

Responding to Pre-Hospital Events in BC:

Time to Re-Think the Current Model of Service Delivery



Dr. Martha Dow

September 2014

Introduction

On October 29, 2013, the BC Emergency Health Services (BCEHS) implemented changes to their BC Ambulance Service Resource Allocation Plan (RAP) resulting in a significant number of codes being downgraded to Code 2 (routine) calls instead of their previous designation as Code 3 (lights and sirens) calls. According to BCEHS the process undertaken to make the changes involved a thorough review of over 630,000 patient calls with a focus on call outcomes to ensure that only those calls that warranted a downgrading to routine based on an outcome analysis were in fact downgraded. BCEHS has asserted that the changes were made to optimize the use of resources in a manner that prioritizes the allocation of services based on the most pressing medical needs.

Since the RAP changes there have been concerns raised by various stakeholders in the emergency services community and responses to those concerns by the BCEHS. Key areas of concern for the first responder (FR) communities have included:

- Inadequate consultation with the BC fire service community with respect to data collection and the framing of results;
- Inadequate analysis of claims that the downgrading of calls results in safer responses by lowering the number of calls being responded to with lights and sirens;
- Resultant increases in wait times for ambulances in cases that are upgraded based on FR initiative once on-scene, those that remain Code 2 despite warranting a higher priority in the opinion of first responders, and other routine response calls;
- Lack of appreciation of the current and the potential role of first responders in supporting positive outcomes in medical incidents and the resulting over-resourcing of calls and duplication of services; and,
- Inadequate conceptualization of patient outcomes that ends at emergency room hand-off of patients.

Key areas of focus for the BCEHS have included:

- Rationalizing response protocols based on medical outcome data;
- Responding to increasing paramedic workloads, particularly in the Lower Mainland;
- Decreasing the response times for the most urgent calls;
- Increasing the capacity of the BC Ambulance Service to respond to patient needs; and,
- Increasing the efficiency of the emergency services system in British Columbia.

The impact of the most recent call code changes was explored in a report conducted for the Surrey Fire Service¹ which demonstrated that there was an increase in wait times overall and a decrease in patient wait times for British Columbia Ambulance Service's (BCAS) response to Code 3 calls since the RAP changes were implemented. All stakeholders would agree that decreasing Code 3 wait

¹ Dow, M. (2014). *British Columbia Ambulance Service Resource Allocation Plan: An Analysis of Recent Changes to Call Codes*. A report prepared for the Surrey Fire Services, British Columbia.

times is a positive change and has the potential to have a significant impact on patient outcomes; however, the apparent increases in Code 2 wait times need to be addressed.

The initial focus of the work that grounds this report was to expand on the analysis of pre and post RAP data to the GVRD. However, a contextualized examination of the data pointed to the need for a system-based discussion as opposed to a specific output analysis. The GVRD data analysis is contained in Appendix I and is referenced in this broader discussion of the FR role in responding to pre-hospital events in BC. Quantitative data from various municipalities in the Greater Vancouver area was examined to document potential areas of opportunity and concern with respect to the response capacity of first responders in their relationship with ambulance services. Additionally, qualitative data from Officer Detail Reports provide some illumination on the issues most salient to the system and the public it serves.

The purpose of this report is to contribute to this discussion by framing the RAP changes within the particular context of emergency services in British Columbia and a broader conversation of system responsiveness. The historical and contemporary context of emergency services has been outlined in numerous documents² and explored through the activities of various committees. This report will provide a brief overview of that context; however, the primary purpose of this report is to assist key stakeholders in addressing some of the systemic challenges that characterize the current relationship between first responders and paramedics in British Columbia.

Context

The provision of emergency services in BC needs to be understood within a broader context including population growth and demographic changes and increasing service delivery demands and associated costs.

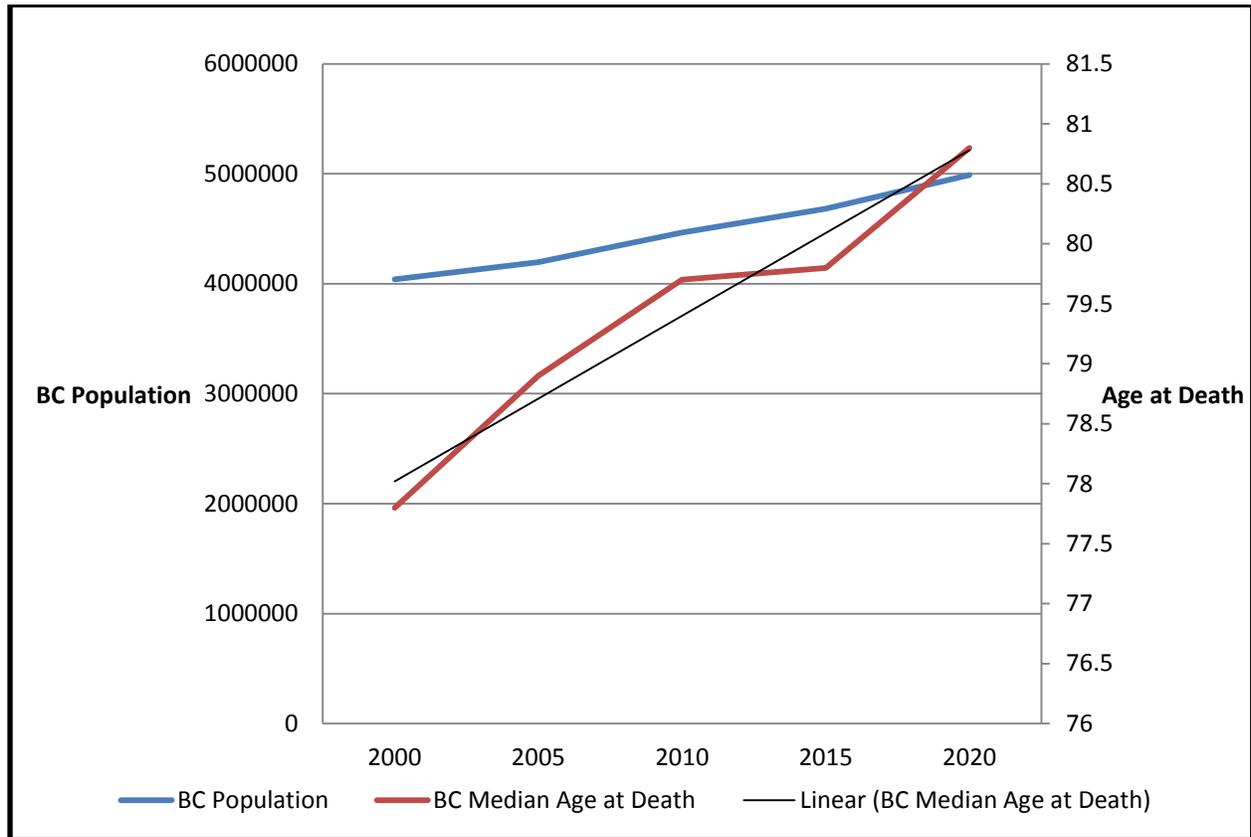
Demographic Changes

Population projections coupled with an increasing median age at death will create additional and more complex challenges for the pre-hospital health care system in the coming years. Figure 1 illustrates the upward trend of both of these factors with the projected population growth resulting in a provincial population of 4,988,900 and a median age at death of 80.8 in 2020.³

² These reports include: the Foulkes Report, the Cain Report, and the Cameron Report.

³ <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationProjections.aspx>

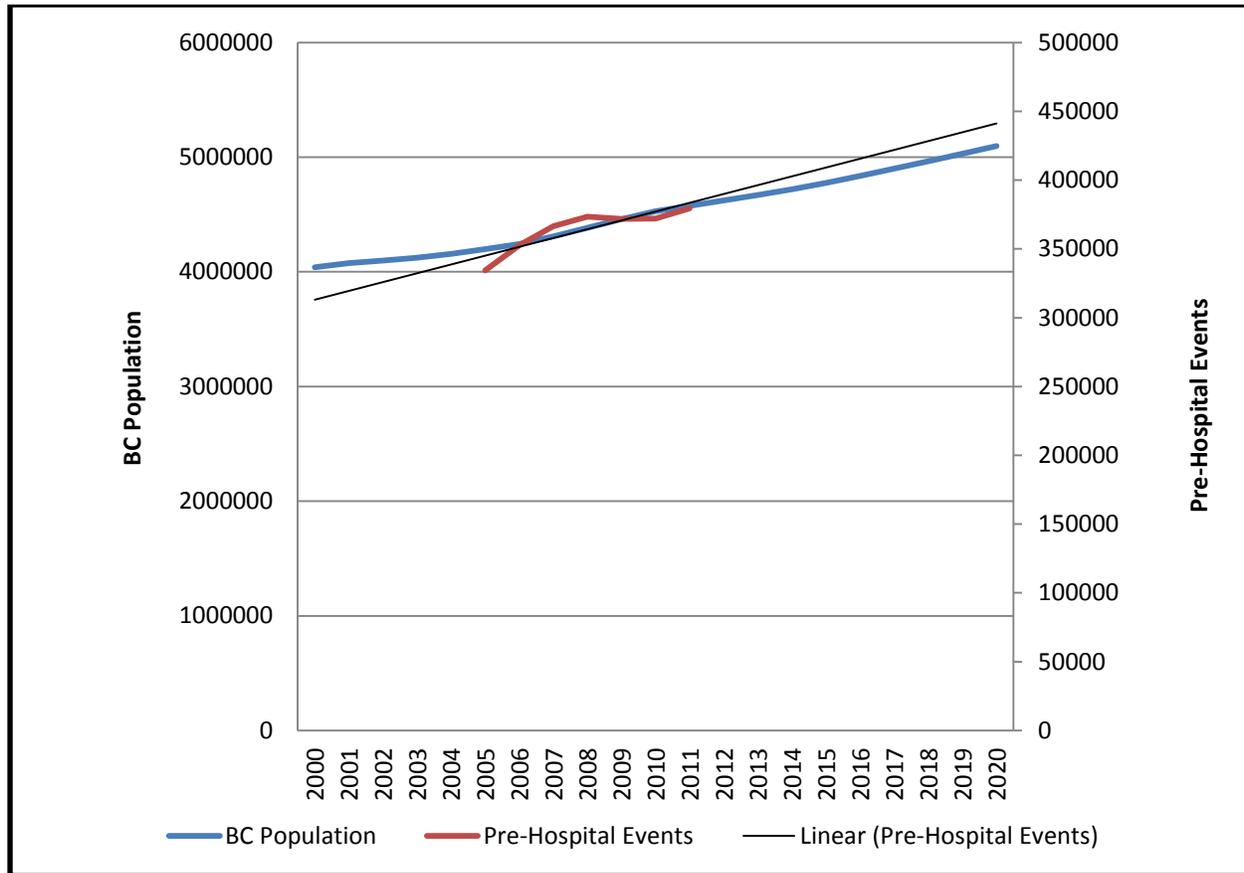
Figure 1: BC Population and Aging Population Projections (2000 to 2020)



Service Demand

The demographic trends discussed above will continue to stress the health care system and necessitate innovative and collaborative approaches to providing care to citizens of BC. Importantly, pre-hospital events are particularly susceptible to these pressures as the proportion of high user groups grows. Pre-hospital incidents have been steadily increasing over the last decade and are projected to outpace population growth at an increasing rate (Figure 2).

Figure 2: BC Population Projections and Pre-Hospital Events (2000 to 2020)



While the demand for emergency services is increasing, the rate of fires per capita has been decreasing making an examination of the role of the fire service and the first responder system increasingly important. In the Metro Vancouver area the rate of fires per 1000 residents has decreased from .96 in 2004 to .92 in 2013. Provincially, the rate has decreased from 1.34 in 2004 to .91 in 2013.

System Costs

Despite a reduction in the rate of fires in BC, the fire service budgets in BC are increasing annually. The total of all of the fire departmental budgets in BC in 2001 was \$327,310,317 increasing to \$509,447,179 in 2010. Not surprisingly, the BCAS is facing similar budgetary pressures.

All of these contextual factors contribute to a complex and increasingly important relationship between first responders and BCAS. The next section of this report provides an overview of first responders’ involvement in pre-hospital events.

The First Responder System

Prior to the implementation of the provincial ambulance system, fire departments and their municipal governments across British Columbia were responsible for pre-hospital care. In 1974, the BC Ambulance Service was established by the provincial government in an effort to provide citizens with equitable access to pre-hospital emergency services. The integral role of fire services in providing these services prior to BCAS was recognized with the establishment of the first responder system to provide localized and complementary service delivery. Unlike most other jurisdictions in Canada, this model results in British Columbia having a layered model with shared responsibility for emergency health care between municipal and provincial governments.

BCAS is a provincial entity under the BCEHS and is operationally responsible for pre-hospital care and transportation to hospital. While participating in the first responder model is voluntary and can take on different iterations, participating municipalities are financially and administratively responsible for these programs. There are approximately 6250 first responders, providing low-level medical and scene support, operating out of approximately 226 fire departments across the province of British Columbia.⁴ Various estimates indicate that first responders attend a substantial proportion of BCAS calls. Despite this significant role, there is a perception that local governments and fire departments have not had input commensurate with their level of involvement in the system.

Since the establishment of BCAS there has been numerous reviews and changes made to the model of emergency services. Critical to this system and the issues highlighted in so many reports is the dispatch system for emergency services in the province. As outlined in the Cameron Report (2007),

the jurisdictional responsibility for dispatch is also divided between municipalities and the Province. Contact with pre-hospital care begins with a call to 911 call takers – who are employed by municipalities (either directly, or through arrangements with other municipalities). Medical calls are then transferred to one of three BCAS dispatch centres in the province for purposes of caller interrogation and dispatching emergency resources. For calls where the BCAS emergency medical dispatcher (“EMD”) determines that first responders should be deployed, the EMD alerts the appropriate dispatcher or dispatch centre (usually a fire department staffed by municipal employees), and a dispatcher sends the first responders (usually fire service personnel). It should be noted that the *medical* aspects of the dispatch process - including caller interrogation, triage for determining the level(s) of resource to send to the patient, and pre-arrival instructions to the caller - are all performed by the provincial EMDs”.⁵

⁴ Cameron, P. (2007). *First responders, fire services and pre-hospital emergency care in British Columbia: A report to the Emergency Health Services Commission*. British Columbia.

⁵ Cameron, P. (2007). *First responders, fire services and pre-hospital emergency care in British Columbia: A report to the Emergency Health Services Commission*. British Columbia, p. 28.

Acknowledging the political and logistical challenges associated with revising this dispatch model, it would seem prudent to examine the benefits and challenges of a more streamlined and integrated system.

Response and Wait Times: A Symptom or the Problem?

The most recent RAP changes sparked a public discussion regarding response and wait times as a critical problem in the system; however, it is more useful to frame these response issues as symptoms of a dysfunctional system rather than the problem.

Table 1 illustrates that a significant proportion of the work of the fire services in the Greater Vancouver area is connected to medical calls and the related call type assigned to MVAs.

**Table 1: First Responder Involvement in Medical and MVA Calls
May 1, 2013 to April 30, 2014⁶**

Municipality/ District	Total Number of Calls	Total Number of Medical Calls	Medical Calls as a % of Total Calls	Total Number of MVA Calls	MVA Calls as a % of Total Calls
Burnaby	13330	8010	60.1%	1606	12.0%
Coquitlam	6097	3226	52.9%	608	10.0%
Langley City	2428	1618	66.6%	184	7.6%
North Vancouver District	3830	2157	56.3%	306	8.0%
Pitt Meadows	586	164	28.0%	110	18.7%
Port Coquitlam	2915	1718	58.9%	289	9.9%
Port Moody	1598	725	45.4%	214	13.3%
Richmond	9789	4693	48.0%	1125	11.5%
Surrey	34674	18760	54.1%	4093	11.8%
Vancouver	49406	22840	46.2%	3211	6.5%
West Vancouver District	3494	1766	50.5%	237	6.8%
White Rock	1739	913	52.5%	52	3.6%

An examination of twelve departments providing data for this analysis indicates that medical calls represent an average of 52% of the calls responded to by fire services in these jurisdictions. Adding MVA calls to the workload distribution indicates that those calls represent an average of 10% of calls responded to by fire services (Table 1).

⁶ All of the fire departments in the Greater Vancouver area were invited to submit incident data to be analyzed for response and wait times six months before and six months after the most recent RAP changes. Data sets from the following departments were analyzed: Burnaby, Langley City, District of North Vancouver, Pitt Meadows, Port Coquitlam, Surrey, Vancouver and District of West Vancouver.⁶ Of the total incidents for each department, only the calls that had clear incident start times and arrival times, for both fire and BCAS, were included in the analysis. While there are some departmental variations in response policies and organizational factors, it is hoped that this analysis provides an additional piece of the foundation upon which some of the strategic conversations about first responder models might be built.

Table 2 indicates that wait times have increased since the most recent RAP changes; however, simply highlighting increases and decreases misses the more fundamental discussion of differentiating between necessary and potentially unnecessary wait times within a context of systemic change.

Table 2: Response/Wait Times for Medical Calls Pre and Post RAP Changes⁷

Period of Analysis	FR Average On-Scene	BCAS Average On-Scene	Average Wait Times	FR 90 th Percentile On-Scene	BCAS 90 th Percentile On-Scene	Average Differential Between FR and BCAS
Pre RAP Changes (n=29035)	5min 40sec	10min 50sec	5min 10sec	8min 28sec	17min 17sec	8min 50sec
Post RAP Changes (n=27992)	5min 57sec	12min 29sec	6min 32sec	8min 28sec	21min 0sec	13min 22sec

Importantly, these numbers indicate that local fire departments and their municipalities are playing a significant role, both financially and operationally, in the response matrix for pre-hospital care. The duplication of services that characterizes the current response patterns highlights the urgency in rethinking the current model of co-response in British Columbia. Using Vancouver as an example, the city’s Fire and Rescue Services makes up 8% of the total operating budget for the municipality and fire suppression and medical calls represent 93% of those expenditures.⁸ Using the results in Table 1 to extrapolate the magnitude of medical calls, first responder services consume approximately 43% (\$42.3 million) of Vancouver Fire Services’ projected expenditures for 2014.

This reality and the likelihood that these numbers will continue to grow in the coming years, coupled with the significant time that first responders are on scene waiting for BCAS in circumstances that all parties would agree do not require the attention of ambulance services, make it imperative that the system examine questions related to response patterns, scope of practice, and levels of resourcing for all parties involved in the current co-response system.

⁷ Note: 1) Municipalities included: Burnaby, Langley City, North Vancouver District, Pitt Meadows, Port Coquitlam, Surrey, Vancouver, West Vancouver District; 2) Only those calls that had both FR and BCAS response times were included in the analysis; 3) Pre-RAP data was gathered for the period May 1, 2013 to October 28, 2013 and Post-RAP data was gathered for the period October 29, 2013 to April 30, 2014; 4) The data was extracted from the CAD and/or record management systems used in each of the participating municipalities. It is recognized that there may be some minimal variance due to on-scene conditions, differential access to technology, and dispatch centre conditions; however, it is not expected that these anomalies would impact the findings given the sample size available for this review.

⁸ City of Vancouver. 2014 Capital and Operating Budget.

As stated above, this analysis is intended to explore broader systemic issues with respect to first responders' attendance to such a significant number of medical calls and potential in the current system as well as innovations that may increase the efficiency and effectiveness of these responses.

Officer Duty Reports

An additional source of information that was examined for this study were complaints/concerns documented by fire service crews and submitted as Officer Duty Reports in response to patient/family concerns about service and/or FR concerns based on the circumstances of the call. These reports were requested from all of the departments within the Greater Vancouver area. Reports from Burnaby, Coquitlam, District of North Vancouver, Port Coquitlam, Surrey, Vancouver, and White Rock were received representing a total of 243 reports.

Given the significant number of calls included in this report, the number of complaint reports is very small; however, it is important to note that the parameters that compel, encourage and ultimately shape completion and content of these reports is not standardized across departments, crews or individual firefighters. For example, in some departments there are no reports completed; however, it would seem unlikely that there are no concerns in these departments. Based on conversations with senior fire administrators, it is reasonable to assert that there is an under-reporting of concerns and complaints. Despite these qualifiers, there are a number of key themes that are characterized in these reports that contribute to this discussion including: excessive wait times, requests for upgrades of calls by first responders on-scene, and communication challenges.

First Responder Requests for Call Upgrades

The reports highlight a number of concerns with respect to coding of calls as routine instead of Code 3. The majority of these reports indicate that first responders felt that the original call had not been accurately coded given the condition of the patient once on-scene. In a minority of these cases, the call may or may not have been accurately coded at the time of the dispatch; however, there was a deterioration of the patient's condition once on-scene. An obviously related aspect of this concern is patient care. Observations related to the impact of under-coding calls resulted in patients experiencing longer than acceptable waits despite the following types of health concerns: heavy bleeding; obstructed breathing; loss of consciousness; severe head pain; falls and accidents resulting in severe pain, neck pain, head injury with disorientation; and, spinal injuries. The over-resourcing and associated wait times coupled with the on-scene observations of first responders highlights the need to have a meaningful exploration of how addressing current challenges in the delineation and integration of dispatch responsibilities would be important to consider in any discussions moving forward.

Inadequate/Problematic Response

Wait Times

The majority of the reports identified wait times as a problem with these times ranging from 20 to 90 minutes and in some cases documenting no attendance by BCAS. In some cases the concerns were most directly related to the wait time; however, in most other cases, the concern was compounded by either the condition of the patient upon first responders' arrival or the deteriorating condition of the patient during the wait.

Layered Response

The primary theme in these complaints was a sense of inadequacy in the response of the BCAS. These cases included the following kinds of issues: slow response times; lack of communication with the first responders with respect to ETA information and patient information; inadequate information provided to 911 callers; diversion of ambulances without communication with first responders; inability to contact BCAS on the shared event channel; lack of urgency in assigning cars or upgrading based on additional information from FRs; extensive wait times; delays in notifying fire of calls; and, citizens driving to hospital due to wait times. This category also included those cases that were characterized by a concern about the nature of the BCAS response and included: non-response to incidents; disregarding FR transport information; inadequate assessment of patient upon arrival; inappropriate cancelling of fire support; and, rerouting in emergent situations.

Not surprisingly, these Officer Duty Reports, while only accounting for less than 1 per cent of the total incidents responded to by the participating departments, illustrate some of the important consequences of the response and wait times discussed above and some of the coding and communication issues that have been highlighted throughout the years as the various stakeholders navigate their way through the complex and critical relationships that characterize emergency services in this province.

This qualitative data is particularly important as it contextualizes some of the apparent systemic problems in designating/coding of calls, communication between first responders and BCAS, and the need to more closely examine the significance of care provided by first responders in medical incidents as it contributes to patient experiences and outcomes and the efficiency of the system.

Summary

A review of the documentation (in the form of reports, committee minutes, and memos) from all sectors that has framed this discussion over the last 50 years repeatedly highlights the continued relevance of the following key questions:

- How might the system be changed to support BCAS in their continued efforts to respond to the most urgent cases? If other efficiencies in the system were realized, how might an increase in the number of paramedics further strengthen the BCAS response to the most urgent cases?
- Are firefighters unnecessarily attending calls that are of low acuity?
- Is the BCAS call-taker's coding of a call ever manually altered by a BCAS dispatcher? If so, what criteria are used to re-classify the call?
- What does ICBC data indicate regarding accidents resulting from Code 3 responses of emergency services?
- Are there training, procedural, and systemic lessons to be learned from calls being upgraded based on FR assessment on scene? If so, how is that data collected, analysed and communicated to stakeholders?
- How might the dearth of research, regarding the impact of first responder care on-scene, noted most recently in the Craig report, be addressed? How might this information contribute to the discussion with respect to resource allocation?
- What are the public's expectations with respect to pre-hospital emergency/urgent care responses by emergency services?
- How is patient information transferred from FRs to BCAS on-scene? How might this transfer be strengthened through shared procedures and technology regarding Patient Care Records?
- How might the efficiency and effectiveness of the dispatch services be strengthened? How might greater integration, streamlining and centralization contribute to these changes?
- How might the training and competencies of First Responders be better accounted for to enable more efficient upgrading to EMR levels for those departments that are pursuing this route? How might FRs play a greater role within these innovations?
- How might models of pre-hospital care incorporate triage, treat-and-release, and urgent care facilities?
- What are the major factors contributing to over-response? How might these factors be altered to encourage appropriate response levels?
- Given the magnitude of FR involvement in pre-hospital emergency services, how might scope of practice guidelines (and associated legislation) be modified to enhance the capacity of first responders and focus the capacity of BCAS on the most urgent cases?
- How might more collaborative approaches to innovating within the system be strengthened among emergency services providers?

Importantly, these questions are critical to framing efforts to increase the responsiveness of the system of pre-hospital care in an evidence-based, efficient and progressive manner and ever more pressing in today's climate characterized by population growth, an aging demographic, rising health care costs, and a shrinking tax base.

Conclusion

There have been repeated efforts to document the regulatory and operational complexities of the first responder model in British Columbia. The Cameron report highlights that in many of these discussions the constraints on the scope of these reports serves to restrict the very innovative thinking that would seem to be demanded by the writing of such reports.

The RAP changes reinvigorated a conversation regarding the need for the system to explore and implement new approaches to the provision of care and it would be short-sighted to simply argue for a return to the approach used before the changes. In fact, the changes have contributed to making the system more responsive to the most urgent cases. Agree or disagree with these changes, BCAS and various fire departments around the province are exploring, in some cases through pilot projects, and in some cases through more systemic adjustments such as the RAP, innovations in service delivery. It is with this in mind that the following suggestions are offered for the committee's consideration, not as new ideas but as strategies to respond to the systemic challenges that ground them.

1. Support meaningful local government stakeholder participation at the BCEHS governing level in recognition of the significant contribution made by first responders and their associated municipal governments.
2. Develop uniform data collection and data sharing strategies to enable system monitoring, evaluation, and evidence-based improvements to the system.
3. Conduct a comprehensive assessment of the co-response model employed in BC. This examination would include a robust assessment of the need for the already implemented and proposed changes (i.e. evidence of public safety concerns and unnecessary Code 3 classification of incidents), the implementation of the changes (i.e. congruence of on scene assessment and initial call code, role of FRs in scene management, diversion of ambulances and resultant delays, review of inter-agency protocols), and the impact and potential impact of the changes (i.e. changes in wait times, consequences of changes in wait times, relationship between the FR role and patient outcomes, measures of patient experience and outcomes on scene and post emergency room handover). Some of the work with respect to response and wait times, while not comprehensive in terms of coverage, has been completed within this report.
4. Design, implement and evaluate pilot projects to explore the potential of:
 - a. Providing triage and treat and release capacity to first responders;
 - b. Enhancing the certification levels of first responders;
 - c. Resourcing first responder apparatus with Primary Care Paramedics;
 - d. Using urgent care facilities to receive non-emergency urgent care cases;
 - e. Developing an integrated dispatch model; and,
 - f. Sharing Patient Care Records across FRs and BCAS personnel.

It is clear that there is a tremendous commitment on the part of BCAS and the first responder communities to provide excellent pre-hospital care to the citizens they serve. It is equally clear that first responders are attending a significant and increasing number of medical calls without an ability to fully and efficiently respond to the needs of lower acuity patients and that paramedics are experiencing increasing workload pressures. The data reviewed in this report reiterates the importance of these issues and emphasizes the urgency of examining the current model of service delivery and potential innovations and alternate modes of response.

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- Reference Note: In addition to the references listed above, other material was reviewed to support the content of this report including media releases, meeting minutes, correspondence, and power point presentations.

Author's Biographical Information

Dr. Martha Dow is a researcher and consultant working in the areas of public safety, education, and organizational change and is an Associate Professor in the Department of Social, Cultural and Media Studies at the University of the Fraser Valley. Contact her at martha.dow@ufv.ca for further information.

Acknowledgments

This report was commissioned by the Metro City Managers Sub-Committee for Pre-Hospital Care, First Responder Services.

Appendix 1

A recent analysis of response times for the Surrey Fire Service confirmed the BCAS assertion that the RAP changes would increase the likelihood that responses to more serious calls would be improved.⁹ Concomitantly, the wait times for call codes impacted by the RAP changes increased highlighting the need to once again engage in a scope of practice assessment to enable the appropriate levels of expertise to attend to the appropriate calls. It is reasonable to conclude that the initial findings of the Surrey review, that examined the differences between Code 2 and Code 3 call times, would be generalizable to other departments in the Greater Vancouver area.

Results and Discussion

The following four tables present response and wait time data for all of the medical calls received six months before and six months after the RAP changes by Burnaby, Langley City, District of North Vancouver, Pitt Meadows, Port Coquitlam, Surrey, Vancouver and District of West Vancouver.

⁹ Dow, M. (2014). *British Columbia Ambulance Service Resource Allocation Plan: An Analysis of Recent Changes to Call Codes*. A report prepared for the Surrey Fire Services, British Columbia.

**Table 3: Average Response/Wait Times for all Medical Calls
May 1, 2013 to October 28, 2013 (Pre-RAP Changes)**

Municipality	Total Number of Medical Calls	FR Average On-scene ¹⁰	BCAS Average On-scene ¹¹	Average Wait Time
Burnaby	3981	5min 47sec (n=3661)	12min 4sec (n=637)	6min 17sec
Langley City	783	5min 3sec (n=768)	11min 4sec (n=542)	6min 1sec
North Vancouver District	1064	5min 38sec (n=1064)	10min 11sec (n=747)	4min 33sec
Pitt Meadows	88	7min 26sec (n=72)	12min 30sec (n=55)	5min 4sec
Port Coquitlam	873	5min 40sec (n=853)	12min 57sec (n=92) ¹²	7min 17sec
Surrey	9231	5min 17sec (n=8980)	10min 34sec (n=5269)	5min 17sec
Vancouver	12117	4min 49sec (n=11732)	7min 26sec (n=10368)	2min 37sec ¹³
West Vancouver District	898	5min 42sec (n=875)	9min 51sec (n=675)	4min 9sec

Prior to the most recent RAP changes, on average first responders arrived on-scene in 5 minutes and 40 seconds and waited an average of 5 minutes and 10 seconds for BCAS to arrive (see Table 3). As noted in Table 4, prior to the changes, first responders arrived on-scene in 8 minutes 28 seconds or less 90 per cent of the time, while BCAS arrived on-scene in 17 minutes and 17 seconds or less 90 per cent of the time. It is the 90th percentile data that is particularly instructive as decision-makers explore alternate models to address urgent care demands as extended wait times will be more generally associated with Code 2 or lower acuity calls. These are calls that are well suited to more varied scope of practice models.

¹⁰ Only those calls with a FR arrival time were used in this analysis.

¹¹ Only those calls with a BCAS arrival time were used in this analysis.

¹² Port Coquitlam's data contained a significant number of cases without a BCAS on-scene time.

¹³ Vancouver's BCAS arrival on-scene data is recorded as whole numbers.

**Table 4: 90th Percentile Response/Wait Times for all Medical Calls
May 1, 2013 to October 28, 2013 (Pre-RAP Changes)**

Municipality	Total Number of Medical Calls	FR 90 th Percentile On-scene ¹⁴	BCAS 90 th Percentile On-scene ¹⁵	Differential Between FR and BCAS
Burnaby	3981	8min 11sec (n=1477)	19min 18sec (n=637)	11min 7sec
Langley City	783	7min 13sec (n=768)	17min 23sec (n=542)	10min 10sec
North Vancouver District	1064	8min 13sec (n=1064)	15min 29sec (n=747)	7min 16sec
Pitt Meadows	88	14min 5sec (n=72)	19min 59sec (n=55)	5min 54sec
Port Coquitlam	873	7min 35sec (n=853)	20min 58sec (n=92) ¹⁶	13min 23sec
Surrey	9231	7min 27sec (n=8990)	17min 28sec (n=5269)	10min 1sec
Vancouver	12117	6min 39sec (n=11732)	11min 59sec (n=10368)	5min 20sec ¹⁷
West Vancouver District	898	8min 21sec (n=875)	15min 46sec (n=675)	7min 25sec

Wait times are generally discussed as important because of their length; however, equally important is the examination of wait times in terms of what first responders are able and not able to provide as they attend to the patient upon arrival and during the wait time. An additional consideration is that the current model operates on the premise that wait times are embedded in the system as ambulance always needs to attend the scene.

¹⁴ Only those calls with a FR arrival time were used in this analysis.

¹⁵ Only those calls with a BCAS arrival time were used in this analysis.

¹⁶ Port Coquitlam's data contained a significant number of cases without a BCAS on-scene time.

¹⁷ Vancouver's BCAS arrival on-scene data is recorded as whole numbers.

**Table 5: Average Response/Wait Times for all Medical Calls
October 29, 2013 to April 30, 2014 (Post-RAP Changes)**

Municipality	Total Number of Medical Calls	FR Average On-scene ¹⁸	BCAS Average On-scene ¹⁹	Average Wait Time
Burnaby	4030	5min 45sec (n=1490) ²⁰	15min 6sec (n=661)	9min 21sec
Langley City	835	5min 41sec (n=808)	12min 34sec (n=681)	6min 53sec
North Vancouver District	1093	5min 35sec (n=1093)	11min 35sec (n=860)	6min 0sec
Pitt Meadows	76	8min 26sec (n=66)	11min 58sec (n=57)	3min 32sec
Port Coquitlam	845	5min 38sec (n=826)	15min 50sec (n=177) ²¹	10min 12sec
Surrey	9529	5min 34sec (n=9272)	12min 33sec (n=6594)	6min 59sec
Vancouver	10723	5min 14sec (n=10454)	9min 24sec (n=9456)	4min 10sec ²²
West Vancouver District	861	5min 43sec (n=821)	10min 53sec (n=656)	5min 10sec

After the most recent RAP changes, on average first responders arrived on-scene in 5 minutes and 57 seconds and waited an average of 6 minutes and 32 seconds for BCAS to arrive (see Table 5). As noted in Table 6, first responders arrived on-scene in 8 minutes and 28 seconds or less 90 per cent of the time, while BCAS arrived on-scene in 21 minutes or less 90 per cent of the time.

While wait times are an important piece of the puzzle, simply looking at increases and decreases is not sufficient. In some cases, longer wait times make sense given the patient’s level of medical need and the limited resources within the existing model. Instead, what is necessary is an openness to “do things differently” so that wait time analysis becomes obsolete because if there are emergency service personnel on-scene then there is appropriate and sufficient care being providing and transportation and receiving decisions being made and acted upon in a timely fashion.

¹⁸ Only those calls with a FR arrival time were used for this analysis.

¹⁹ Only those calls with a BCAS arrival time were used for this analysis.

²⁰ Incomplete data decreased the number of usable incidents.

²¹ Port Coquitlam’s data contained a significant number of cases without a BCAS on-scene time.

²² Vancouver’s BCAS arrival on-scene data is recorded as whole numbers.

**Table 6: 90th Percentile Response/Wait Times for all Medical Calls
October 29, 2013 to April 30, 2014 (Post-RAP Changes)**

Municipality	Total Number of Medical Calls	FR 90 th Percentile On-scene ²³	BCAS 90 th Percentile On-scene ²⁴	Differential Between FR and BCAS
Burnaby	4030	8min 6sec (n=1490) ²⁵	28min 59sec (n=661)	20min 51sec
Langley City	835	8min 30sec (n=808)	22min 21sec (n=681)	13min 51sec
North Vancouver District	1093	7min 57sec (n=1093)	18min 21sec (n=860)	10min 24sec
Pitt Meadows	76	11min 10sec (n=66)	18min 22sec (n=57)	7min 12sec
Port Coquitlam	845	7min 42sec (n=826)	29min 48sec (n=177) ²⁶	22min 6sec
Surrey	9529	8min 5sec (n=9272)	19min 57sec (n=6594)	11min 52sec
Vancouver	10723	7min 33sec (n=10454)	17min 33sec (n=9456)	10min 0sec ²⁷
West Vancouver District	861	8min 42sec (n=821)	19min 18sec (n=656)	10min 36sec

In summary, the response and wait time data examined before and after RAP changes indicate the following:

- Despite important differences in the characteristics of the communities represented in the Greater Vancouver area, the response and wait time patterns associated with FR and BCAS attendance on-scene are relatively consistent;
- The response times for BCAS responding to Code 3 calls have improved since the RAP changes;²⁸
- First responders are waiting longer for BCAS to arrive on-scene; and,
- The average time for BCAS to respond to 90% of all calls has increased substantially since the RAP changes.

²³ Only those calls with a FR arrival time were used for this analysis.

²⁴ Only those calls with a BCAS arrival time were used for this analysis.

²⁵ Incomplete data decreased the number of usable incidents.

²⁶ Port Coquitlam's data contained a significant number of cases without a BCAS on-scene time.

²⁷ Vancouver's BCAS arrival on-scene data is recorded as whole numbers.

²⁸ Dow, M. (2014). British Columbia Ambulance Service Resource Allocation Plan: An Analysis of Recent Changes to Call Codes. A report prepared for the Surrey Fire Services, British Columbia.