



Report To: Program Planning Committee
From: Michael MacIsaac, Chief of EMS
Date: November 27, 2013
Re: Balanced Emergency Coverage Update – Issue Report

RECOMMENDATION

That the Program Planning Committee accept this report as an update to the Balanced Emergency Coverage changes made in the EMS Deployment Plan in June 2013.

REPORT

Purpose

This report will provide information on the statistical information from the period of June 1, 2013 to August 31, 2013. The review will be focused on the effect of the changes to the Deployment Plan as detailed in the [Balanced Emergency Coverage \(Standbys\) - Issue Report](#) of February 27, 2013.

Background

As detailed in the previous report on this issue, the term “balanced emergency coverage”, as the name implies, revolves around a balanced approach to providing emergency coverage when ambulances are indisposed of, performing their duties. The goal of balanced emergency coverage is to redeploy ambulances in an attempt to capture the “greatest good” by placing vehicles on emergency coverage standbys (code 8’s). While the concept makes sense in theory, a full review of effectiveness was in order.

History

Balanced emergency coverage in our area statistically proved to be, for the most part, an exercise in futility with just over 92% of the standby’s resulting in going back to the original station having done nothing. In circumstances where calls occurred when on standby, 4.7% of the time the call response time was improved by being on standby (favourable standby) but 3.5% of the time the call response occurred in the area where

the ambulance was originally located resulting in a unfavourable response time. In summary, placing ambulances in balanced emergency coverage situations resulted in inefficient, ineffective and sometimes detrimental results nearly 96% of the time. A change was in order and the updated Deployment Plan reflected such.

Updated Situation

After much consideration, a change in the deployment of EMS resources occurred in June 2013. The following is a summary of those changes based upon area (more detail and rationale can be found in the previous report).

Chapleau, Foleyet, Gogama

- Standbys have been eliminated in their entirety in the aforementioned areas. There are provisions however for exceptional circumstances.

Noëlville, Hagar, Killarney

- If the Noëlville Ambulance gets a call that will end up with them transporting a patient to a hospital the Hagar Ambulance will proceed to Noëlville.
- Conversely, due to a number of factors including geographic location in comparison to populated communities and other EMS Stations, there is no standby coverage being provided for Hagar when they are out on a call.
- Lastly, due to the geographic nature of Killarney and the time it takes to get to Hwy 69, the Killarney ambulance is not being utilized for coverage. Additionally, due to the small amount of call volume in Killarney there is no standby coverage when Killarney is out.

Espanola, Massey, Little Current, Mindemoya, Gore Bay, Wikwemikong

- Representing nearly 80% of our overall call volumes these six stations were paired into zones; Manitoulin West (Gore Bay/Mindemoya), Manitoulin East (Little Current/Wikwemikong), and North Shore (Espanola/Massey). Standby is implemented within any one of these zones only if the whole zone is without either available resource.

One last item to note is the usage of our front line EMS managers: the Field Superintendents. As certified paramedics working in Emergency Response Vehicles (ERV's), they have the ability to provide patient care. Within our Deployment Plan is the ability for the Central Ambulance Communication Centre (CACC) to contact the Field Superintendents to assess their ability to provide coverage in any of the above noted circumstances. If they are available to respond, then no standby will be sent.

Implementation of the proposed changes was undertaken in a very cautious manner. Staff were informed of the changes in advance of the start date. Discussions were held with management at Sudbury CACC, MOHLTC EHSB Field Office, and other EMS providers. Understanding that this was a substantial change to the way they operate EMS Management even went so far as to provide two separate information/education sessions to the actual Ambulance Communications Officers (ACO's) who are the ones responsible for the dispatching of our ambulances.

As previously mentioned the changes took effect June 1, 2013. There were some “growing pains” and we can reasonably say that by June 15th most of the uncertainties were overcome.

Updated General Statistics

There was a commitment to the Board to review this plan in detail at regular intervals. This report will highlight the first 3 months of operation under the new deployment model. Future reports are planned for the 6 month mark and at the very least the 12 month mark. Additionally, at any point where an issue is brought forth due to deployment, the EMS Administrative team will undertake a full review of the particulars of that call.

It is extremely important to understand the method of analysis. When analyzing our Balanced Emergency Coverage earlier this year we looked at whether it would have been better to have stayed at the station as opposed to proceeding to standby at a midpoint location. Analyzing the new Deployment model we are looking at whether staying at our station was better than proceeding to the old standby.

It is important to note that data collected for this report was done using the MOHLTC ADRS database. The rationale behind this is that we have arranged with Sudbury CACC to note a crew as being on standby even if this standby is still at their base. Under the old deployment model when a standby was required the ambulance would have moved to the appropriate location, an official call number would have been generated, and the ambulance crew would complete a basic form indicating their movement for a standby. Under the new deployment model, the ambulance doesn't move to a standby location as often, so call numbers (and associated data) would not be generated. By having Sudbury CACC generate standbys while still at base it created call data which allows us to gauge the effectiveness of the new system by seeing if these “perceived” standbys made matters more favourable or less favourable. Consequently, the statistics below will fully illustrate the effect of the new deployment model in terms of effectiveness. It must be noted that we do not have the same arrangement with Timmins and Sault Ste. Marie CACC's. Due to the nature of dispatching between two different CACC's, as is that case in our Northern stations, it is unfeasible to suggest the same system would be able to function in a similar manner. As such the statistics for Chapleau, Foleyet and Gogama below reflect 100% actual standbys.

The following are updated tables which attempt mirror the style of those created for the original report. Please recall that the original stats encompassed a timeframe of twenty-one months whereas our new stats detail the first three months under the new system. The statistics surrounding the Code 8's reflect, as noted above, the “perceived” standbys as well as any actual standbys requiring vehicle movement.

Station	Total Code 8's	Favourable	Unfavourable	Total Calls on Stby	Plus Minus	% Call on Stby	% Favourable Stby	% Unfavourable Stby
Chapleau	2	0	0	0	0	0.0%	0.0%	0.0%
Foleyet	3	0	0	0	0	0.0%	0.0%	0.0%
Gogama	3	0	0	0	0	0.0%	0.0%	0.0%
Killarney	7	0	0	0	0	0.0%	0.0%	0.0%
Noëlville	114	10	2	12	8	10.5%	8.8%	1.8%
Hagar	116	5	6	11	-1	9.5%	4.3%	5.2%
Espanola	116	18	4	22	14	19.0%	15.5%	3.4%
Massey	166	7	13	20	-6	12.0%	4.2%	7.8%
Gore Bay	119	9	5	14	4	11.8%	7.6%	4.2%
Mindemoya	209	20	4	24	16	11.5%	9.6%	1.9%
Little Current	242	14	10	24	4	9.9%	5.8%	4.1%
Wikwemikong	11	3	1	4	2	36.4%	27.3%	9.1%
New Totals	1108	86	45	131	41	11.8%	7.8%	4.1%
<i>Old Totals</i>						<i>8.2%</i>	<i>4.7%</i>	<i>3.5%</i>

The overall totals of favourable vs. unfavourable standbys would seem to indicate that while we are doing more when crews are technically on standby, we are doing so from a seemingly more responsive position. We have a 3.7% gap between favourable and unfavourable standbys now whereas under the old deployment model there was a gap of only 1.2%. On a global scale it appears as though Ambulances are more effectively placed and are able to provide an improved response time to those in need.

While the above generalizations provide a good synopsis more specific data has been reviewed as it relates to each of the stations positioning.

Specific Data Analysis

Chapleau, Foleyet, Gogama, and Killarney have no data regarding favourable or unfavourable responses. There were 15 standbys performed during the 3 month period most likely in error due to growing pains or due to direction provided by a Field Superintendent.

For the remaining 8 EMS stations further analysis can be done bringing the evaluation to a more granular level. Highlighting the areas of concern and areas of improvement and evaluating the current model directly against the former model can shed more light on this deployment change.

For the Hagar and Noëlville Stations the data can be further detailed as below. These two stations in Sudbury East have differing responsibilities. Noëlville does not move to a standby location and Hagar does move to standby at the Noëlville station when the Noëlville ambulance is on a call taking them to a hospital.

Hagar Station

- 116 standbys, 24 staying at the Hagar station, 92 moving to the Noëlville station
- 5 favourable, 6 unfavourable
 - 2 favourable and 1 unfavourable from Hagar
 - 3 favourable and 5 unfavourable from Noëlville
- The 5 unfavourable occurred in the following locations: 3 St. Charles, 1 each in Kukagami, Markstay and West Nipissing
- Of the 6 unfavourable responses 4 were cancelled, 1 patient refused transport, and 1 patient return was a Code 4

Noëlville Station

- 114 Standbys, 112 staying at the Noëlville station, 2 moving to the Hagar station
- 10 favourable and 2 unfavourable
 - All occurred while at the Noëlville station
- The 2 unfavourable occurred in the following locations: 1 St. Charles, 1 West Nipissing
- Of the unfavourable responses 1 was cancelled and 1 patient refused transport

Furthermore, a review of the Sudbury East area would reveal the following for current standby location vs. former standby location

Station	New Deployment			Old Deployment		
	Favourable	Unfavourable	Actual Movement	Favourable	Unfavourable	Actual Movement
Hagar	5	6	92	5	6	116
Noëlville	10	2	2	1	11	114
Total	15	8	94	6	17	230

For the Espanola and Massey Stations the data can be further detailed as below. Espanola and Massey are stations paired by geography in our Deployment Plan. Neither station regularly performs standbys.

Espanola Station

- 114 standbys, 92 staying at the Espanola station, 7 moving to the Little Current Station, 7 moving to Manitoulin East Airport, 6 moving to the Massey Station, 2 to Moores Corner.
- 18 favourable, 4 unfavourable
 - 14 favourable and all 4 unfavourable occurred while remaining in Espanola
 - 2 favourable while in Massey and 1 each favourable at the Little Current Station and Manitoulin East Airport
- The 4 unfavourable occurred in the following locations: 2 in Massey and 2 in Sagamok
- Of the unfavourable responses 2 were code 3's, 1 was a code 4, and 1 patient refused transport

Massey Station

- 165 standbys, 151 staying at the Massey station, 13 moving to the Espanola Station, 1 at the Wikwemikong Station (possible data entry error)
- 7 favourable, 12 unfavourable
 - 7 favourable and 10 unfavourable while staying in the Massey Station
 - 2 unfavourable while at the Espanola Station
- The 12 unfavourable occurred in the following locations: 7 in Espanola, and 1 each in Baldwin, Massey, Sagamok, Nairn Centre, & Whitefish Falls
- Of the unfavourable responses 4 were code 3's, 4 were cancelled calls, 2 were code 4's, & 2 were code 1's

Furthermore, a review of the Espanola and Massey stations would reveal the following for current standby location vs. former standby location

Station	New Deployment			Old Deployment		
	Favourable	Unfavourable	Actual Movement	Favourable	Unfavourable	Actual Movement
Espanola	18	4	22	9	13	114
Massey	7	12	14	10	9	166
Total	25	16	36	19	22	280

For the Gore Bay and Mindemoya Stations the data can be further detailed as below. Gore Bay and Mindemoya are stations paired by geography in our Deployment Plan. Neither station regularly performs standbys.

Gore Bay Station

- 119 standbys, 106 staying at the Gore Bay station, 7 in M'Chigeeng, 3 at Moores Corner, 2 moving to the Mindemoya Station, 1 in Spring Bay
- 9 favourable, 5 unfavourable
 - All 9 favourable and 5 unfavourable occurred while staying in the Gore Bay Station
- The 5 unfavourable occurred in the following locations: 3 in Mindemoya, and 2 in M'Chigeeng
- Of the unfavourable responses 3 were cancelled calls and 2 were code 3's

Mindemoya Station

- 209 standbys, 68 staying at the Mindemoya station, 46 moving to the Little Current Station, 36 at Manitoulin East Airport, 22 moving to the Gore Bay Station, 20 moving to the Wikwemikong Station, 9 moving to the Espanola Station, 3 at Moores Corner, 2 in M'Chigeeng, 2 in Manitowaning, & 1 in Spring Bay
- 20 favourable, 4 unfavourable
 - 2 favourable and 3 unfavourable occurred while staying in the Mindemoya Station
 - The remaining unfavourable occurred while at the Little Current Station
 - The remaining 18 favourable occurred as follows: 8 while on standby at the Wikwemikong Station, 5 while on Standby at the Gore Bay Station, 3 while on standby at the Little Current Station, 2 while at Manitoulin East Airport

- The 4 unfavourable occurred in the following locations: 2 in Gore Bay, and 2 in Wikwemikong
- Of the unfavourable responses 2 were code 1's, 1 was a code 4 and 1 was a cancelled call

Furthermore, a review of the Gore Bay and Mindemoya stations would reveal the following for current standby location vs. former standby location.

Station	New Deployment			Old Deployment		
	Favourable	Unfavourable	Actual Movement	Favourable	Unfavourable	Actual Movement
Gore Bay	9	5	13	3	11	119
Mindemoya	20	4	141	21	3	209
Total	29	9	154	24	14	328

For the Little Current and Wikwemikong Stations the data can be further detailed as below. Little Current and Wikwemikong are stations paired by geography in our Deployment Plan. Neither station regularly performs standbys.

Little Current Station

- 242 standbys, 162 staying at the Little Current Station, 60 while at the Espanola Station, 9 while on standby at M'Chigeeng, 4 while on standby at the Gore Bay Station, 3 while on standby at Whitefish Falls, 2 while on standby at the Wikwemikong Station, 1 while at the Massey Station, & 1 while on standby at Moores Corner.
- 14 favourable, 10 unfavourable
 - 5 favourable and all 10 unfavourable occurred while staying in the Little Current Station
 - The remaining 9 favourable occurred as follows: 7 while on standby at the Espanola Station, & 2 while on standby in M'Chigeeng
- The 10 unfavourable occurred in the following locations: 8 in Wikwemikong, and 1 each in Espanola and Mindemoya
- Of the unfavourable responses 4 were cancelled, 4 patients refused transportation, 1 was a code 4 and 1 was a code 3

Wikwemikong Station

- 11 standbys, 0 staying at the Wikwemikong Station, 4 while on standby at Moores Corner, 3 while on standby at the Little Current Station, 2 while on standby at the Espanola Station, & 2 while on standby in M'Chigeeng
- 3 favourable, 1 unfavourable
 - 2 favourable and the unfavourable 1 occurred while being on standby at the Little Current Station
 - The remaining favourable 1 occurred while on standby at Moores Corner
- The unfavourable 1 occurred in Wikwemikong
- The unfavourable response was a code 3 call

Furthermore, a review of the Little Current and Wikwemikong stations would reveal the following for current standby location vs. former standby location.

Station	New Deployment			Old Deployment		
	Favourable	Unfavourable	Actual Movement	Favourable	Unfavourable	Actual Movement
Little Current	14	10	80	13	11	242
Wikwemikong	3	1	11	1	3	11
Total	17	11	91	14	14	253

Total Analysis

A grand total review of the new deployment model vs. what would have occurred under the old deployment model is as below.

New Deployment			Old Deployment		
Favourable	Unfavourable	Actual Movement	Favourable	Unfavourable	Actual Movement
86	44	375	63	67	1091

Reviewing the new deployment model as a whole suggests that we have made the correct choice. If we were still operating under the old model we would have had more unfavourable responses than favourable, all the while moving ambulances nearly 3 times as much as we are under the new model. To summarize, we are seeing a marked increase in favourable responses while reducing the unnecessary deployment of ambulances to standby.

Lastly, a breakdown on the return priority of the calls that occurred in an unfavourable response will highlight the actual needs of the patient who has experienced a possible extended response time. The return priorities in those situations reveal the following:

- 40% of the calls were cancelled prior to the ambulance arriving on scene
- 23% of the calls were Code 3 returns
- 16% of the calls the patient refused treatment and transportation
- 14% of the calls were Code 4 returns
- 7% of the calls were Code 1 returns

Understanding that the most serious ambulance priority is a Code 4, we see that 14% of unfavourable responses fall within that category. Normally, we find that 18%-20% of overall calls dispatched as Code 4's do not return as a Code 4. So to see a percentage of 14% would indicate that less than normal amounts of serious patients are responded to from an unfavourable response perspective.

One final area noted in the previous report was the percentage breakdown of ambulance movements. While the above specific statistics detail calls from various standby perspectives, the following table will reveal our actual movements based upon the percentage breakdown. The volumes of calls are irrelevant at this point because of the very narrow timeframe of operation under the new deployment model.

YEAR	Priority of Call Going Out				
	1	2	3	4	8
<i>Old Deployment</i>					
2012	7%	7%	12%	27%	47%
2013 Jan-May	7%	5%	15%	33%	41%
<i>New Deployment</i>					
2013 Jun-Aug	8%	5%	22%	52%	13%

Judging by the above information, there has been an overwhelming shift in focus regarding the movements of ambulances under our new deployment plan. Where previously Code 8 standbys made up nearly 50% of the call volumes, now the biggest percentage of responses are emergency Code 4's. This means that when an ambulance is moving there is a greater chance that they are now moving with an actual purpose.

Conclusion

The new Deployment Plan was implemented after much consideration of options. We were facing a system that was nearly 96% inefficient in delivering balanced ambulance coverage. A change was necessary.

Since implementation of this change, dialogue has arisen with both paramedics and CACC ACO's. While some were skeptical of the change prior to implementation, the statistical results are proving that this new system has merit. The realities of this change and the effects on staff have been positive. While statistics can tell a factual story the anecdotal experiences of those working through a change can be a valuable tool also in determining success. On that front the paramedics have noted minimal disruption or negativity with this new system. When asked if they find themselves responding greater distances away than before, the paramedics spoken with don't suggest this to regularly be the case.

We are now experiencing less movement of ambulances combined with more positive results regarding response times. While both favourable and unfavourable standbys have increased the increase in favourable standbys is at 3.1% while the increase in unfavourable standbys is at 0.6%. Additionally, overall unnecessary standbys have decreased by nearly 66%. Since implementation, Code 8 standbys represent only 13% of all vehicle movements as opposed to 47% which has been the average for the past 5 years. Finally, the overall impact of the unfavourable response is less than average for the most serious of patient with Code 4 returns making up 14% of the unfavourable responses.

So far the changes in the EMS Deployment Plan have worked out as predicted. Monitoring of this system will continue and changes can be implemented at any point where there is an overall detriment to the citizens within our communities.