

INFORMATION REPORT

TO: Chair and Members Emergency & Community Services Committee	WARD(S) AFFECTED: CITY WIDE
COMMITTEE DATE: November 25, 2013	
SUBJECT/REPORT NO: Hamilton Paramedic Service Code Zero Update January 1, 2013 to October 31, 2013 (CS13019) (City Wide) (Outstanding Business List Item)	
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SIGNATURE:	

Council Direction:

On April 23, 2008, Council approved item 6(h) of the Emergency & Community Services Committee Report 08-006 (HES08006 – Resource Limitations and Hospital Emergency Depart off-Loading), which directed “That staff provide Council with monthly reports on Code Zero occurrences in ambulance calls.”

Information:

Hamilton Paramedic Service (HPS) continues to be challenged in ability to respond to emergency calls as a result of call volumes and the duration of calls. The workload created from these operational challenges impacts our paramedic and supervisory staff through increased end of shift overtime, an inability to provide consistent breaks over the course of the work shift, and constant response performance pressure from high volumes of calls which are frequently overlapping during their shift. Code Zero occurrences is a primary indicator that workload is excessive and that the ability of the service to respond is challenged. A Code Zero occurrence is an instance where there are one or less transport ambulances available to respond to emergency ambulance requests within the City.

The three main contributing factors to Code Zero events are response volumes, the number of ambulances available, and the time an ambulance is committed to a call from

the time they are assigned the call by the ambulance dispatch until they are again available for assignment following cancellation of the call enroute, at the scene, or after having unloaded the patient at the hospital.

Over the first ten months of 2013, daily management reports identify that Hamilton Paramedic Service experienced 187 Code Zero events, an average of one event every one and a half days. The daily frequency is slightly higher than that experienced in 2012, and at the same level as 2011 (Figure 1 of Appendix A to Report CS13019).

The duration of the Code Zero events has increased, with the average length of time in this status now at 1.3 hours, an increase from last year's average of 0.7 hours per event.

When there are no Hamilton Paramedic Service ambulances available, Emergency Response Vehicles (ERV) or qualified Supervisory staff may be utilized to respond, stabilize, and await an available ambulance for transportation to hospital.

In addition to use of an ERV to *`stop the response time clock`*, the ambulance dispatch also assigns an available transport ambulance from an adjacent municipality (primarily Halton, Niagara, Guelph, Norfolk, and Haldimand) to respond. Situations where we have had to rely on transport ambulances from adjacent municipalities responding to citizens of Hamilton have occurred 350 times over the first nine (9) months of this year. Agreements are in place for the City of Hamilton to be billed annually for the use of ambulances from adjacent municipalities. Actual 2012 costs for these services totalled \$162,240.

Contributing Factors

There are three primary contributing factors to Code Zero events: response volume, the number of transport ambulances available, and the duration of each call.

Response Volumes:

Responses are a count of the number of ambulance resources assigned to respond to events. Some events require more than one (1) resource due to the nature and type of event. Our response to event ratio is essentially unchanged year over year at an average of 1.4 responses per event. (Figure 2 of Appendix A to Report CS13019).

Year to date, HPS resources perform an average of 189 responses per day. The most recent Ontario Municipal Benchmarking Initiative (OMBI) report reflects the demand for Hamilton as averaging 133 responses per 1,000 population. This is above the reported median of 119 responses per 1,000 population, and the second highest reported figure in the Province.

Approximately 99% of all calls are currently dispatched as either a Code 3 (urgent) or Code 4 (life-threatening, lights and siren response).

Call Duration:

The average call duration, or “time on task” (TOT) reflects the time period from when an ambulance is assigned a call by the Ministry of Health and Long Term Care (MOHLTC) operated Central Ambulance Communications Centre (CACC) through until the ambulance is again available for assignment (cancelled from the call while enroute by dispatch, cancelled on the scene, or clear of the hospital after offloading the patient). An increase in TOT results in reduced response availability.

TOT does not include any travel time to return to station or to an assigned coverage area, nor does it include any administrative tasks such as restocking or cleaning, meals, or any breaks.

For 2013 to date, the average TOT for Hamilton Paramedics is 91 minutes an average increase of 2 minutes from 2012.

The longest portion of the current average TOT for HPS is that time period from arrival at the receiving hospital through transfer of care for the patient and subsequent ability of the paramedics to clear the hospital after getting the required equipment available for another response. The targeted time period for this is to have the ambulance ready for their next assignment within 30 minutes of arrival 90 percent of the time.

Dispatch records year to date show that nine (9) times out of ten (90th percentile) the time from ambulance arrival at the hospital until they are clear of the hospital is less than 1 hour and 47 minutes, and that the average time to clear hospital is 62 minutes (Figure 3 of Appendix A to Report CS13019).

The most recent OMBI report indicates that 23.8% of every staffed transport ambulance hour is spent at hospital. This is above the provincial median of 17.8% and the second highest reported measure in the Province.

A significant contributor to experienced periods where ambulances are not available for response are longer delays at hospital. Over the first eight (8) months of this year we experienced almost 8,000 incidents, an average of 29 times a day, where the ambulance was longer than one hour from arrival at hospital until clear and available. Offload delays in excess of 4 hours occurred 186 times.

A portion of these delays has occurred when ambulances have been required to transport patients requiring higher levels of medical care from Urgent Care Centres (UCC) to an appropriate receiving hospital. The ambulance was able to clear the

hospital within 30 minutes on less than 11% of the 825 UCC transfers performed during the first eight (8) months of the year (Figure 4 of Appendix A to Report CS13019).

McMaster University Medical Centre (MUMC) Access to Best Care (ABC) Program:

Staff analysis demonstrates that approximately 2,400 patients per year that would previously have been taken to the MUMC site are now being taken to one of the other hospital sites. These changes have added pressure on ambulance availability through increased travel time to hospital, a longer time at the hospital than is typically experienced at the MUMC site, and additional travel time to relocate the ambulance back to availability in their coverage area. The average response time for these patients was one (1) minute longer than that experienced during the one year period prior to implementation of the ABC Program (Figure 5 of Appendix A to Report CS13019).

Offload Nurse Funding:

The MOHLTC increased the 100% restricted grant funding for the provision of nursing staff at hospitals to take over responsibility for incoming ambulance patients for the past two years. The intent of the funding is to reduce delays offloading ambulance patients thereby returning the ambulance to availability more quickly. Currently approved funding for the MOHLTC fiscal year (April 2013 through March 2014) is \$1.343 million to provide 26,448 hours of nurse staffing, equally shared across the Hamilton General, Juravinski, and St. Josephs Hospital sites.

The desired effect, a reduction in ambulance time at hospital, has not been achieved from this initiative. Time at hospital, by site, for the first eight (8) months of the year continues to challenge our resources and to increase the average TOT, thereby decreasing availability of ambulances for response (Figure 6 of Appendix A to Report CS13019).

Available Ambulances:

The number of staffed transport ambulances and other available resources such as ERVs has been established following various reviews and initiatives. The staffing pattern has been created to closely follow the average daily demand curves recognizing that some hours are busier than others (Figure 7 of Appendix A to Report CS13019).

Transport ambulances and ERV's were increased following the 2007 IPS Report. An additional ERV was added to "stop the clock" in the western sector following the ABC change for Hamilton Health Sciences which resulted in increased travel time, and decreased ambulance availability, for adult patients previously transported to McMaster University Medical Centre.

Response Time Performance

Response time is the time period from when an HPS ambulance or ERV is first notified of a potentially life threatening emergency call (Code 4) by the MOHTLC CACC through until the first ambulance resource arrives at the scene of the incident. Response time is directly related to the availability of an ambulance resource to respond to an incident within the desired time frame.

The 1996 established City-wide response time benchmark, utilized since responsibility for ambulance services was transferred from the Province to the City, was that when dispatched to a life-threatening emergency an ambulance resource be on the scene of an incident within 10 minutes and 3 seconds (10:03) 90% of the time.

This year to date, our first unit arrived on scene in 10 minutes and 49 seconds (10:49) or less nine (9) times out of ten. This is an increase of 11 seconds from the 2012 overall performance of 10:38, and around 46 seconds longer than the 2006 benchmark.

Conclusions

Hamilton paramedics continue to make commendable efforts to protect the public safety needs of Hamilton's citizens supported by their managers and allied agencies including the MOHLTC CACC, the hospitals, the Police Service and Fire Department.

The combined high demand for ambulance responses and long call duration continues to place significant pressure on the ability of the ambulance service to respond in a timely manner as well as our ability to meet our obligations to our paramedic employees.

The anticipated reduction in call duration from the MOHLTC Offload Nurse Funding initiative has not occurred and we will need to continue efforts to mitigate against this operating pressure.

Implementation of the ABC Program appears to have negatively impacted transport ambulance availability and the average response time performance in the former MUMC catchment area.

Figure 1 - Code Zero Event Frequency and Duration

Appendix A to Code Zero Report

HAMILTON PARAMEDIC SERVICE
CODE ZERO AMBULANCE EVENTS

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Code Zero events: Frequency of occurrence													
2006	Data tracking began in May →				1	0	0	3	1	3	0	5	13
2007	10	5	7	0	2	4	4	3	1	0	0	8	44
2008	0	8	10	3	17	5	12	16	6	6	8	4	95
2009	1	10	12	13	6	7	9	7	2	8	5	2	82
2010	6	9	9	3	7	7	12	6	10	4	11	10	94
2011	23	16	16	13	7	32	16	13	35	15	22	15	223
2012	26	15	19	10	7	16	11	26	9	9	14	32	194
2013	35	20	11	19	12	13	16	26	24	11			187
Code Zero events: Average Duration (hours)													
2012	0.6	0.6	1.0	0.3	0.5	0.4	0.8	0.4	0.8	0.5	0.5	1.5	0.7
2013	1.4	1.5	1.0	1.4	0.9	0.7	1.7	1.2	1.3	1.2			1.3
Code Zero events: Maximum Duration (hours)													
2012	2.2	2.3	4.5	2.0	1.6	1.4	3.8	2.0	1.9	1.5	2.3	12.0	12.0
2013	12.0	5.1	3.5	7.0	2.7	1.9	8.3	6.2	4.7	3.7			12.0
Code Zero events: Accumulated Duration (hours)													
2012	14.5	9.2	19.2	3.4	3.7	6.5	8.4	10.9	6.9	4.7	7.2	47.9	142.4
2013	47.4	30.2	9.9	25.8	11.4	9.4	27.8	32.5	31.6	13.6			206.3
Code Zero events: Accumulated Time as a percentage of the Total Hours in month													
2012	1.9%	1.3%	2.6%	0.5%	0.5%	0.9%	1.1%	1.5%	1.0%	0.6%	1.0%	6.4%	1.6%
2013	6.4%	4.1%	1.3%	3.5%	1.5%	1.3%	3.7%	4.4%	4.2%	1.8%			3.1%

Source Data: Superintendent's Code Zero reports

Updated : 14 Nov 2013

Figure 2 - General response Volume Statistics

HAMILTON PARAMEDIC SERVICE GENERAL STATISTICS						
	2008	2009	2010	2011	2012	2013 Projected
NUMBER OF EVENTS	47,368	48,809	49,955	53,094	51,502	49,255
Non-emergency calls (dispatched priorities 1 & 2)	1,469	1,334	1,164	954	728	496
Urgent call (dispatched priority 3)	11,160	13,904	15,762	15,924	15,697	15,982
Life threatening call (dispatched priority 4)	34,739	33,571	33,029	36,216	35,077	32,778
NUMBER OF RESPONSES	62,795	63,663	67,177	72,863	71,217	68,856
Non-emergency calls (dispatched priorities 1 & 2)	1,471	1,422	1,343	1,092	828	581
Urgent call (dispatched priority 3)	13,164	16,502	19,000	19,449	18,942	19,410
Life threatening call (dispatched priority 4)	48,160	45,739	46,834	52,322	51,447	48,865
Responses by non-Hamilton units	1,296	1,460	1,166	1,641	1,037	470
RATIO OF EVENTS:RESPONSES	1:1.3	1:1.3	1:1.3	1:1.4	1:1.4	1:1.4
Total number of transported patients	40,192	41,290	41,970	44,376	43,174	41,125
Number of patients transported with return priority 4	4,784	4,921	4,871	5,249	4,905	4,972

Figure 3 - Time at Hospital - 90% vs target 30 minutes

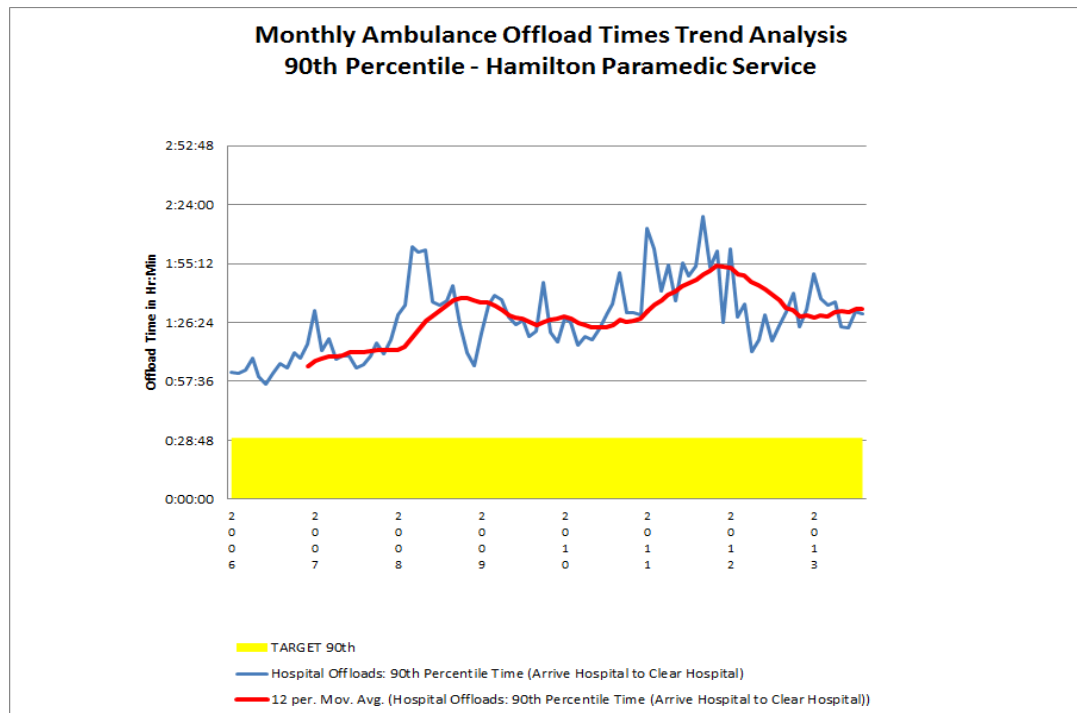


Figure 4 - Transports from Urgent Care Centre to Hospital

TRANSFERS FROM URGENT CARE CENTRES TO EMERGENCY DEPARTMENTS									
	Total # of patients	Accum. ToC > 30 mins	Average ToC	Maximum ToC	90th %tile ToC	JAN - AUG 2013 # of patients			% of pts <30 mins
						0-30 mins	30-60 mins	>60 mins	
ST. JOSEPH UCC	680	346	1.0	3.6	1.6	74	322	284	10.9%
MAIN ST W. UCC	145	62	0.9	4.3	1.7	33	69	43	22.8%
BOTH UCCs	825	408	1.0	4.3	1.6	107	391	327	13.0%

Figure 5 - Ambulance Transports - MUMC Catchment Area

HAMILTON PARAMEDIC SERVICE ANALYSIS OF RESPONSES IN THE McMASTER CATCHMENT AREA FROM 1 Oct 2012 - 30 Sep 2013				
	Hamilton General	Juravinski	St. Joseph's	McMaster
ANCASTER				
# of patients	339	590	588	115
Average response (mins)	11	<i>irrespective of hospital</i>		
Average time-on-task (mins)	101	104	101	74
DUNDAS				
# of patients	605	243	863	47
Average response (mins)	9	<i>irrespective of hospital</i>		
Average time-on-task (mins)	96	112	103	66
FLAMBOROUGH				
# of patients	361	92	322	97
Average response (mins)	13	<i>irrespective of hospital</i>		
Average time-on-task (mins)	104	122	108	76
TOTALS				
# of patients	1,305	925	1,773	259
Average response (mins)	11	<i>irrespective of hospital</i>		
Average time-on-task (mins)	100	108	103	73
Note: Time-on-task includes interval from time enroute to time hospital is clear Response includes interval from time notified to time arrived scene. The average response provided is calculated for the entire community irrespective of hospital.				

Figure 6 - Ambulance Time to Clear Hospital After Arrival

	JAN - AUG 2013								
	Total # of patients	Accum. ToC > 30 mins	Average ToC	Maximum ToC	90th %tile ToC	# of patients			% of pts <30 mins
						0-30 mins	30-60 mins	>60 mins	
EMERGENCY DEPARTMENTS - PATIENT ARRIVALS BY AMBULANCE									
HOSPITALS	25,264	11,273	0.9	13.1	1.6	2,870	17,111	5,283	11.4%
St. Joseph's	9,476	4,611	1.0	6.0	1.6	783	6,519	2,174	8.3%
Juravinski	6,509	3,327	1.0	11.5	1.9	752	4,256	1,501	11.6%
Hamilton General	7,642	3,124	0.9	13.1	1.5	784	5,338	1,520	10.3%
McMaster	1,637	212	0.6	2.1	0.9	551	998	88	33.7%

Source: ADDAS/ADRS, MOHLTC Data Warehouse.

Note: ToC defined as interval (ArriveHospital to ClearHospital) in hours.

Figure 7 - Planned Transport Ambulance Staffing

