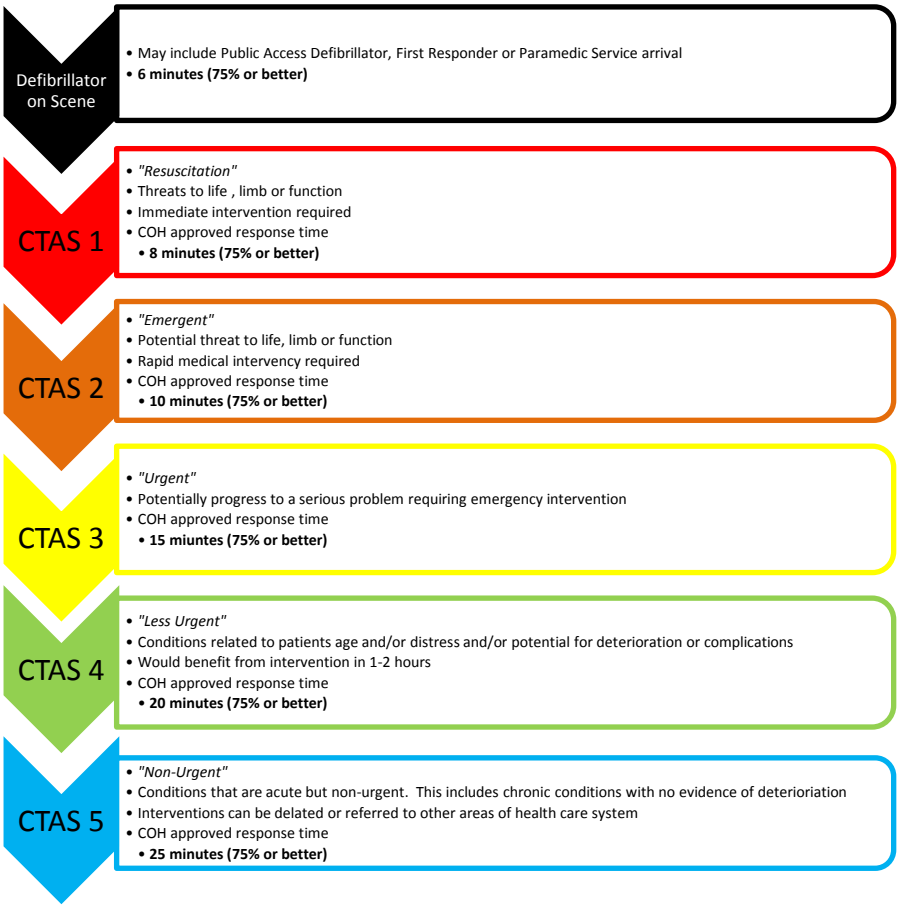
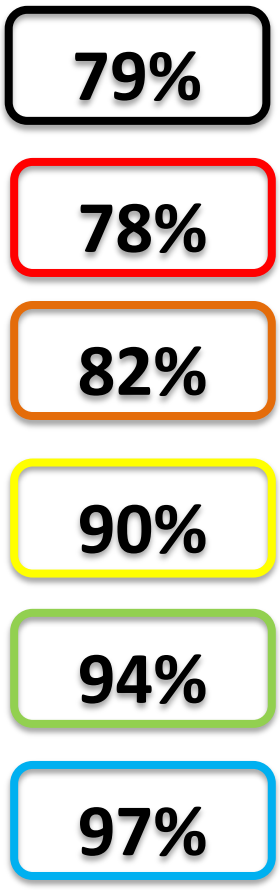


Diagram 4b – 2016 COH Actual Response Times



Our service understands that while the MOHLTC mandated RTPP provides somewhat of an outcome measure, it does not provide a measure of response time for calls assessed by a MOHLTC dispatcher as being an emergency and dispatched as an emergency.

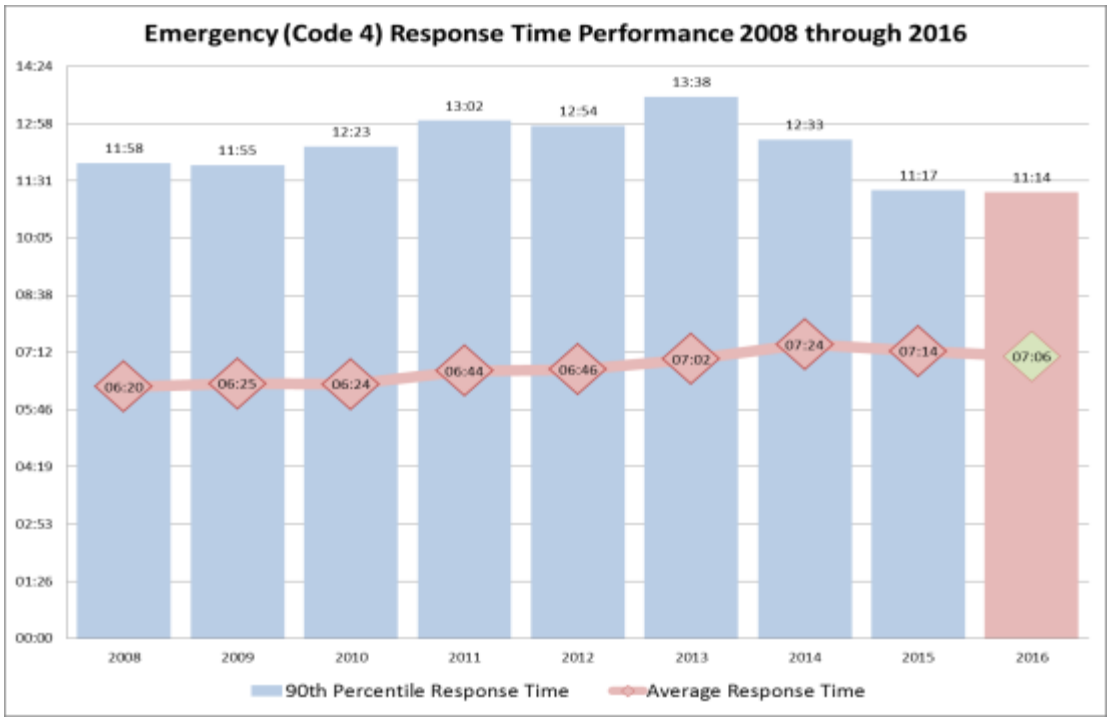
For example, when a bystander comes across a person in the street who appears unconscious, or witnesses a pedestrian struck by a car, and calls for an ambulance a lights and siren response is expected. They are calling for paramedics to determine if it is an emergency, to treat the patient as needed, and to transport the patient to hospital if required. In the mandatory standards if the paramedic determines after arriving on scene that the patient falls into a CTAS 4 category a 20 minute response time would be acceptable. Unfortunately there is no way of

> • While the Ministry expected to publicly report ambulance response times starting in 2014, the reporting method was to be based on patient urgency, measured by ambulance paramedics after they reached a patient (i.e., retrospectively), rather than on information provided by callers at the time of dispatch. Most other jurisdictions report response times based on information available at the time a call is dispatched. We found no other jurisdiction that used a retrospective response time measure.

knowing until after the paramedic arrives on scene and assesses the situation whether a quick response for a cardiac arrest (CTAS 1) or a longer response for a non-life threatening situation (CTAS 4) is appropriate.

This anomaly in reporting, as recognized in the 2015 Auditor General Report (Chapter 4, Section 4.04, Page 614), has been addressed with the City of Hamilton by continuing to report on our historical measures, or what the public would normally understand to be response time to emergencies *(Table 3).* In 2016, despite pressures from increasing call demand and extensive long hospital offload delays our emergency response times improved slightly as indicated in Table 3 below. Our average response time was 7 minutes and 6 seconds for calls dispatched by the MOHLTC as a life threatening emergency, and 90% of these calls had a paramedic on scene within 11 minutes and 14 seconds.

Table 3 – HPS Historical Response Times



Off-Load Delay

Individual paramedics, and the Paramedic Service, are required to comply with certain standards and directives issued by the MOHLTC in accordance with O. Reg. 257/00 and pursuant to the Ambulance Act. The MOHLTC issued patient care standards definitively require that our paramedic remain with the patient, and continue care for the patient, until the hospital accepts responsibility for the patients care.

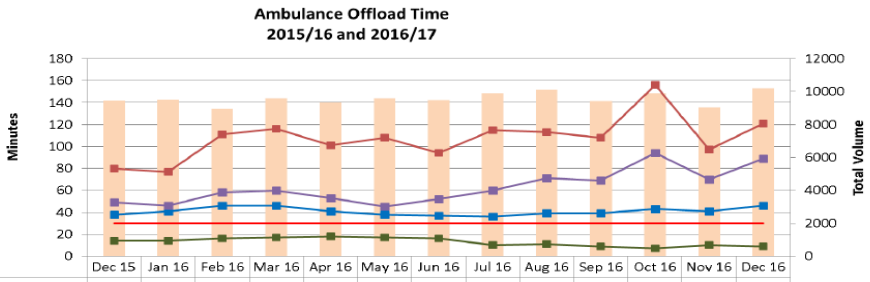
An Off-Load Delay (OLD) occurs when the hospital does not accept responsibility for the care of a patient within 30 minutes of arrival at hospital. While our leadership team continues to meet and collaborate with our hospital partners, and we understand that there are a variety of issues primarily related to hospital capacity, internal hospital patient flow, and flow out of the hospital, the fact remains that OLD

significantly impacts the availability of ambulance resources required for emergency community coverage and response.

The MOHLTC has continued the Dedicated Offload Nurse (DON) program where flow through funding is provided to the ambulance service to purchase additional nursing hours at significantly impacted hospital sites which will then allow for ambulances to be offloaded more quickly. One offload nurse with four available temporary holding spaces can quickly free four ambulances for return to availability. In 2016 the MOHLTC provided sufficient funding, just over $1.3 M, to cover more than 22 hours per day of dedicated offload nurse staffing, and four stretcher locations, at the Hamilton General, St. Joseph's, and the Juravinski.

All hospitals report their own measure of ambulance offload time on a monthly basis to an organized MOHLTC "Access to Care" analytics process. Retrospective reporting, generally 1 to 2 months after the fact, is provided back to the hospitals, to the LHIN, and to the paramedic services. As an example from the figure below in December 2016:

Ambulance Off-Load Times



	Dec 15	Jan 16	Feb 16	Mar 16	Apr 16	May 16	Jun 16	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16
HNHB Volumes	9448	9490	8945	9596	9345	9587	9462	9905	10109	9427	9909	9037	10197
Province	38	41	46	46	41	38	37	36	39	39	43	41	46
HNHB	49	46	58	60	53	45	52	60	71	69	94	70	89
Highest in LHIN	80	77	111	116	101	108	94	115	113	108	156	97	121
Lowest in LHIN	14	14	16	17	18	17	16	10	11	9	7	10	9
Recommended Standard (30 min)	30	30	30	30	30	30	30	30	30	30	30	30	30

Recommended time is 30 minutes	Dec 15	Jan 16	Feb 16	Mar 16	Apr 16	May 16	Jun 16	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16
Province	38.00	41.00	46.00	46.00	41.00	38.00	37.00	36.00	39.00	39.00	43.00	41.00	46.00
Brantford General Hospital	31.00	28.00	36.00	42.00	31.00	31.00	33.00	26.00	32.00	33.00	31.00	37.00	45.00
Haldimand War Memorial Hospital	14.00	14.00	16.00	17.00	18.00	17.00	26.00	14.00	16.00	14.00	13.00	16.00	NC
HHS - Hamilton General Hospital	67.00	66.00	75.00	90.00	72.00	63.00	75.00	86.00	86.00	77.00	148.00	92.00	107.00
HHS - Juravinski Hospital	80.00	77.00	111.00	116.00	101.00	108.00	94.00	115.00	102.00	74.00	156.00	80.00	112.00
HHS - McMaster Children's Hospital	19.00	23.00	30.00	24.00	19.00	20.00	16.00	10.00	11.00	9.00	7.00	10.00	9.00
HHS - West Lincoln Memorial Hospital	67.00	28.00	37.00	47.00	35.00	33.00	29.00	29.00	30.00	58.00	36.00	55.00	21.00
Joseph Brant Memorial Hospital	37.00	47.00	52.00	45.00	30.00	33.00	26.00	30.00	37.00	32.00	41.00	45.00	69.00
NHS - Greater Niagara General Site	33.00	35.00	40.00	38.00	50.00	34.00	40.00	44.00	53.00	47.00	62.00	58.00	70.00
NHS - St. Catharines General Site	65.00	55.00	51.00	55.00	50.00	46.00	49.00	45.00	77.00	91.00	113.00	97.00	121.00
NHS - Welland Hospital Site	30.00	31.00	42.00	40.00	34.00	33.00	36.00	46.00	53.00	36.00	62.00	51.00	86.00
Norfolk General Hospital	20.00	20.00	19.00	19.00	19.00	20.00	22.00	20.00	19.00	18.00	20.00	20.00	21.00
St. Joseph's Healthcare	46.00	44.00	85.00	79.00	72.00	41.00	85.00	99.00	113.00	108.00	96.00	85.00	91.00
HNHB	49.00	46.00	58.00	60.00	53.00	45.00	52.00	60.00	71.00	69.00	94.00	70.00	89.00

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Data Source: ER Fiscal Year Report, ER Analytics, Access to Care, CCO

- Recommended time is that 90% of patients are offloaded within 30 minutes;
- Provincially 90% of patients were offloaded within 46 minutes;
- Across HNHB LHIN 90% of patients were offloaded within 89 minutes; and
- Within Hamilton
    - Hamilton General 90% offloaded within 107 minutes;
    - Juravinski 90% offloaded within 112 minutes;
    - St. Joseph's 90% offloaded within 91 minutes.

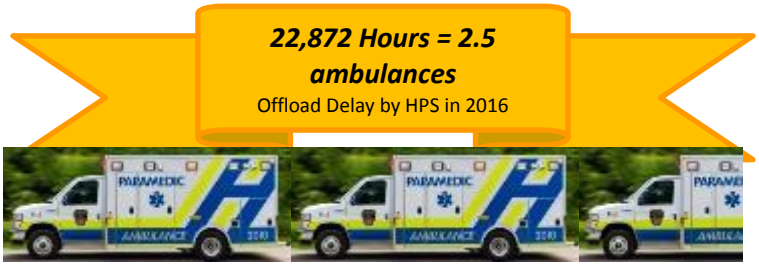
Diagram 5 demonstrates the intricate and complex relationship of how community, hospital and legislative resources impact paramedic resource capability.

Diagram 5 – Offload Delay Relationship

"EMS patient off-load delays costing city", *Matthew Van Dongen, Hamilton Spectator*

"Hamilton ambulances stretched to limit over 'significantly busy' weekend" & "weekend code zero's blamed on weather, off-loading delays" *Natalie Paddon, Hamilton Spectator*

"Province targets ambulance off-load delays", *Peter Criscione, Mississauga News*



Paramedic Offload Delay

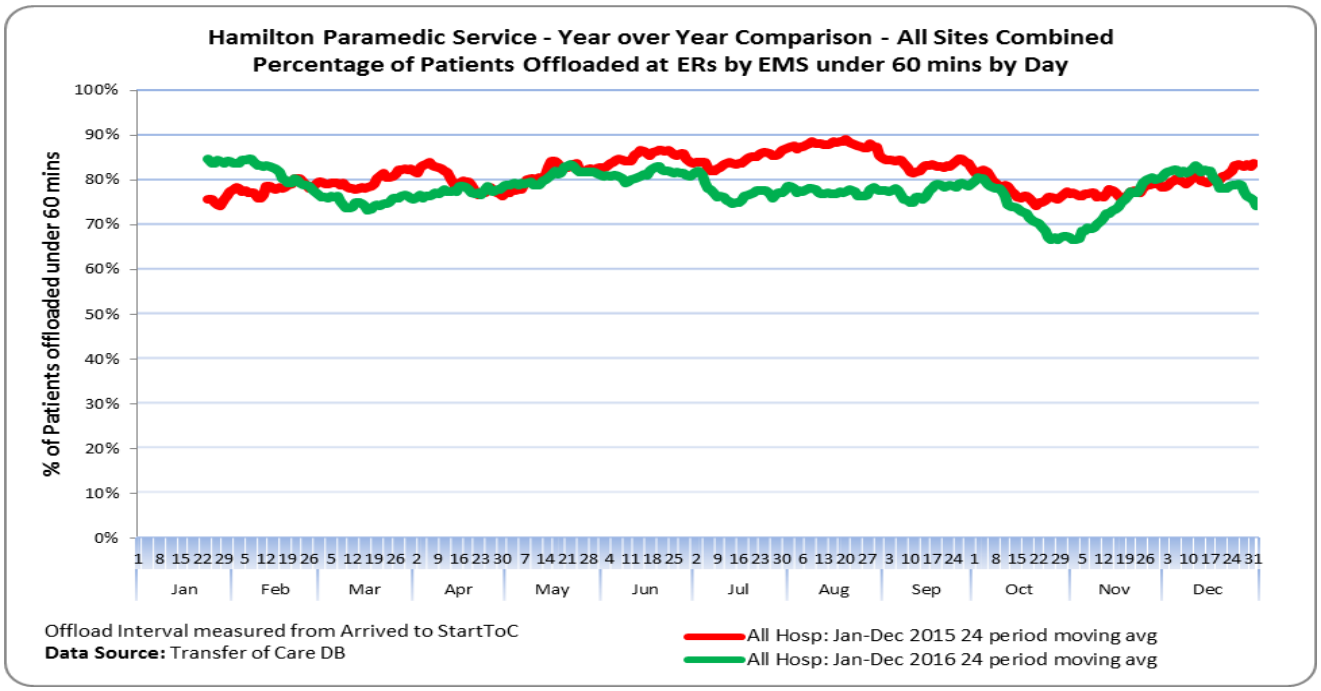
Lack of Alternative Care Beds in Community Settings

Lack of Hospital Beds for Admitted Patients from ED

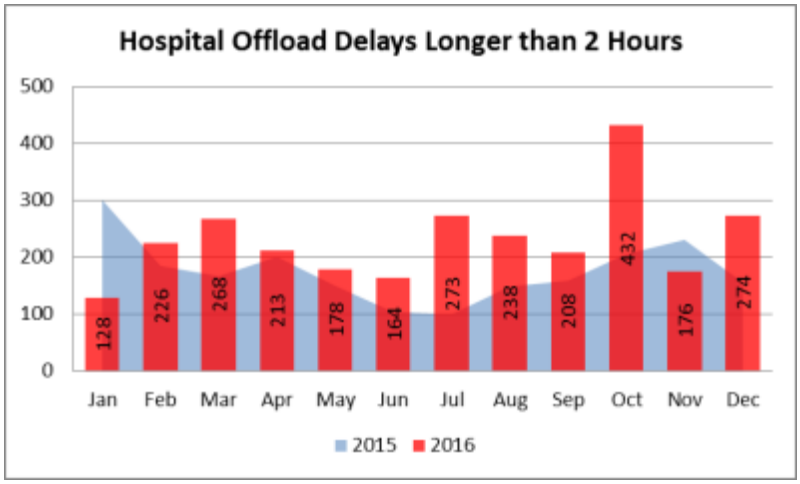
Lack of ED Beds to Offload Patients

Restrictive Ambulance Legislation not to Allow Alternative Transport Destinations for Paramedics

In addition to the retrospective hospital reporting we also utilize a manual Transfer of Care (TOC) software which provides real time awareness of Hamilton ambulance arrivals at hospital based on manual information inputs. Daily reports are provided to each hospital ED manager, and weekly run charts are provided at the Director level. A sample trend chart, using forward averaging processes to smooth out the daily variation, and comparing 2015 and 2016 for all Hamilton hospitals combined is provided below.



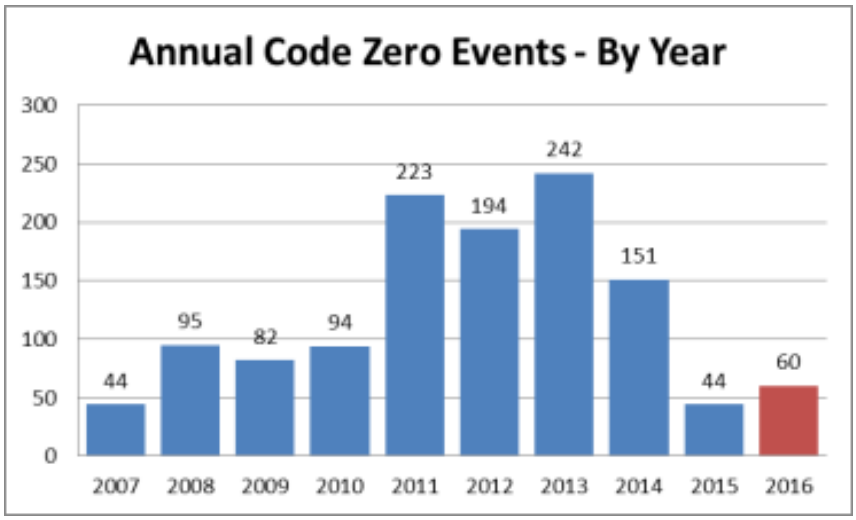
This report shows TOC performance within an interim 60 minute target rather than the Provincial 30 minute target.



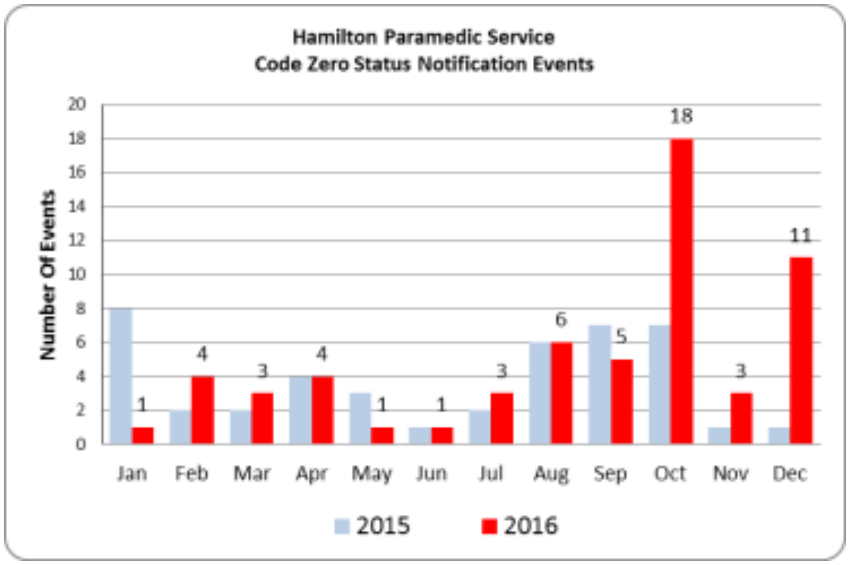
Of significance, and in our analysis directly related to the frequency of Code Zero events, is the frequency of offload delays taking longer than two (2) hours. The figure below provides a comparison of these very long offload delays with 2015. For example, in the most challenging month of October there were 432 patients not offloaded within two hours after arrival. While this represents an average of 14 patients per day the actual experience in October ranged from a low of 1 offload delay longer than 2 hours on October 9 to a high of 44 offload delays longer than 2 hours on October 11 – a date that also saw us experience three separate Code Zero events.

Code Zero Events

Annually we report on the number of times our available ambulance resources are narrowed to the point where one or less Hamilton ambulances are available to respond to calls. Escalation algorithms are in place to manage processes when a Code Zero event occurs. These include the MOHLTC dispatch centre assigning calls to other community ambulances which are transient within the Hamilton area, ambulances responding from outside of Hamilton, single paramedic Emergency Response vehicle assignment, and additional efforts to clear ambulances from offload delay at hospitals.



Despite performing thousands more responses than in 2015, and despite continued offload delay pressures and a significant increase in hospital offload delays longer than 2 hours, our frequency of Code Zero events rose slightly from 44 to 60 for the year. More than half of these Code Zero events occurred during the final quarter of the year, a time period that all hospitals have reported as having been significantly challenging.

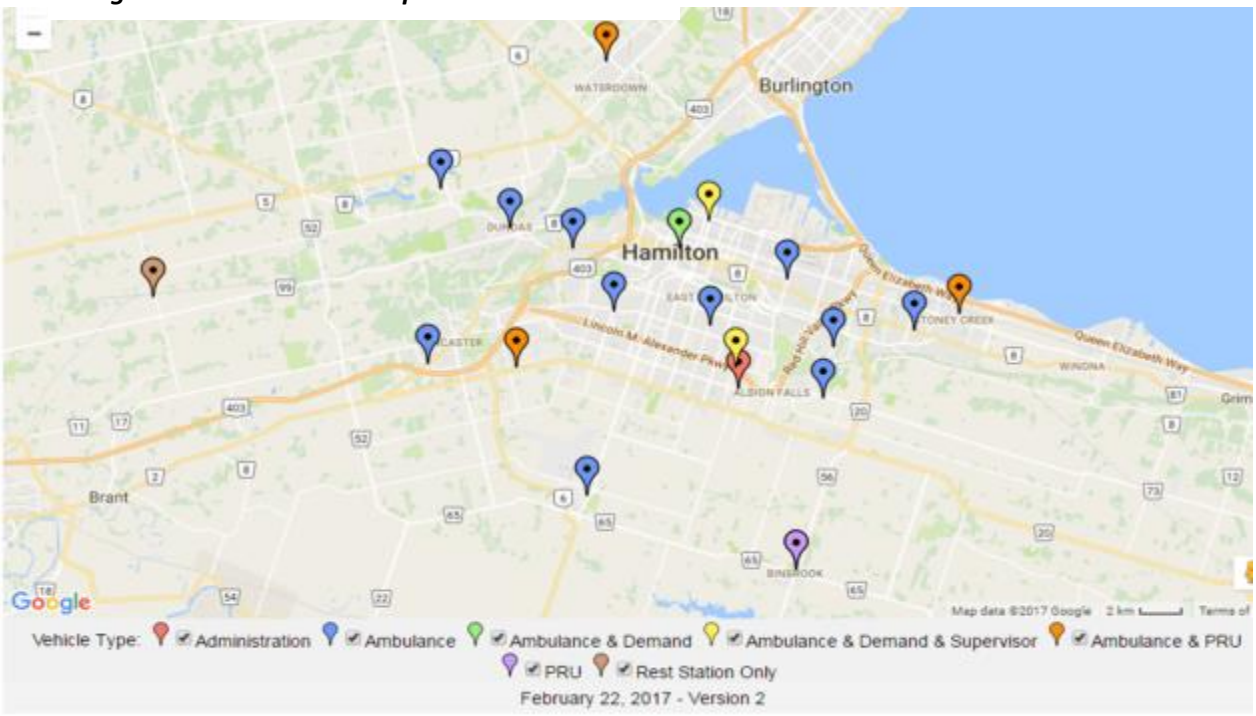


Code Zero events continue to be a significant challenge for our community and for our paramedics who live through very challenging shifts. The support of Council in their staffing enhancement budget approvals, with the Phase 3 enhancement of two additional 12 hour shifts being put into service in April 2016, has been critically important to managing these pressures.

Facilities

With a diverse community of both urban and rural landscape, HPS strategically deploys its resources from 20 Paramedic Response Stations *(see Diagram 6)* shared with Hamilton Fire Service. Depending on location, a facility may deploy a combination of ambulances, paramedic response units (PRU's) and supervisor vehicles. Stations are temperature controlled due to temperature sensitive medical supplies, contain additional equipment to stock vehicles and administrative quarters for completion of required documentation. In addition, kitchen and washroom facilities are provided to allow for appropriate rest periods of staff.

Diagram 6 – Paramedic Response Stations



Staffing

Staggered start times are utilized to ensure coverage at shift change periods and to reduce, where possible, end of shift overtime.

While staff may start their shift at a particular station they are routinely moved to alternate stations or locations to provide emergency response coverage, and to respond to calls, as service demand requires and flows during the day.

Table 4 – Paramedic Response Station Staffing Levels

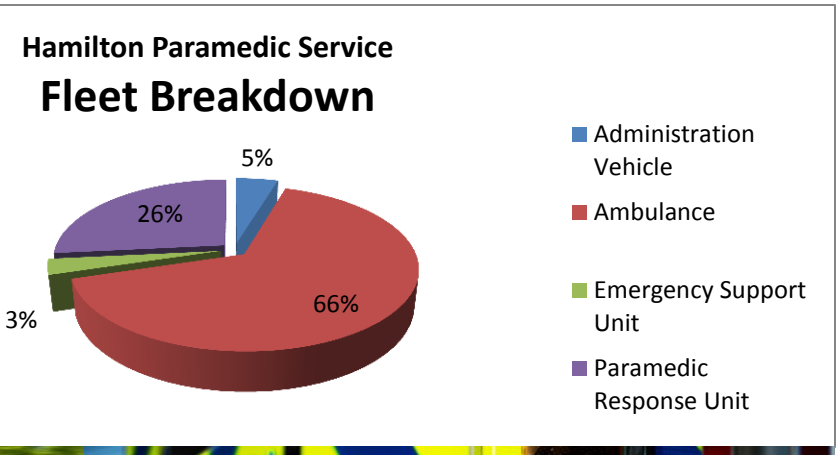
Station #	Station Name	Address	LTM	Vehicle Type	Level	Hours	Start Time
1	John	35 John Street North	Hamilton	Ambulance	PCP	24	6:30
1	John - Demand	35 John Street North	Hamilton	Ambulance	PCP	12	11:00
3	Garth	965 Garth Street	Hamilton	Ambulance	PCP	24	7:30
4	Upper Sherman	729 Upper Sherman Avenue	Hamilton	Ambulance	PCP	24	7:00
7	Quigley	225 Quigley Road	Hamilton	Ambulance	ACP	24	7:00
9	Kenilworth	125 Kenilworth Avenue North	Hamilton	Ambulance	ACP	24	6:30
10	Norfolk	1455 Main Street West	Hamilton	Ambulance	ACP	24	7:00
12	Stoney Creek	199 Highway 8	Stoney Creek	Ambulance	PCP	24	7:30
15	Arvin	415 Arvin Avenue	Stoney Creek	Ambulance	ACP	24	6:30
16	Arvin	415 Arvin Avenue	Stoney Creek	Paramedic Response Unit	PCP	24	6:30
17	Issac Brock	363 Issac Brock Drive	Stoney Creek	Ambulance	ACP	24	7:30
18	Binbook	2636 Highway 56	Binbrook	Paramedic Response Unit	PCP	24	6:30
19	Mount Hope	3302 Homestead Drive	Mount Hope	Ambulance	ACP	24	6:30
20	Ancaster - Garner	661 Garner Road East	Ancaster	Ambulance	PCP	24	7:00
20	Ancaster - Garner	661 Garner Road East	Ancaster	Paramedic Response Unit	PCP	24	6:30
21	Ancaster - Wilson	365 Wilson Street West	Ancaster	Ambulance	ACP	24	6:30
23	Dundas	19 Memorial Square	Dundas	Ambulance	ACP	24	6:30
24	Waterdown	256 Parkside Drive	Waterdown	Ambulance	ACP	24	6:30
24	Waterdown	256 Parkside Drive	Waterdown	Paramedic Response Unit	PCP	24	6:30
25	Greensville	361 Old Brock Road	Greensville	Ambulance	PCP	24	7:00
26	Lynden - Rest Only	119 Lyden Road	Lynden	Rest Station Only	N/A	N/A	N/A
30	Victoria	489 Victoria Avenue North	Hamilton	Ambulance	PCP	24	7:30
30	Victoria - D1 Supervisor	489 Victoria Avenue North	Hamilton	Superintendent	ACP/PCP	24	6:15
30	Victoria - Demand 1	489 Victoria Avenue North	Hamilton	Ambulance	ACP	12	7:30
30	Victoria - Demand 2	489 Victoria Avenue North	Hamilton	Ambulance	PCP	12	8:00
30	Victoria - Demand 3	489 Victoria Avenue North	Hamilton	Ambulance	PCP	12	8:30
30	Victoria - Demand 4	489 Victoria Avenue North	Hamilton	Ambulance	PCP	12	9:00
30	Victoria - Demand 5	489 Victoria Avenue North	Hamilton	Ambulance	PCP	12	11:00
30	Victoria - Demand 6	489 Victoria Avenue North	Hamilton	Ambulance	PCP	12	12:00
30	Victoria - Demand 7	489 Victoria Avenue North	Hamilton	Ambulance	PCP	12	13:00
30	Victoria - Demand 8*	489 Victoria Avenue North	Hamilton	Ambulance	PCP	12	7:00
30	Victoria - Demand 8A**	489 Victoria Avenue North	Hamilton	Ambulance	PCP	10	7:00
30	Victoria - Demand 9**	489 Victoria Avenue North	Hamilton	Ambulance	PCP	10	13:00
30	Victoria - Demand 9A***	489 Victoria Avenue North	Hamilton	Ambulance	PCP	12	13:00
30	Victoria - OLD Supervisor	489 Victoria Avenue North	Hamilton	Superintendent	ACP/PCP	12	11:00
32	Limeridge	1000 Limeridge Road East	Hamilton	Ambulance	ACP	24	7:00
32	Limeridge - D2 Supervisor	1000 Limeridge Road East	Hamilton	Superintendent	ACP/PCP	24	6:15
32	Limeridge - Demand	1000 Limeridge Road East	Hamilton	Ambulance	PCP	12	10:00
N/A	MATC	1227 Stone Church Road East	Hannon	Administration	N/A	N/A	N/A

With more than 418,000 paramedic shift hours on the street, each station is staffed with at least one paramedic resource that is able to respond to emergency requests for service. In locations where data has demonstrated call volumes to be high or a lengthy response time, additional ambulances or paramedic response units have been staffed 12 to 24 hours per day. For a complete breakdown of staffing, please refer *Table 4*

“More than 418,000 paramedic shift hours on the street in 2016”

Fleet

With an estimated 1,727,321 kilometres travelled last year, HPS depends on a fleet of 64 ambulances, paramedic response units and administrative vehicles to respond, transport and move its patients and employees in a safe manner. All vehicles are certified to ensure MOHLTC compliance against applicable standards including conversions to the Original Equipment by the Manufacturer (OEM) systems. Vehicle branding is established to ensure safety during low light conditions and meet legislative requirements while maintaining a professional appearance unique to the COH.

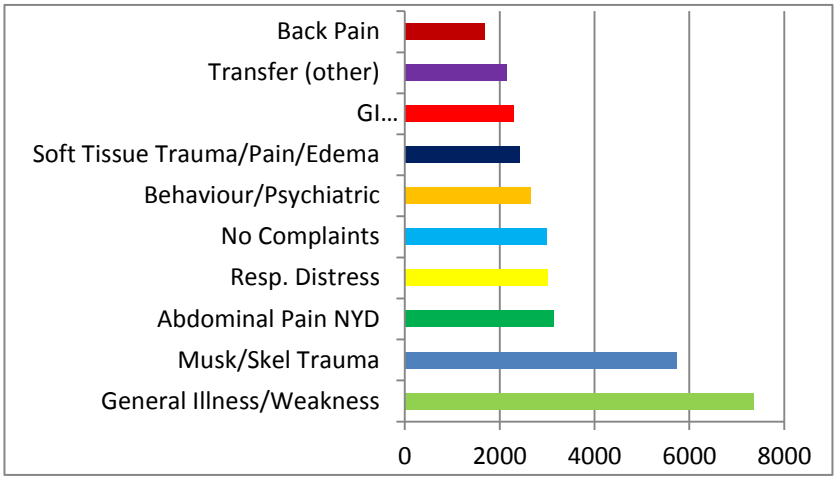


"Vehicle branding is established to ensure safety during low light conditions and meet legislative requirements while maintaining a professional appearance unique to the COH."

Clinical Overview

Call Types & Interventions

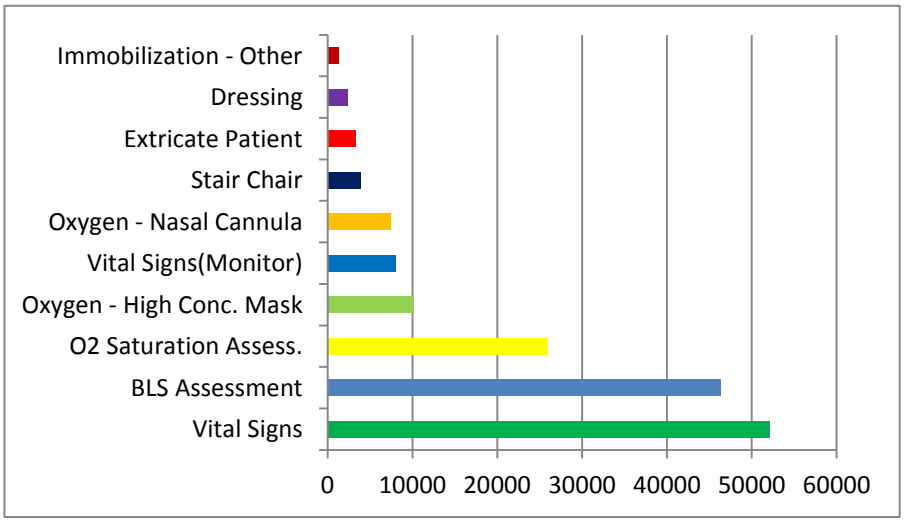
Table 5 – Top 10 Types of Calls Attended to by HPS



Hamilton Paramedic Service reviewed 62,405 patients in 2016, which was a combination of patients transported to hospital and patients that refused transport after initial assessment. As a mobile health care provider, HPS responds, assesses, treats and transports patients with a variety of physical and mental health conditions *(see Table 5)*. Once arriving on scene, paramedics conduct the following to determine a "working diagnosis":

1. Detailed history of current condition including previous medical history
2. Diagnostics assessments including vital signs, electrocardiogram, and blood sugar testing
3. Detailed physical assessment of the impacted body system

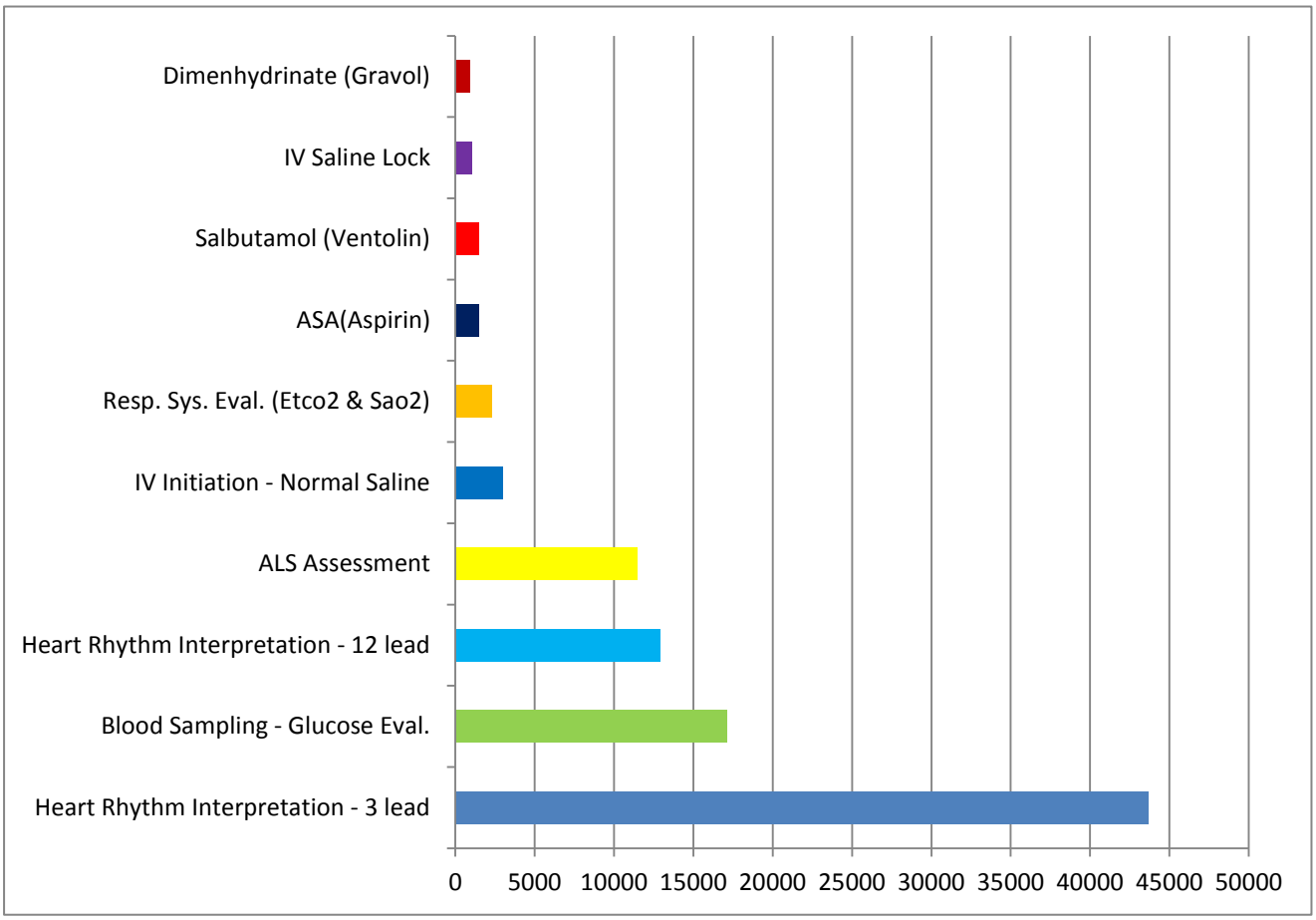
Table 6 – Basic Life Support Interventions



Once completed the paramedic shall decide on a treatment modality, should the patient's condition warrant intervention. Assessments and interventions are dependent on the level of experience, education and certification level of the paramedic. As noted in the paramedics scope of practice diagram on page 11, all paramedics in Ontario are educated and trained to provide minimum assessments and controlled acts as per provincial legislation. Additional education provided to ACP's, allows them to enhance the patient's quality of life and/or provide additional life-saving assessment/interventions that are usually reserved for the hospital setting.

Table 6 and 6b provides a breakdown of these assessments and interventions.

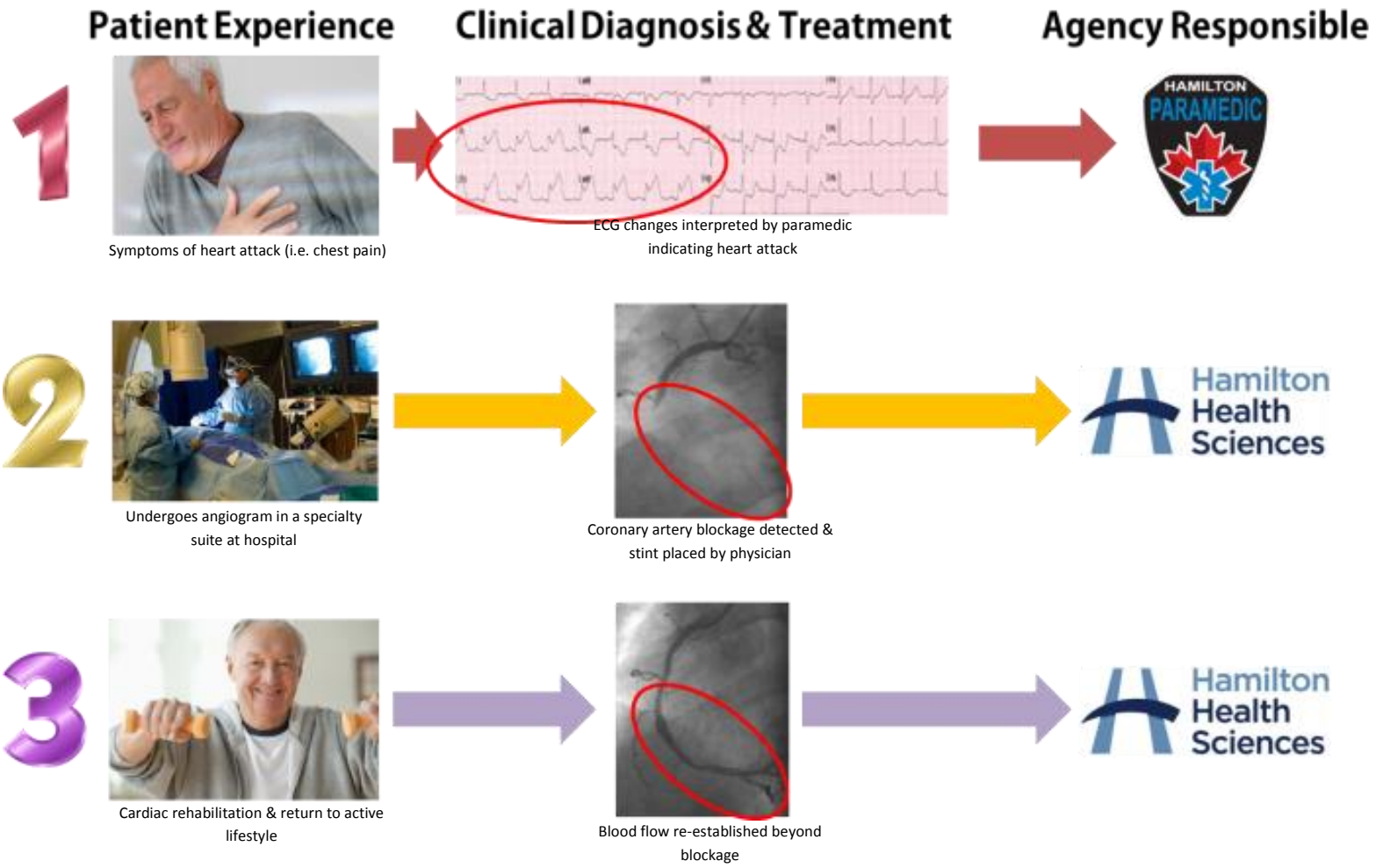
Table 6b – Delegated Medical Acts



Specialty Programs & Partnerships

In addition to providing some of the best quality of care in the province, HPS through provincial and local partnerships is fortunate enough to have acute care specialty programs available to residents/visitors. These programs that focus on emergency situations involving heart attacks, strokes severe traumatic events and pediatrics, allows paramedics to directly transport to an acute care facility where specialty physicians and teams are awaiting to provide benchmarking care. *Diagram 7* is an example of one of these programs: demonstrate the patients experience and the responsibilities of HPS and hospitals.

Diagram 7 – Heart Attack Alert Response Partnership



Sudden Cardiac Arrest Outcomes

The Heart and Stoke Foundation of Canada defines sudden cardiac arrest as:

> *"when the heart suddenly and unexpectantly stops beating normally"*
> *((Heart & Stroke Foundation of Canada, 2017)*

In 2016, HPS responded to a total of 1,184 cardiac arrests or 1.8% of the total events received by the public. The MOHLTC mandates through Ambulance Act 257/00, that ambulance services operators annually report the following:

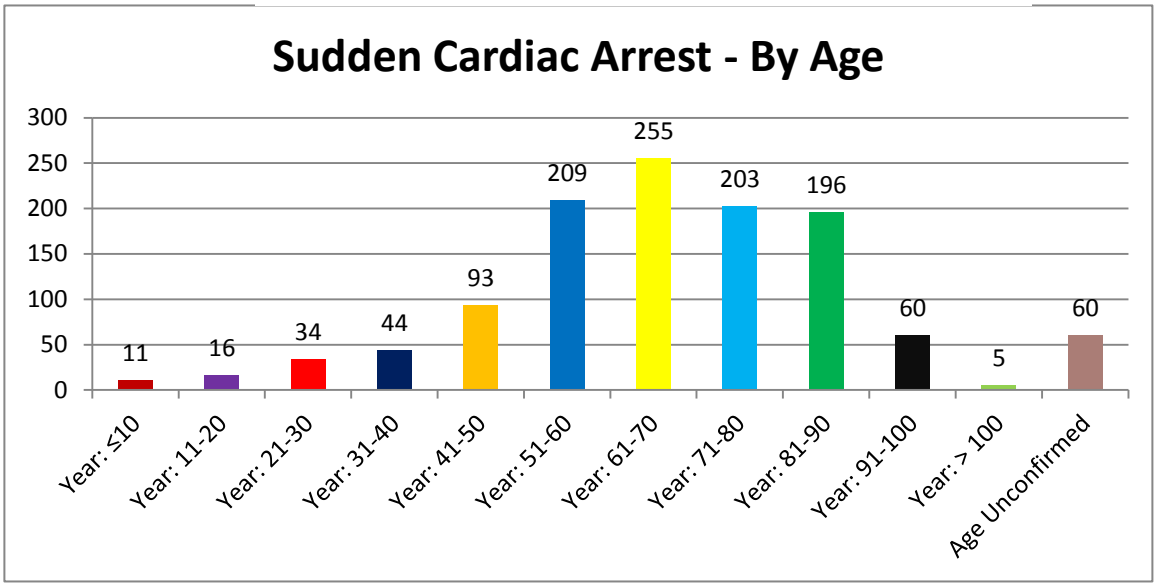
> *"The percentage of times that a person equipped to provide any type of defibrillation has arrived on-scene to provide defibrillation to sudden cardiac arrest patients within six minutes of the time notice is received."*
>
> *And*
>
> *"The percentage of times that an ambulance crew has arrived on-scene to provide ambulance services to sudden cardiac arrest patients or other patients categorized as CTAS 1 within eight minutes of the time notice is received respecting such services."*

As a pre-hospital care provider, HPS is expected to respond to SCA's no matter the location where it occurs. As with majority of our other calls, SCA's tend to occur while people are at home, but do occur in a variety of other locations seen in *Diagram 8*. As a result of this, HPS in cooperation with the City of Hamilton currently manages a city-wide database that tracks all AED's (that are reported by the public) and is able to upload them to the MOHLTC dispatch system. This allows Ambulance Communications Officers (ACO's) not only to give CPR instructions over the phone, but advise where the closest Automated External Defibrillator (AED) is located.

Diagram 8 – Sudden Cardiac Arrest – Location Distribution

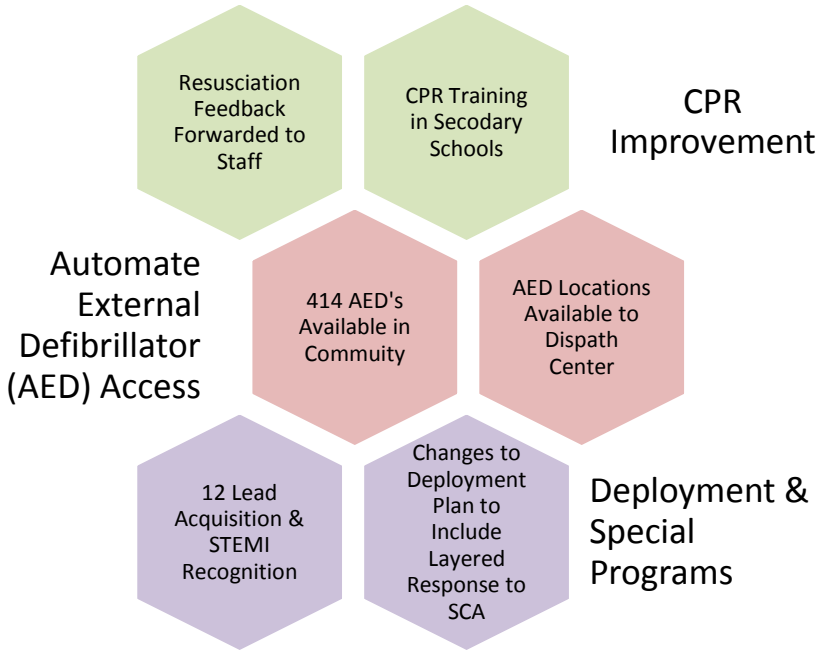
Of the 1,184 cardiac arrests approximately 72.8%% are between the ages of 51 and 90 years of age *(see Table 7).* Of this group 39.1%% fall between the ages of 51 and 70 years, and are very active within the COH.

Table 7 – Sudden Cardiac Arrest – By Age



In collaboration with the COH, The Heart and Stoke Foundation and other community agencies, HPS continues to improve on its "Cardiac Safe City" initiative. Quality improvements aim on increasing the strengths of each of the links in the Chain of Survival. Some of the key initiatives are included in *Diagram 9*.

Diagram 9 – Initiatives to Increase Survival of SCA



These quality improvement initiatives were based on recommendations from an American Heart Association Consensus Statement (American Heart Association, 2013) which concluded the following to improve patient outcomes:

1. High quality CPR should be recognized as the foundation on which all other resuscitative efforts are built
2. At every cardiac arrest attended by professional rescuers, use at least one modality to monitor teams CPR and physiological response of patient
3. Resuscitation teams should coordinate efforts to optimize CPR performance early
4. EMS systems should implement strategies for continuous improvement in CPR quality and feedback
5. A national system for standardized reporting of CPR quality metrics should be developed

"Key focus areas for HPS in improving survivor success rates for SCA" *Russell Crocker, Hamilton Paramedic Service*

In 2016, HPS recorded a total of 100 Return of Spontaneous Circulations (ROSC) in the field. This translates into 8.4% (100 of 1,184) residents/visitors that regained a pulse due to the efforts of paramedics and were transported to hospital for post-arrest care. Current limitations as a result of Personal Health and Information Protections Act (PHIPA), do not allow HPS to determine patient survival rate 30 days post event, but will be available in future publications for comparison.

Innovation

Automated Vehicle Locator & Asset Management

MOHLTC legislation requires that all paramedic vehicles are monitored for compliance in speed, emergency system use, braking etc. In addition to legislative compliance, monitoring of these characteristics allows for legal mitigation in the instance of a vehicle collision or driving concerns brought forward.

With HPS's previous vehicle monitoring system at the end of its life cycle, a new system was acquired in late 2015 and system configuration completed in 2016. The new system by Skyhawk and BeWhere Technologies is now capable in monitoring and managing a variety of issues (Diagram 10):

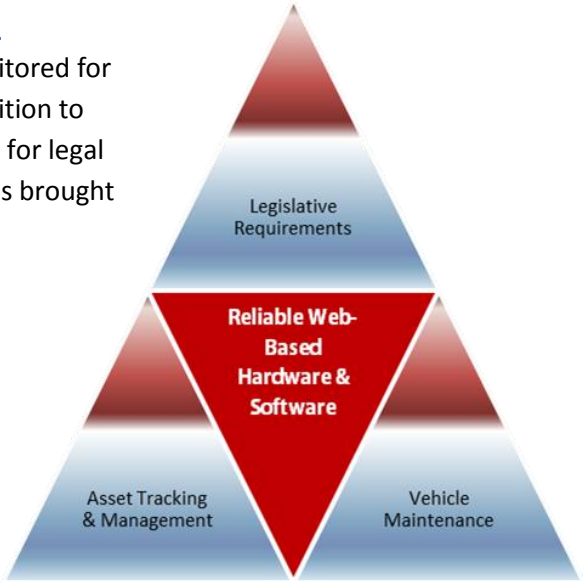
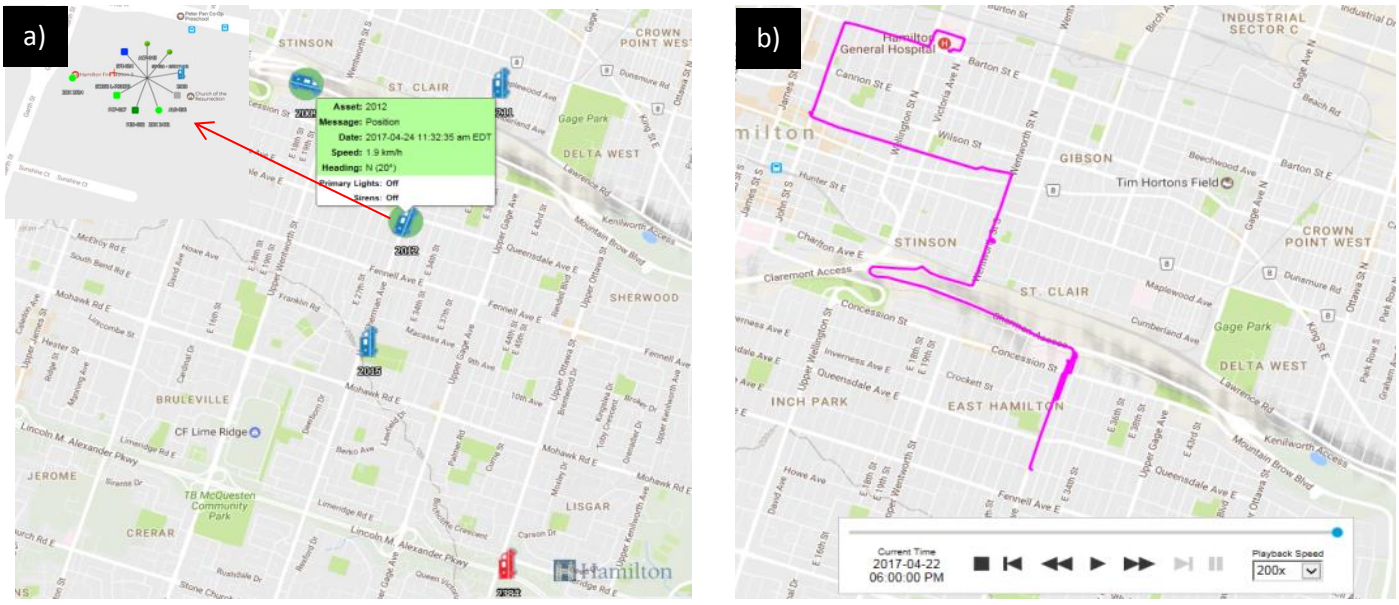


Diagram 10 – AVL Benefits

In addition to providing mandatory MOHLTC legislative information, the new system is able to track major assets assigned to a vehicle. Vehicle mileages and information from the vehicles Electronic Control Module (ECM) can be easily transmitted to HPS Logistics personal to manage fleet maintenance and repairs (see Diagram 11).

The net result is both equipment and vehicles that are safe, legislatively compliant and reduce cost by minimizing lost items and potentially unnecessary repairs

Diagram 11 - A) real time asset and vehicle reporting, B) access to historical reports



CanROC Participation

The Resuscitation Outcomes Consortium (ROC) is a North American agency that is comprised of 20 cities from North America. Their objective is to increase patient survivability through clinical research in the area of cardiopulmonary resuscitation and traumatic injury. As a satellite site, CanROC (Canadian Research Outcomes Consortium) based at St. Michaels Hospital in Toronto, is a subsidiary of ROC and is responsible for coordinating the epidemiologic registry and subsequent research in Canada.

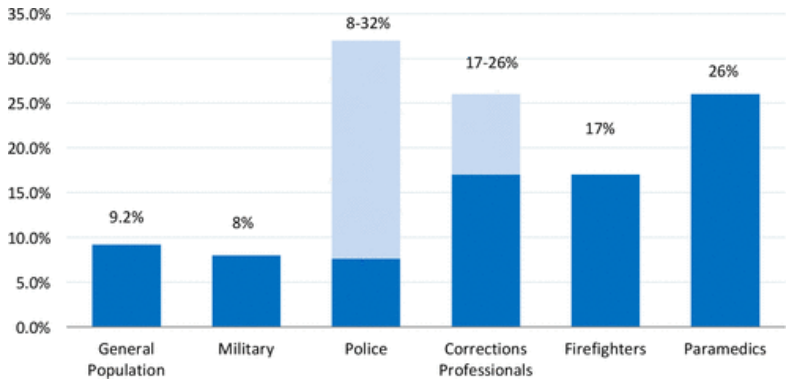
In 2016 HPS applied and was accepted into the CanROC Epistry, which allows for contribution of data into the CanROC data set. As a result, paramedics in HPS will receive feedback on all out of hospital cardiac arrests they participate in. In addition to feedback on CPR depth, CPR rate, defibrillation times and other procedures, paramedics will also be communicated the patient outcome at hospital, something rare to our industry. Through this continuous quality improvement feedback, paramedic services participating in CanROC reported a 1.7-fold increase in survival for out of hospital cardiac arrest.

"paramedic services in CanROC reported a 1.7 fold increase in survival for out of hospital cardiac arrest"

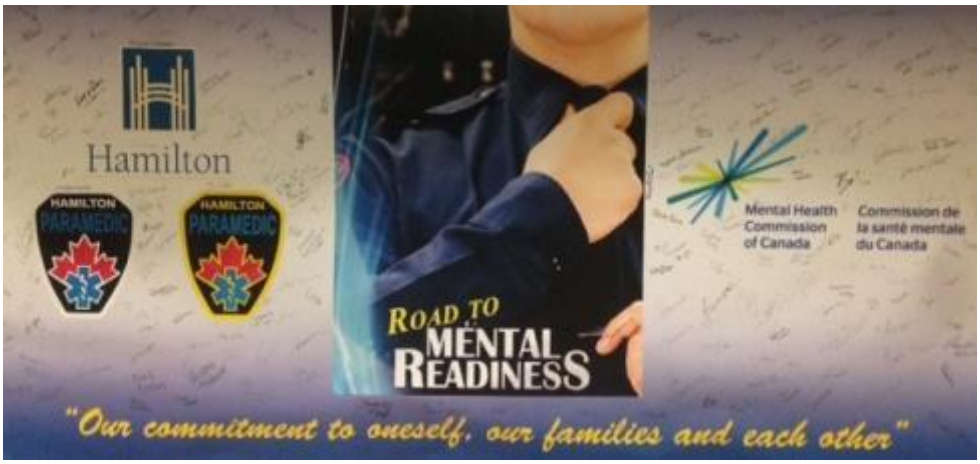
Road to Mental Readiness (R2MR)

Mental Health in first responders is a growing area of concern for employers across the nation. *Table 8* was extracted from the Journal of Community Safety and Well-Being and identified the lifetime prevalence rates for high risks groups including paramedics. It demonstrates that of the estimated 26,760 paramedics based on a 2011 National Household Survey, 6,958 or 26% will develop PTSD in their lifetime (Stuart Wilson, 2016).

Table 8 – Prevalence Rates for High Risk Groups



To assist in identification with at risk employees, HPS applied to the Mental Health Commission of Canada (CMHC) to be a pilot site for the implementation of the Road to Mental Readiness (R2MR) specific to paramedic services. As one of 6 pilot sites in the country for paramedic services, R2MR's goal "is to improve short term performance and long term mental health outcomes". As a result, all paramedics within HPS have received an 8-16 hour training session surrounding this great initiative that was derived in the Canadian Military. As a show of support, staff was requested to sign a poster with the statement "our commitment to oneself, our families and each other", recognizing that mental health cannot only affect them individually, but their family and peers.



The program has been well received and with the support of the Peer Support Team slated for 2017, HPS will have a program that is anticipated to effectively assist with employee's mental health and reduce associated costs due to lost time.

Key Performance Indicator Development

During the past 3 years HPS with the support of its employees and the COH, has positioned itself to acquire and develop systems to analyze data. The objective of this is to begin developing Key Performance Indicators (KPI's) for HPS and a road map of quality improvement initiatives to improve customer service while containing costs. Data for the systems noted in *Table 9*, have been developed to track and report on several key measurable.

In 2017, HPS will continue to develop its KPI's, and in addition to response times, look at how patient outcomes are being affected by the services we provide. Collaboration will continue to be a cornerstone of this effort, but will ensure sustained gains into the future.

Table 9 – Data Sources for Future KPI Development

Electronic Patient Care Record (ePCR)
• Tracks all clinical information performed by paramedics
COH Fuel Dispensing Stations
• Tracks amount of fuel consumed by HPS vehicles
Ambulance Dispatch Response System (ADRS)
• Produced by the MOHLTC and encompassess all response data
Transfer of Care (TOC) Monitor
• Track off load delay hours at hospitals
Quality Review Database
• Tracks all feedback and complaints from external and internal sources • Tracks all vehicle collisions • Tracks all recognition
FDM
• Responsible for tracking all vehicle maintenance and repairs • Tracks all equipment and consumable purchase
Automatic Vehicle Locator
• Tracks vehicle location for dispatch centre • Reports on legislative requirements • Tracks driving habits
Other
• Employee Attendance • Employee Performance • Public Relations Events • Public Access Defibrillator

Community Paramedicine & Partnerships

Summary

HPS in collaboration with a variety of community partners including Hamilton Police Service, McMaster University – Department of Family Medicine, City of Hamilton Housing and Catholic Family Services initiated the Community Paramedic program in 2014 under the leadership of Superintendent Brent McLeod. Keeping with the MOHLTC's "Patient First: Action Plan for Health Care", the Community Paramedic programs directly focuses on the key objectives set forth by the MOHLTC which include:

1. Access: Improve access – providing faster access to the right care
    a. In identifying "high users" of paramedic services, community paramedics are able to intervene and assist the patient in receiving the right health care services for their needs. This translates in decreasing reliance on paramedic/hospital services, therefore increasing the capacity for other 911 emergencies

2. Connect: Connect services – delivering better coordinate and integrated care in the community, closer to home
    a. The Community Paramedic program does not look to duplicate services, but to identify, triage and refer high use patients that utilize paramedic services to the appropriate specialized services already being offered by community agencies.
3. Inform: Support people and patients – providing the education, information and transparency they need to make the right decision about their health
    a. In addition to responding to "high users", the community paramedic program completes preventative health assessments by identifying patients that are at high risk of falls, high blood pressure, diabetes and heart disease through clinics at COH Housing. This allows patients to follow up with their personal health care practitioners prior to their condition requiring paramedic and hospital services

4. Protect: Protect our universal public health care system – making evidence based decisions on value and quality, to sustain the system for generations to come
    a. In partnering with McMaster University, the community paramedic program continues to be evaluated by medical researchers to ensure quality of care to patients and its impact on the health care system

These objectives set forth by the MOHLTC and adopted as the cornerstones for community paramedic program, has accomplished the following:

1. Decreases reliance of "clients" on paramedic/hospital services. This results in less patients being transported to hospital which directly decreases the length of time a paramedic unit is potentially on off load delay. The net result is an increase in hours that a paramedic unit is able to respond to 911 calls in the community.

@Home Visit

As a result of an increase in off-load delays by paramedics throughout the province and the Patients First Strategy, the MOHLTC committed to a pilot project to sponsor and evaluate the usefulness of Community Paramedic Programs. The one time funding up to $300,000, would allow a paramedic service to develop, operationalize and evaluate if these programs could effectively reduce paramedic transports to hospital, while achieving the Patients First objectives.

HPS utilized a three part strategy to assist with deferring clients from acute care facilities which included:

1. Identify – utilizing both a paramedic referral "hotline" and/or ePCR data, HPS identifies patients that have the potential to become "high users" of the system.
2. Refer – Once attending the clients home and a needs assessment completed, the Community Paramedic will refer the client to appropriate community agencies that specialize in the level of care the client requires
3. Advocate – During subsequent visits, Community Paramedics will ensure that resources are in place to support the client prior to discharge from the program. If not, the CP will contact the appropriate organization and ensure follow-up

As a result of the programs efforts, the following was observed in 2016 for clients identified to meet the program criteria:

Total number of identified patients	665
Total number of patients enrolled in this initiative	258
Total Number of home visits completed	571
Total Number of Referrals to Community	196
Percentage Decrease in High User Patients (60 follow up)	59%

"percentage decrease in high user patients = 59%"

Social Navigator Paramedic

The Social Navigator Program is a collaboration with the Hamilton Police Service, COH Neighbourhood Action Strategies and the Urban Renewal Section of Economic Development. Introduced in 2012, the Social Navigator Programs objectives were to reduce contacts with persons interacting with police, by coordinating and advocating for appropriate care to meet their specific needs. The program is part of the Hamilton Police Service ACTION Strategy and consists of one paramedic, constable and case coordinator.
In addition to referrals received by frontline police constables and paramedics, the program has been recognized and supported by the court system, which discharges people into their programs as part of their release conditions.

In 2016, the Social Navigator program received a total of 208 referrals for clients. There are currently 93 clients active in the program of which 27 are mandated by the judicial system. The Social Navigator Paramedic was responsible for making a total of 231 referrals with only 14% of the clients having repeat usage of the program. A 2016 report is currently be drafted by the Hamilton Police Service and will be available in Q2 of 2016 which will demonstrate results of the program.

In September of 2015 the Hamilton Paramedic Service successfully implemented an electronic patient report system that has the capacity of mitigating the above mentioned barriers. Moving forward, the SNP will be able to get timely and consistent data of frequent users and vexatious callers of the Hamilton Paramedic Service. Hamilton Paramedic Service responded to a 61,429 unique events originating from a 911 call from September 2015 until September 2016 (iMedic Cube, Sept 21, 2016). Of those calls, there were 2,626 Alcohol Intoxication and Drug Overdose and 3,140 mental health incidents. Furthermore, in that same time period we have identified 856 patients whom had five or more visits by a frontline paramedics. (iMedic Easy View, Sept 21, 2016).

Public Access Defibrillation Program

Since 2007, both provincial and federal governments in addition to local fund-raisers, have assisted the COH in moving toward a “Cardiac Safe City” through the installation of Automated External Defibrillators (AED’s) throughout public buildings including recreation centres, libraries, schools and public building associated with public access. As the responsible agent, HPS coordinates and maintains 414 Public Access Defibrillators (PAD’s) in the city, through TrackMy AED Plus©. In addition to this, the database allows the public to register their AED, so that HPS can track all PAD’s in community. This database is then shared with the MOHLTC Central Ambulance Communication Centre (CACC) which in the event of a sudden cardiac arrest, can provide

instructions of where the closest PAD is and how to use it. In 2016, we had eight AED units used by our community members in public places with two patients regaining a pulse before reaching the hospital. In 2017, HPS will be working with Corporate Communications to discuss the feasibility of implementing a registration path on the COH website so that the public can register AED's on their own.

Community Health Assessment Program through Emergency Medical Services (CHAPEMS)

CHAP EMS clinics are led by the paramedic service and overseen by the Community Paramedicine Research Program at the Department of Family Medicine, McMaster University. The clinics are located in selected COH Housing buildings and the intervention focuses on health promotion and the prevention of high blood pressure, diabetes, cardiovascular disease, social isolation and falls in senior residents in the buildings. This program has multiple benefits, including improvement in risk profile for chronic diseases, improved quality of life, and decreased paramedic responses to these buildings with resultant resource savings. Overall, there was a 25% decrease in 911 calls to the buildings that hosted the clinics, blood pressure dropped by 5 points which was clinically significant to decrease comorbidities like stroke and heart attack and an overall health improvement by all residents participating in the program when compared to the non-participating sites.

"25% percent decrease in 911 call to buildings that hosted the clinics"

"blood pressure dropped by 5 points which was clinically significant to decrease comorbidities like stroke and heart attack"

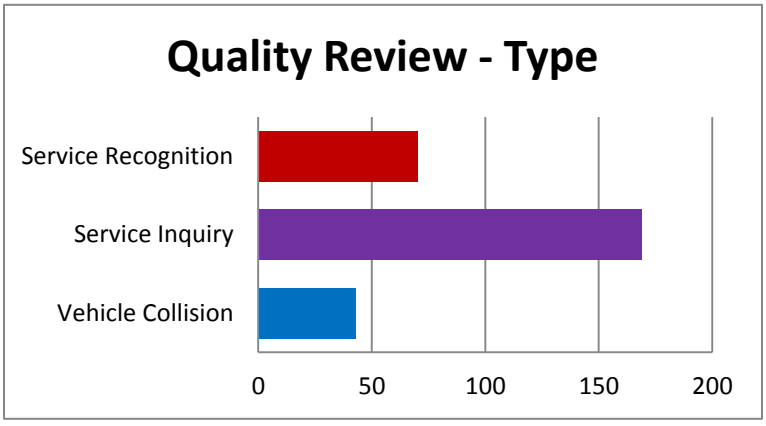
Service Inquiries

Quality Review

Hamilton Paramedic Service is dedicated to providing the highest quality of care and customer service to anyone that utilizes our services. In addition to a rugged quality assurance process, patient and customer feedback from both external and internal agencies is imperative.

The Commander of Quality Improvement and Regulatory Affairs (QIRA) in cooperation with the Operations Section is responsible for the coordination and follow up with patients and clients that provide feedback to HPS. In 2016, HPS received a total of 282 items that required further investigation to determine potential system and/or behavioural improvements. Table 10, provides a breakdown of these items into one of three categories.

Table 10 – Quality Reviews – Type



"recognitions account for 25% or 71 of 282 opportunities for feedback for our patients & clients"

When a Customer Service Inquiry (CSI) is received, the Commander of QIRA reviews the file and assigns a Risk Priority Number (RPN) to the file. The lower the number, the higher the risk is to the COH. This can correlate to the following:

Risk Priority Number	Category of Risk
1	High
2	Medium
3	Low

Vehicle Collisions

A collision report must be completed, and a review performed, where any damage occurs to the vehicle including incidents where there is minor damage such as a scratch, a dent, or mirror damage. As mentioned earlier, HPS travelled 1,727,321kms in 2016 and was involved in a collision on average every 40,170kms. Although there are no industry standards in regards to this measurement, other services have communicated interest in comparing results in an effort to better understand potential areas for improvement. A summary of the collisions is as follows:

Of the 43 collisions reported and reviewed in 2016 there were 39 classified as minor and there were 4 classified as major. Just over half (23) of the collisions occurred while on an emergency call and 31 of them were deemed preventable.

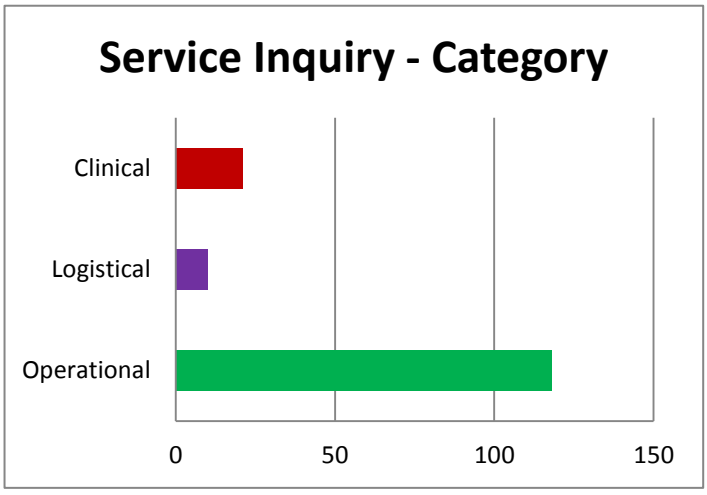
As a result, HPS will be conducting a review of the following in an effort to improve on these results:

1. Driver education for new staff
2. Vehicle specifications
3. On-going driver training of current staff

Service Inquiries

Service Inquiries are generated from both external and internal customers of HPS. When a patient and/or customer have a question or concern regarding the service they received, a Customer Service Inquiry form is generated and a Quality Review (investigation) is conducted. In 2016, HPS conducted a total of 149 Quality Reviews which are summarized in *Table 11*.

Table 11 – Service Inquiries – Category



Some of the areas HPS conducts quality reviews on include:

- Professional conduct
- Clinical practice
- Lost/Missing personal items
- Delays in response
- Hospital destination and transfer of care issues

After reviewing the patient/customer's feedback, an investigation is conducted with the intent of reviewing potential system and in some cases behavioural issues. Review of feedback both positive and negative provides HPS the opportunity to review both systems and behavioral issues with our division's commitment to improve our service.

"Review of feedback both positive and negative provides HPS the opportunity to review both systems and behavioural issues with our division"

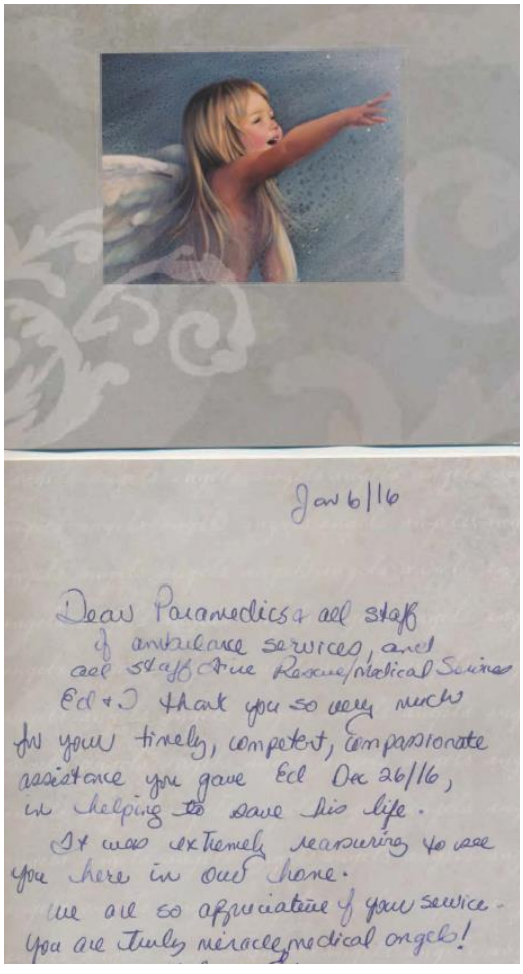


Diagram 12 – Thank-you Letter to Paramedics

Recognition

As mentioned prior, the public routinely provides positive feedback to our staff and takes the time to send a personal letter, email or even phone call as seen in *Diagram 12*. Through our quality review process, we ensure that all feedback is forwarded directly back to staff, and in recognition of their excellence that are awarded the HPS "Sensational Service" pin which recognizes the COH Corporate Culture Pillars.

Achievements

2016 proved to be an ambitious and successful year for HPS and all its employees. Several initiatives that began in 2015, were completed and led to not only legislative requirements, but an increase in the quality and efficiency in which we deliver paramedics services

Electronic Patient Care Record Implementation (ePCR)

Patient care documentation is the cornerstone to ensuring continuous quality of care within the health care system. Paper based systems have a variety of limitations including legibility, lack of extractable data and completion compliance against applicable provincial standards. With 100% implementation effective in early 2016, HPS is now able to deliver "real time" clinical data to hospitals and other agencies. In addition to this, developing clinical abilities and programs that are measureable, will result in improvements to the residents we serve. Programs that have been developed as a result of this success include Community Paramedics, CANROC, Performance Appraisals and the MOHLTC Ambulance Service Review.

"Programs that have been developed as a result of ePCR include Community Paramedics, CANROC, Performance Appraisals and the MOHLTC Ambulance Service Review"

Ambulance Service Review

Under the Ambulance Act, the MOHLTC requires that any organization that operates a paramedic service undergoes an accreditation process every three years. The intent of this process is to ensure that the operator provides the highest quality of care in the safest manner to the patient. In May 2017, 221 areas were evaluated over a 2 day period that included the following categories:

1. Patient Care
2. Quality Assurance
3. Administration

Under the guidance of the Commander of QIRA and Deputy Chief of Performance and Development, Grant Burse, Superintendent of Recruitment of Professional Development was responsible for acquiring, organizing and delivering the necessary information to the ASR Team. Through his leadership and cooperation of the Logistics and Operations Sections, HPS and the COH received notification on November 17, 2016 that their license had been approved for 3 years.

"Hamilton Paramedic Service is commended for its efforts in the following areas:

- ***Preparation for the certification inspection***
- ***Level of Service***
- ***QA initiatives with community agencies***
- ***Training***
- ***Vehicles"***

"100% of the patient care equipment provided for use met the Provincial Equipment Standards for Ontario Ambulance Services"

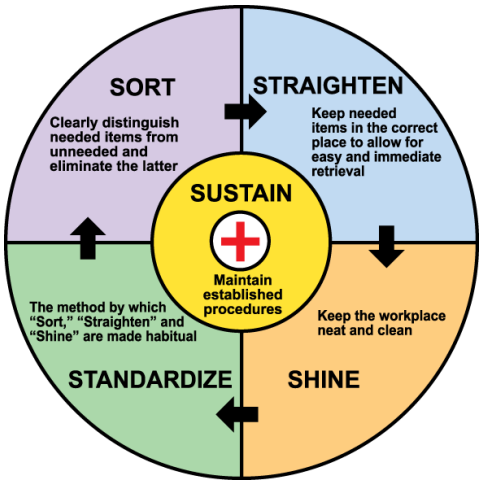
"Congratulations on successfully meeting the legislated requirements for certification as a land ambulance operator in the Province of Ontario"

"99.9% of the patient care and accessory equipment observed was clean and sanitary. 100% of the patient care and accessory equipment observed was maintained in working order

"100% of ride-out observations demonstrated patient care provided met the ALS/BLS Patient Care Standards"

Response Bag Review & Vehicle Standardization

LEAN principles are developed around the elimination of waste, with the goals of improving quality, decreasing time and reducing cost. During the past 2.5 years, HPS in collaboration with the OH&S Committee and frontline paramedics developed both response bags and vehicle layouts that would benefit these goals and achieve both MOHLTC and Ministry of Labor (MOL) legislation for weights and ergonomics. Utilizing a LEAN tool known as 5S which stands for:



1. Sort
2. Store/Straighten
3. Shine
4. Standardize
5. Sustain

HPS was able to reduce its stocked items by 8%, eliminating the purchase into the future and therefore reducing cost. In addition to this, some highlights of the standardization process included:

- Proper identification of all equipment, therefore reducing the inadvertent waste of cost associated with the wrong piece of equipment being opened
- All vehicles acquired the same standardized workplace, therefore reducing downtime (lost time) at the beginning while conducting legislated vehicle checks
- All vehicles now carry the same equipment for PCP and ACP providers, allowing paramedics to practice at their level of certification irrelevant of post assignment, allowing a high quality service

Deployment Plan Revitalization

In late 2015, HPS began the task of modernizing its deployment plan to reflect the current atmosphere both locally and provincially. The key objectives of this plan include:

1. Using resources efficiently to contain costs
2. Balancing paramedic workloads to optimize both physical and mental wellness
3. Prioritize resources based on patients condition within the limitations of the MOHLTC Dispatch System

"Key objectives of the deployment plan include:

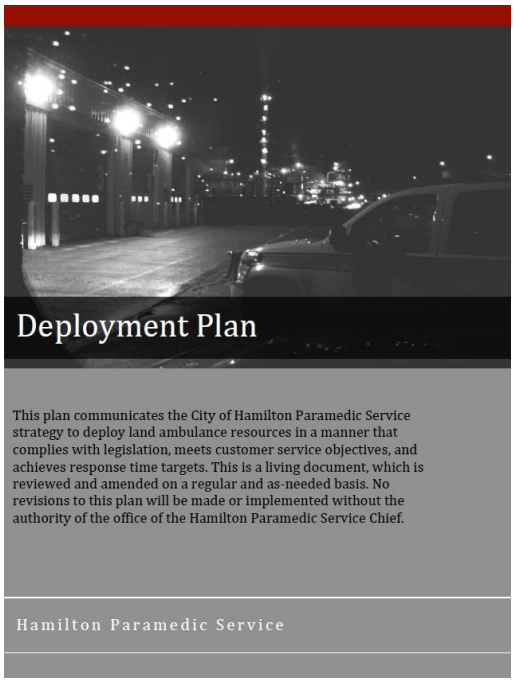
1. Using resources efficiently to contain costs and meet response time performance plans

2. Balancing paramedic workload to optimize both physical and mental wellness

3. Prioritize resources based on patients condition within the limitations of the MOHLTC Dispatch System"

During 2016, a project plan was drafted and a three phase plan consisted of the following:

1. An analysis of current state which included combining all deployment related matters into one single document. In addition to this, several other deployment plans were reviewed from other paramedic services throughout Ontario.
2. Consultation was conducted with all stakeholders including the HPS Operations Section, union representatives and Hamilton Central Ambulance Communications Centre (CACC).
3. Review of the current plan for completeness and against the response time performance plan approved by the COH.



It is anticipated that the plan will be implemented in Q2 of 2017, once the MOHLTC has reviewed and approved the plan for use and all Ambulance Communications Officers (ACO's) have been educated.

Education & Training

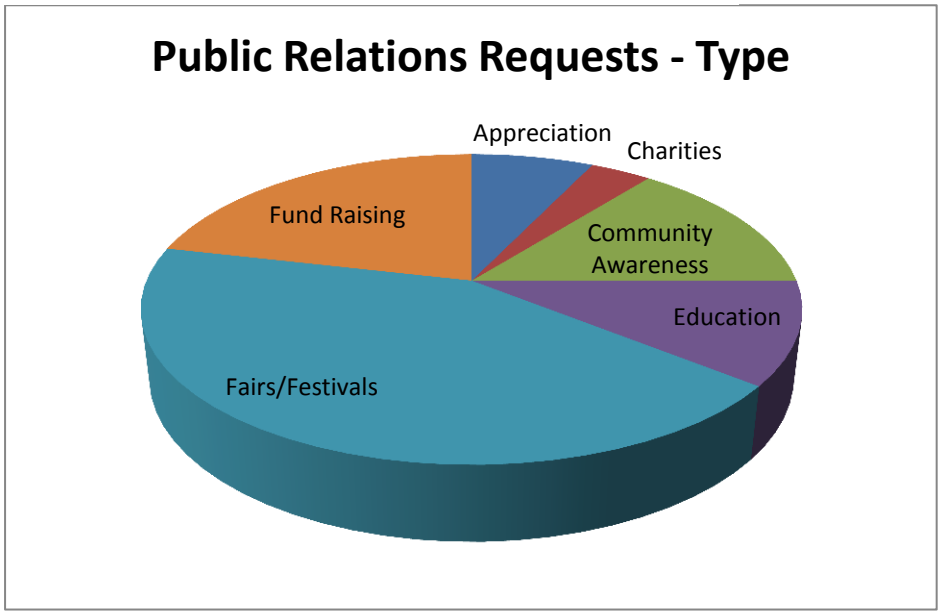
To maintain certification at their respective levels, both PCP and ACP's must attend legislated mandatory training. In collaboration with the Centre for Paramedic Education and Research (CPER), all 322 paramedics attended approximately 11,000 hours of training in 2016. This included annual certification in CPR, respiratory mask fitting, delegated medical acts, Road to Mental Readiness (mental health recognition), racial equity, heart attack by-pass protocol, 12 lead interpretation, personal protective equipment drilling and patient safety. In addition to this, 10 Return to Clinical Practice (RTCP) were completed for paramedics that were out of the workplace for a period of greater than 3 months.

In addition to this, HPS supported a total of 11 requests for tuition reimbursement through the COH Tuition Reimbursement Program. Through this program, the COH has invested in paramedics advancing their knowledge in their profession which will translate into better quality of services for our residents/visitors. Some employees have invested into other related areas that will not only benefit HPS programs like our Community Paramedics, but potentially other COH areas through case management for clients.

"COH has invested in paramedics advancing their knowledge in their profession, which will translate into better quality of services for our residents/visitors"

Public Relations

Diagram 13 – PR Opportunities – By Type



Hamilton Paramedic Service received a total of 28 public relations requests in 2016 for a variety of events as seen in *Diagram 13.*

Attendance at these events is based on a combination of utilizing paramedic volunteer, staff on modified duties as a result of injury/illness and in rare circumstances frontline staff and/or Superintendents. This has resulted in 18 of 28 events being attended (64%) with the opportunity to meet and educate the public.

Volunteer Participation

Community Garden

The Hamilton Community Garden was developed in partnership with Neighbour 2 Neighbour, Toronto Dominion Bank and the City of Hamilton in 2014. Under the leadership of Paramedics Joe Cox and Heather Little, the objective of the garden is to raise food for local food banks to increase the availability of nutritious foods in the community and in need. In addition to this, local seniors that reside next to the garden are always welcome to "pick their own" produce whenever they wish.

We are fortunate to have local residents contribute their time, gardening knowledge and resources to making the garden a success. A special thank you to "Jake" our seedling expert, who every year contributes his time to grow seeds for planting in the spring!

From early spring preparation and planting of seeds, to ongoing maintenance followed by multiple harvests, Joe, Heather and local volunteers ensure a great harvest every year that is organic and free of chemicals. On average the community garden produces 1,500lbs of produce per year that is contributed to local food banks for distribution.

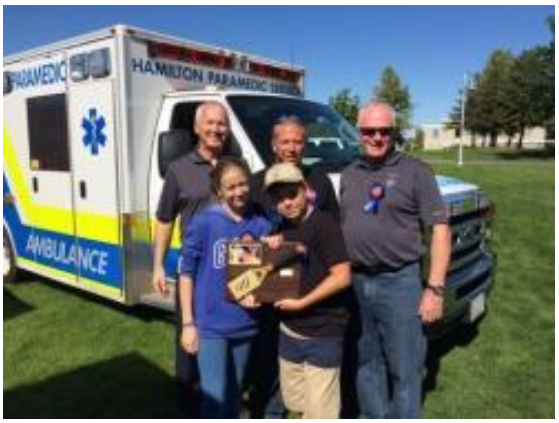
"on average the community garden produces 1,500lbs of produce per year that is contributed to local food banks for distribution"

Heart and Stroke Ride for Heart

Starting in 2015, Hamilton Paramedic Service began to annually participate in the Heart and Stroke Ride for Heart, in an effort to raise funds for research and AED's in our community. One of the highlights of the ride is having sudden cardiac arrest survivors participate with paramedics. These survivors were resuscitated by Public Access Defibrillator (PAD) that in part is purchased through this event. We are humbled and honored to have them participate with us and help to raise funds to purchase more of these life saving devices.

Through fund raising efforts, our survivors and HPS paramedics raised a total of approximately $6,000.

St. Josephs Health Centre – Burger Cook Off



The first annual St. Josephs Health Centre – 1st Responder Charity BBQ Cook Off was help on September 24th 2016 to raise proceeds for the St. Josephs Healthcare Hamilton. Hamilton Paramedic Service master chef Daryl Cheney with his family, prepared a succulent and rich burger to claim the "Judges Choice" for best tasting burger

Sirens for Life – Blood Donation Competition

The Canadian Red Cross is responsible for coordinating blood donation services across the country. During the summer months when demand for blood is above average, first responders from Hamilton Paramedic, Fire and Police agencies hold a friending competition in an effort to raise awareness and blood donations.

Sirens For Life

CONGRATULATIONS

Hamilton Fire Department

A total of 126 units of blood were donated over the months of July and August and although Hamilton Fire Department proved to be the victors, the true winners are those that required the necessary blood transfusions.

TEAMS	UNITS DONATED	%
Hamilton Police	34	3%
Hamilton Fire Department	70	14%
Hamilton EMS	22	5%
TOTAL	126	

City Kidz Christmas Toy Drive

Hamilton Paramedic Service has been a proud partner of City Kidz for the past several years, through its annual Christmas Toy Drive. Led by Craig McCleary and Santo Pasqua, they have partnered with Walmart Canada and the Ontario Provincial Police (OPP) to raise funds and toys for the youth at City Kidz. The 2016 year proved to be no exception in showing how generous City of Hamilton residents are in supporting their fellow neighbours. A total of $5,385 and 2 ambulances full of toys were raised in 6.5 hours! A special thanks to Doug Mason, James & Anne Masterton, HPS family members and Walmart Stoney Creek for their generosity in making this event a success!

Appendix

Paramedic Acronyms

ACP – Advance Care Paramedic

PCP – Primary Care Paramedic

CACC – Central Ambulance Communications Centre

ACO – Ambulance Communications Centre

SCA – Sudden Cardiac Arrest

VSA – Vital Signs Absent

CTAS – Canadian Triage Acuity Scale

PAD – Public Access Defibrillator

AED – Automated External Defibrillator

ePCR – Electronic Patient Care Record

BLS – Basic Life Support

ALS – Advance Life Support

BLSPCS – Basic Life Support Patient Care Standards

ALSPCS – Advance Life Support Patient Care Standards

MOHLTC – Ministry of Health and Long Term Care

LHIN – Local Health Integration Network

COH – City of Hamilton

STEMI – ST Elevation Myocardial Infarction (Heart Attack)

CPER – Centre for Paramedic Education and Research

SNP – Social Navigator Paramedic

CHAPEMS – Cardiovascular Health Awareness Program by Emergency Medical Service

HPS – Hamilton Paramedic Service

CPSO – College of Physicians and Surgeons of Ontario

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