Emergency Pre-Hospital Medical Services in British Columbia

DECEMBER 2008
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Executive Summary

The Ambulance Paramedics of British Columbia continue to believe that the responsibility for public health and safety is best provided by the public sector, that continued delivery of emergency health care services by the provincial government ensures lowest cost, prevents duplication of services, and conflicting service delivery policies and that the citizens of BC must be informed about pre-hospital care delivery in BC today.

The purpose of this document is to provide the general public with background information about BC’s pre-hospital medical care system, so that individuals can understand the current state of services provided in their local communities and to determine for themselves, the adequacy of ambulance service in BC.

This document is divided into two sections. The first section details the history, governance, organizational structure and operational framework of pre-hospital medical services in BC.

The second section, inspired by work done in 2005 by J. Fitch, is structured around recognized standards, targets and benchmarks that have been deemed as appropriate markers of an emergency medical system’s health. The vital signs or indicators of a systems general condition, used to review BC’s pre-hospital emergency medical system include: clinical quality, response times, services provided, communications, training and certification, staff recruitment and development, medical direction and finances. These clinical and operational vital signs reflect the organizational goals of the British Columbia Ambulance Service (BCAS); high quality timely patient care, public and partner orientation, healthy and supportive workplaces, corporate governance and financial stewardship.

Thirteen of fifteen separate markers, or 87% of the vital signs evaluated, were below acceptable levels, indicating that emergency medical services in BC are in Critical Condition.
Glossary

ACP: Advanced Care Paramedic
AMPDS: Advanced Medical Priority Dispatch System
Chute Time: Time it takes from dispatch notifying the crew of a call, to the wheels of the ambulance rolling to the call.
CCP: Critical Care Paramedic
CCT: Critical Care Transport
CED: Clinical Education Division
CMA: Canadian Medical Association
CME: Continuing Medical Education
CPR: Cardiopulmonary Resuscitation
BCAS: British Columbia Ambulance Service
EHSA: Emergency and Health Services Act
EHSC: Emergency and Health Services Commission
EMALB: Emergency Medical Assistant Licensing Board
EMD: Emergency Medical Dispatcher
EMR: Emergency Medical Responder
EMR-FR: Emergency Medical Responder - First Responder
ERA: Emergency Room Attendant
FTE: Full-time Equivalent
ITT: Infant Transport Team
JIBC: Justice Institute of BC
LMC: Local Medical Coordinator
NOCP: National Occupational Competencies for Paramedics
PAACC: Provincial Air Ambulance Coordination Centre
PAC: Paramedic Association of Canada
PCP: Primary Care Paramedic
RMD: Regional Medical Director
Introduction: BC Ambulance Overview

The British Columbia Ambulance Service (BCAS) is governed by the Emergency and Health Services Commission (EHSC), which is in turn, mandated by the Emergency and Health Services Act 2007 (EHSA). BCAS was formed as the operational branch of the EHSC through enactment of the Health Emergency Act in 1974. In early 2007 a second operational branch was added when HealthLinkBC (formerly known as Health Line Services BC) merged with BCAS under the EHSC. See Fig 1. With this merger, a blended Senior Executive Team brought senior managers from BCAS and HealthLinkBC together under the newly expanded Emergency and Health Services Commission (2007).

The Emergency Medical Assistants Licensing Board (EMALB) is also empowered by the EHSA and is responsible for licensing all levels of pre-hospital responders, including Emergency Medical Responders (EMR), Primary Care Paramedics (PCP), Advanced Care Paramedics (ACP), and Infant Transport Team (ITT).

BCAS is divided into five operational components; four geographic regions and Provincial Programs. The four geographic regions are Vancouver Island, Lower Mainland, Interior, and Northern BC. There are 189 ambulance stations and three dispatch centers in the province. Each region has a mix of remote, rural, and urban stations, with the Lower Mainland and Vancouver Island also containing stations designated as metropolitan. There are a total of 49 rural stations, 67 remote stations, 35 urban stations, and 38 metro stations spread among the four geographical regions (BCAS, 2008a).

The BCAS currently employs approximately 3500 paramedics and Emergency Medical Dispatchers that provide emergency pre-hospital care and emergency medical dispatching to the residents and visitors of BC (BCAS, 2008b). The paramedics provide care in the 944,735 square kilometers of diverse geographical, climactic and economical landscape (Statistics Canada, 2005). Many of these paramedics work in a part-time capacity in rural or remote areas of the province, these same areas are the most common
point of entry for new paramedics who wish to pursue a career as a paramedic. Others work in a full-time capacity in the larger communities and cities of the province. There currently are approximately 2050 part-time paramedics and 1430 full-time paramedics working in British Columbia.

Most BC communities are staffed by Primary Care Paramedics (PCP) and in some rural and remote areas, Emergency Medical Responders (EMR). Advanced Care Paramedics (ACP) work alongside the PCPs in Greater Victoria, Greater Vancouver, Chilliwack, Kamloops, Kelowna, Abbotsford, Nanaimo and Prince George.

A specialized group, the Infant Transport Team (ITT), is based in Vancouver. Members of this team have all the skills of PCPs, some of the skills of ACPs, as well as a number of additional skills specific to the treatment and transport of neonatal and pediatric patients. The Infant Transport paramedics attend at pediatric and obstetrical responses in the Greater Vancouver area and act as the primary team transporting sick children from around the province.

There are also Critical Care Transport (CCT) paramedics in some areas of the province. These highly trained paramedics have the skills of ACP’s but also possess additional skills to transport critically ill patients by air or ground.

In addition to ground ambulances, air medical evacuations are also the mandate of BCAS. Air medical evacuations are accomplished through the use of chartered aircraft and helicopters with designated ambulance crews located in Vancouver, Kelowna and Prince George. In addition to these dedicated resources, BCAS uses other services such as local aircraft companies and the Alberta Shock Trauma Air Rescue Society (STARS) on an as-needed basis to provide air evacuations. All air medical evacuations in the province are co-ordinated by the Provincial Air Ambulance Co-ordination Centre in Victoria.

Another essential component of BCAS are the three regional dispatch centers. The dispatching of ground ambulance resources is accomplished by Emergency Medical Dispatchers (EMD) located in Victoria, Vancouver and Kamloops.
Operational Authority

The provinces are given authority over the delivery of health care in accordance with section 92 of the Constitution Act 1867. British Columbia enacted the Emergency and Health Services Act (EHSA), which established in Section 2, the Emergency and Health Services Commission (EHSC). Section 5 of the EHSA provides EHSC with the power and authority to provide emergency health services, and health services in British Columbia.

Section 5. (1) The commission has the power and authority to do one or more of the following:
(a) provide, in British Columbia, emergency health services and health services;
(b) establish, equip and operate, in areas of British Columbia that the commission considers advisable,
(i) emergency health centres and stations, and
(ii) centres from which health services may be provided;
(c) assist hospitals and other health institutions and agencies, municipalities and other organizations, and persons, to
(i) provide emergency health services and health services, and
(ii) train personnel to provide emergency health services and health services;
(d) enter into agreements or arrangements for the purposes set out in paragraph (c);
(e) establish or improve communication systems, in British Columbia, for emergency health services and health services;
(f) make available the services of trained persons on a continuous, continual or temporary basis to those residents of British Columbia who are not, in the opinion of the commission, adequately served by existing emergency health services and health services;
(g) recruit and train emergency medical assistants and health service providers;
(h) provide ambulance services in British Columbia to be known as the British Columbia Ambulance Service;
(i) perform any other function related to emergency health services as the Lieutenant Governor in Council may order.

BC Ambulance Service Organizational Structure

One of many powers granted to EHSC is the provision of ambulance service by BCAS. BCAS created three policy and procedure manuals designed to regulate the operations of the service. Volume I and II are concerned with all aspects of the delivery of ambulance services. Volume III contains the protocols and procedures that the various categories of paramedics and EMR’s are permitted to perform. See Figure 11.

From the legal framework established by the EHSA, the Ambulance Service has developed its management structure. BCAS structure consists of a central headquar-
ters in Victoria responsible for overseeing the general direction and delivery of ambulance service in the province and five regional administrative centers located throughout the province. The Chief Operating Officer (COO) currently heads BCAS. The COO, appointed by the Lieutenant Governor in Council, has delegated authority from EHSC to carry out the powers of the Commission as outlined in the Act and is responsible for the development and overall control of BCAS. The head office in Victoria provides several administrative support services, as well as programs that report directly to the EHSC and are shared with Healthlink Services. Shared services include Policy and Planning, Information Technologies, Human Resources/Labour Relations, Medical Programs, and Finance.

In all, the administrative arm of BCAS comprises approximately 293 staff, including BC Government Employees Union (BCGEU) support staff and excluded managers. Figure 5 demonstrates the percent increase in fulltime equivalent staff for excluded managers, BCGEU support staff, fulltime frontline Canadian Union of Public Employees (CUPE) staff and part time CUPE frontline staff, over a 6 year period.

Regional Administration Centers are responsible for most operational aspects of the ambulance service within their region, including budgeting, staffing, labour relations, personnel and day-to-day operations. A regional Executive Director, who reports to the COO, is in overall control of ambulance operations within a region. Four administrative centers manage eight distinct operational regions, each with unique characteristics. The Victoria office is responsible for Region 1 (Vancouver Island), Vancouver for Region 2 (Lower Mainland, Fraser Valley, and Sunshine Coast), Kamloops for Regions 3 and 4 (Interior) and Prince George for Regions 5 through 8 (Northern BC).

Reporting to the Regional Executive Directors are the front line supervisors known as Superintendents. Superintendents are excluded managers, and are each
responsible for a number of stations within a region. For example, in Region 1, one superintendent is responsible for the Greater Victoria stations, two for mid-island stations and one for north-island stations. Superintendents deal with the day-to-day issues of their assigned stations, including approving supply orders, disciplinary matters and leave management.

Each ambulance station has a Unit Chief and the dispatch centers have Charge Dispatchers, which are bargaining unit positions with limited supervisory authority. Unit Chiefs are working paramedics responsible for the operation of their individual stations, including ordering supplies and uniforms, maintaining vehicles, submitting payroll and orienting new employees. Unit Chiefs also have the authority to investigate complaints and issue discipline.

In the larger urban centers, there is an additional level of frontline supervision. District Supervisors are bargaining unit employees dealing with day to day operation of a geographical group of ambulance stations. District Supervisors have the same authority as Unit Chiefs, but are given responsibility to oversee several stations. They also act as a liaison with hospital staff, other allied agencies, and as the incident command in the event of a multi-casualty incident.

Staffing & Operations

The typical career lifecycle of a BCAS paramedic begins by obtaining part-time employment in a remote or rural station. As seniority increases, those who wish to do so are able to compete for transfers to successively busier stations until they have enough seniority for a full-time position. Typically, staff transfer to

![Staffing & Operations Diagram](Fig 6 BCAS Paramedic Staff Mix)
stations that have higher call volumes, offering a greater depth of experiences, and increasing earning potential. Currently, it takes approximately 5 years of part-time seniority to qualify for a full-time position (BCAS, 2008a). The majority of full-time positions are in the Lower Mainland, with the remaining full-time positions spread around select urban and rural communities in the province. Remote communities are staffed solely by part-time employees. The migration of the workforce toward busier stations and eventually full-time employment leaves remote stations with the constant challenge to maintain adequate staffing levels.

Through the call-out system, also known as an on-call system, BCAS provides ambulance services to remote, rural, and urban communities. In the call-out system, paramedics submit their availability monthly and are assigned on-call shifts accordingly. Once the shift is assigned, the paramedic is responsible to respond to requests for ambulance service received during the shift. Following pager notification that a request for ambulance service has been received, the paramedic crew contacts the dispatcher who assigns the call, the paramedic crew respond from their home or community, to the ambulance station, and then to the scene of the call.

Part-time paramedics working “call-out” receive $2 per hour pager pay for being on-call. In the event that these volunteers respond to an ambulance call, they are paid a minimum of four hours at the collective agreement rate for their qualifications.

In some communities, part-time paramedics are paid a $10/hr stipend to remain at the station for the duration of their on-call shift. This shift pattern is called the Foxtrot shift. In many communities the part-time Foxtrot paramedic works alongside a full-time salaried employee, and receives full collective agreement rate for their qualifications only when they respond to an ambulance call.

In communities with moderate call volumes, BCAS relies on a combination of full-time staff on salary and on-call part-time staff. High call volume stations are crewed exclusively by full-time staff. However, even in high volume areas, part-time staff are used to provide coverage if all full-time ambulances are responding to calls. Part-time staff are also used to cover vacant full-time shifts resulting from vacation entitlements, illness and injury.
Workload & Response Capabilities

Increasing demands on the ambulance system are evidenced by the increasing number of requests for ambulance service. In the 2004/05 fiscal period, BCAS responded to 556,006 ambulance calls. Four years later in the 2007/2008 fiscal period, BCAS responded to 749,081 ambulance calls, a 35% increase in ambulance calls (BCAS, 2007d). It is anticipated that annual call volumes will continue to rise as the population base in BC is projected to increase from approximately 4.4 million in 2007 to five million by 2020 (BCAS 2007d). Figure 7 demonstrates the recent trend in call volume in each of the four community designations in BC.

As call volumes increase, without a proportional increase in resources, the percentage of time an ambulance is ready and available to respond to a request for ambulances service decreases. One measure used to assess the availability of ambulances is the Advanced Care Paramedic (ACP) capture rate. This measures the percentage of time that an ACP ambulance is available to respond to a high acuity call that has been assessed as requiring ACP attendance. Figure 8 displays the ACP Capture Rate for ACP ambulances around the province.

Another indicator that can be used to measure dispatch accuracy and resource allocation is the length of time it takes to get an ambulance to the most urgent calls, referred
to as “delta” and “echo” calls. Some examples of delta and echo calls are shortness of breath, chest pain, and respiratory or cardiac arrest. For these urgent calls, the BCAS benchmark for response is to have a paramedic crew by the patient’s side in 8 minutes and 59 seconds 90% of the time. In the 2006/08 fiscal periods, BCAS met that benchmark an average of just 54.1% of the time in urban and metropolitan posts. Response times such as the ones measured in delta and echo calls can be impacted by a variety of factors, including traffic congestion, call volumes, hospital delays, resourcing and staff availability.

In urban and metropolitan areas, hospital delays continue to impact the number of ambulances available to respond to calls. Hospital delays occur when hospitals are unable to move patients through the system, usually due to increased demands for service. In these cases, the paramedic crew must wait with the patient until the hospital is able to assume care. In some hospitals in the lower mainland, new positions have been added, called the Emergency Room Attendant (ERA). The ERA is hired by the Health Authority to provide care to patients who have not yet been accepted into a Emergency Department bed. The addition of ERAs to the hospitals has decreased the amount of time ambulance crews spend waiting during hospital delays.

While the demands on the system are increasing, so is the age of the BCAS workforce. In the 2007/2008 fiscal year, 375 working paramedics were 55 years of age or older. This represents approximately 11% of the workforce (BCAS, 2008b). Today, approximately 100 paramedics are able to retire with a full pension, and another 300 are eligible to retire with a reduced pension. By 2015, the number of paramedics who
will be 55 years of age or older will jump to 1354, or 40% of the current paramedic workforce in BC (BCAS, 2008b). As with many other arms of healthcare, there will be an increased challenge in the years to come to attract and retain qualified staff to meet the growing demands on pre-hospital health care.

**Wages & Benefits**

Paramedics in BC are compensated according to their qualifications and seniority. Part-time employees are paid an hourly rate, while full-time employees are salaried. All full-time staff who have completed six months and part-time employees who have completed 6 years of service and worked 96 shifts in the previous accrual period, receive a benefit package. Eligible part-time employees receive the same benefits as full-time staff, excluding Long Term Disability (LTD) and Short Term Injury and Illness Plan (STIIP). Currently 47.4% of part-time staff are ineligible for any benefits based solely on having less than 6 years of service seniority, and more are unable to meet the annual shift requirements. Part-time staff not qualifying for the benefit package receive 11% of their wage as ‘in-lieu’ of benefits. Part-time staff also receive no annual holiday time, instead they receive an additional 6% in-lieu of vacation time. While regular call-in wages are pensionable earnings for part-time staff, the $2/hr pager pay stipends, 17% in lieu of benefits and $10/hr foxtrot stipends are not pensionable earnings.

Figure 9 compares the hourly wage of a full-time PCP with 10yrs against 10yr PCP paramedics in a number of Canadian EMS jurisdictions as of Jan 2009.
Working Conditions

In BC there are currently 189 ambulance stations and 3 dispatch centres in the province. Some of these 192 facilities meet the comprehensive Station Standards defined in the Collective Agreement and Policy and Procedures manuals. Others were built or acquired years ago, and no longer meet the Station Standards. For example, Station 241, Vancouver (West 7th) was originally intended for one 24 hour ambulance and one dayshift ambulance. There are now two 24 hour ambulances, as well as two dayshift ambulances sharing the space. Station over-crowding is particularly challenging at shift change, when crews need to process the day’s patient care records, attend to other administrative paperwork, and access bathrooms, showers and lockers. In a recent survey, 36% of stations report having less than the minimum requirement for bathroom and shower facilities as defined in the Station Standards, while 49% of stations fail to provide adequate lockers or other secure areas for on duty staff to stow their personal belongings.

Employee Health

As the workload and age of the workforce increases, so does the organizational costs resulting from employee illness and injury. Over a 5 year period, the Short Term Illness and Injury Plan (STIIP) costs, Figure 10, have increased by more than 1 million dollars. In response to increasing STIIP costs, BCAS implemented the Absence Review Initiative, where employee’s with higher than average days of sick time are identified and supervisors work with the employee to improve attendance. WorkSafe BC costs, Figure 11, have increased by approximately 3.6% annually over the last 5 years, while the number of ambulance responses has almost doubled over the same period.
Paramedic Education

In the past, all paramedic training in BC was funded by BCAS and provided by the Justice Institute of BC Paramedic Academy (JIBC). Currently, BC paramedics fund their own training costs, with a few exceptions, such as dispatch, Infant Transport Team (ITT) and Critical Care Transport (CCT) training.

The JIBC’s main campus is located in New Westminster, with satellite campuses located in Kelowna, Victoria, Maple Ridge and Chilliwack. Students from outlying areas of the province travel to these centers for training. In some cases, entry-level courses, such as the Emergency Medical Responder (EMR) course have been delivered in more remote locations to accommodate students closer to their home communities.

The Paramedic Academy’s Primary Care Paramedic (PCP) and Advance Care Paramedic (ACP) programs are accredited by the Canadian Medical Association (CMA). The CMA has adopted the National Occupational Competencies for Paramedics (NOCP) as established by the Paramedic Association of Canada (PAC). The CMA accredits training facilities that demonstrate they teach to the NOCP standards. As a result, graduates of any CMA-accredited training agency in Canada have demonstrated mastery of the competencies developed by PAC and accepted by the CMA.

However, some BCAS paramedic designations do not fit into the accredited standards, such as the EMR, ITT and CCT programs. Recently, private training academies have launched EMR and PCP training programs around BC, though they have not yet obtained CMA accreditation. (www.cma.ca/index.cfm/ci_id/19316/la_id/1.htm)

Table 1 and Figure 12 on the following page highlight the skills of each license level, the hours of instruction, and the course costs.
Identify the Type of Pre-Hospital Care in your Community?

See Table 1, page 15 - License Type by Community Designation
See Appendix 1, page 41 - Community Designations

**EMR-FR (First Responder)**
- Scene & Vital Sign Assessment
- Rapid Body & Secondary Survey
- Basic Wound / Fracture Management
- Basic airway management, CPR
- Endorsements: Airway Suction, Ventilation, Oxygenation, Hypoglycemia, Spinal Immobilization, AED

Training Hours: 28
Course Cost: $1,410.00

**PCP (Primary Care Paramedic)**
- All skills / protocols used by EMR-FR including endorsements.
- Patient packaging and transport
- Blood Pressure monitoring
- Emergency Childbirth
- Airway suction & Bag-Valve-Mask
- Fracture & Soft tissue injury treatment
- Endorsements:
  - Initiate Peripheral Intravenous Fluid Administration

Training Hours: 1,575
Course Cost: $5,730.00

**EMR (Emergency Medical Responder)**
- All skills / protocols used by EMR-FR including endorsements.
- Patient packaging and transport
- Blood Pressure monitoring
- Emergency Childbirth
- Airway suction & Bag-Valve-Mask
- Fracture & Soft tissue injury treatment
- Endorsements:
  - Occupational First Aid, Intravenous Maintenance, Oximeter usage, Limited Medication administration by oral, sublingual & inhalation routes, Anti-hypoglycemic, Anti-anginal, Analgesic

Training Hours: 94.5
Course Cost: $1,310.00

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See Fig 12 BC Pre-hospital Care License Levels

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**Fig 12 BC Pre-hospital Care License Levels**

See Table 1, page 15 - License Type by Community Designation
See Appendix 1, page 41 - Community Designations

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THE AMBULANCE PARAMEDICS OF BRITISH COLUMBIA, CUPE LOCAL 873
ACP
(Advanced Care Paramedic)
All skill / protocols used by PCP - Including endorsements
- Electrocardiogram rhythm interpretation
- Manual Defibrillation / Cardioversion
- External Pacing
- Intraosseous infusion
- Intravenous infusion devices & medications
- External Jugular Intravenous lines
- Surgical and Needle Cricothyrotomy
- Needle Thoracentesis
- Naso-gastric tube and suction
- Combitube and Nasal-pharyngeal Airway
- End-tidal carbon dioxide monitors
- Intravenous Colloid & Crystalloid solutions
- Medication administration using Endotracheal, Intraosseous & Rectal routes
- Anti-arrhythmic, Electrolyte -Calcium therapy,..
- Diuretic, Anti-coagulant, Narcotic, Anti-pyretic, Anti-Cholinergic, Sedative / Anti-convulsant
- Anti-emetic, Histamine antagonist
- Alkalizer

Training Hours: 2,940
Course Cost: $11,642.50

ITT/CCT
(Infant Transport Team & Critical Care Transport)
CCT Only:
- All skill / protocols used by ACP
- Bladder Catheterization
- Venous Pressure Monitoring
- Point of care tests (Capillary, Venous, Arterial.)
- Collect Blood Samples (Venous / Arterial.)
- Lab and X Ray interpretation
- Perform & interpret 12 lead ECG's
- Parenteral line management
- Transvenous Pacing

ITT
- All skill / protocols used by PCP
- Adult: AED defibrillation, McGill Forceps & Intubation,
- Pediatric and neonatal: ECG Rhythm interpretation
- Manual Defibrillation, Medication administration using Intravenous, Oral, Nebulization, Endotracheal, Intraosseous, Intramuscular & Rectal routes,
- Anti-arrhythmic, Bronchodilator, Anti-pyretic, Anti-Cholinergic, Anti-hypoglycemic, Anti-Convulsant / Sedative, Anti-emic
- Alkalizer, Infusion Devices
- Naso-gastric tube insertion and suctioning
- Incubator use / monitoring

CCT and ITT:
- Mechanical Ventilation
- Out of scope drugs ordered by Transport Advisors
- Arterial line and Central line monitoring
- Chest tube evacuation device use / monitoring

Training Hours: > 2,940 (Varies)
Course Costs: > $11,462.50
Paramedic Licensing

Paramedics who successfully complete training programs must be licensed by the Emergency Medical Assistants Licensing Board before they are able to practice in BC. The Board consists of three members appointed by Order in Council. At least one member of the Board must be a paramedic.

The Board has delegated the authority to examine, register and license paramedics to the Emergency Medical Assistants Licensing Branch (EMALB). The Branch consists of a registrar, examiners, and support staff. The Branch employs BCAS paramedics as examiners on an as-needed basis to conduct evaluations and examinations on behalf of the Board.

The Branch does not create or administer the examinations for graduates of paramedic programs at any level. The Paramedic Academy certifies that candidates have successfully completed the requirements of the program. After completing an approved training program, a candidate for licensure takes a series of examinations administered by the JIBC, and in some cases, participates in a mentorship and residency program administered by BCAS Clinical Education Division. The EMALB reviews the examinations and performance of each student and issues a license if satisfied that the student has met the criteria. Only EMALB licensed paramedics are qualified to work in BC.

The EMALB takes an active role in the re-licensing of paramedics. Licenses for paramedics are valid for five years. Until November 2001, all licensed paramedics attended a two-week recertification course and examination every five years. In November 2001, the regulations were amended, eliminating recertification. BC Paramedics are now required to complete 20 hours of continuing medical education (CME), as well as document a minimum of 20 patient contacts annually.

Many courses that are eligible for CME credit are available through the Clinical Education Division (CED) of BCAS. Paramedics may take courses in either an online format or in facilitated face to face sessions. In most cases, paramedics must complete the training on their scheduled days off, and receive wage maintenance at straight time for classroom hours. Failure to complete the annual CME requirements results in the Branch revoking the license to practice, requiring the paramedic to complete a formal re-examination process.

The Emergency Medical Assistants
Board is empowered by section 6(5) of the Emergency Health Services Act with the following authority:
• (a) examine, register and license emergency medical assistants;
• (b) set terms and conditions for a license under this section;
• (c) investigate complaints;
• (d) delegate to one or more persons the power and authority to act under one or more of the provisions of paragraphs (a), (b) and (c).
The EMA Licensing Board also has authority to discipline paramedics who are in violation of the terms and conditions of their license. Complaints represent the public and/or user concerns about inadequate, inappropriate or incompetent care. On receipt of a complaint, the Board may take actions including investigating the complaint, holding a hearing, issuing a decision and dismissing the complaint. To investigate complaints, the Board contracts the services of an Investigations Committee consisting of a physician and nurse. Sanctions range from remedial training to permanent revocation of the paramedic license. If charges are laid against a paramedic, the case is turned over to a contract legal counsel for prosecution.

**Medical Programs**

Medical oversight for BCAS employees is the responsibility of Medical Programs. Medical Programs is involved in four key areas of patient care: physician oversight, clinical performance management (quality improvement), clinical education, and research.
Ambulance Service Dispatch

Another essential component of BCAS is Dispatch. Movement of ground ambulance resources for the province is accomplished by dispatchers working in three regional dispatch centers. The centers are located in Victoria, Vancouver and Kamloops. Each dispatch center is administered by a Superintendent reporting to the Regional Director. Frontline dispatch supervision is the responsibility of Charge Dispatchers, who are equivalent to station Unit Chiefs, and report to the Dispatch Supervisor or Regional Dispatch Superintendent.

Most dispatchers are qualified paramedics. Dispatchers begin their broader dispatch training at the Paramedic Academy, which includes certification in the Advanced Medical Priority Dispatch System (AMPDS) and complete their training with a specialized orientation in the regional centre to which they are assigned. Dispatchers are required to re-certify their AMPDS training every two years.

Dispatchers perform dual roles as call takers and dispatchers. In addition to answering requests for service, dispatchers provide telephone instructions to callers on actions to take prior to the ambulance’s arrival. The assignment of the closest appropriate ambulance to a request for service, plays a major role in ensuring a seamless, efficient delivery of ambulance service. The dispatcher monitors the assignment of ambulances from several communities simultaneously, knowing where each vehicle is and what it is doing. This process will soon be made easier with the addition of Automated Vehicle Locators (AVL) which will be installed in each ambulance, allowing the dispatcher to see at a glance where his or her ground resources are. AVL will assist dispatchers in choosing the closest and most suitable resource for a call and help dispatchers to move vehicles from one geographic area to another to provide area coverage when a local ambulance resource is unavailable. The ability to move vehicles from one geographic location across regional and municipal boundaries is one of the strengths of centralized dispatching and a provincial service.

Regional dispatchers are also responsible for notifying Fire Departments to send First Responders (EMR-FR) to calls, where appropriate. There are a number of responses that have been determined to benefit from the use of First Responders, such
as requests for service where there is likely to be a delay in getting ambulance resources to the patient’s side in a timely manner, and calls where it is likely that early interventions by First Responders are likely to make a meaningful improvement to patient outcomes. First Responders are occasionally able to get to a patient’s side faster than paramedic crews, to provide oxygen therapy, assisted ventilations, control of a serious hemorrhage, or Cardiopulmonary Resuscitation (CPR). The AMPDS and BCAS Resource Allocation Plans indicate which calls should include First Responders. See Figure 12, page 16, for EMA-FR license competencies.

In addition to the three regional dispatch centers, a fourth dispatch centre specializes in the delivery of air evacuation. This center, the Provincial Air Ambulance Coordination Center (PAACC), is responsible for the coordination of all air ambulance trips within the province. In addition to receiving requests for transport, the center assigns priorities to the requests. The most urgent calls are assigned immediate priority. Less urgent calls assigned a lower priority response may be delayed for several hours or even days to allow higher priority calls or to permit the centre to best utilize the aircraft available. Several aircraft and helicopters are available throughout the province to provide air transport.

**Finance**

An increase in demand for service requires a matching increase in the annual budget. In 2002/2003 the annual budget for BCAS was $188 million, in 2007/2008 it was $283 million, an increase of 50.5%. The BCAS annual budget represents approximately 1.9% of the annual BC Healthcare budget.

In 2006/2007 the average cost per ambulance response was $504, up from $428 per response in 2003/2004. Despite this increase, the cost per ambulance response in BC is still one of the lowest in Canada. Figure 14 demonstrates how BCAS compares to other ambulance service providers in Canada.
Emergency Medical Services Health Status

In the following pages, the overall health of the pre-hospital emergency medical system will be evaluated based on an assessment of BC Ambulance’s clinical and operational vitals signs. Each of BCAS’s four operational goals: high quality care, public and partner orientation, healthy and supportive workplace and corporate governance and financial stewardship, are explored through the measurement of fifteen clinical and operational factors, to provide some insight into the complexity of providing high quality and cost effective ambulance service in BC.

There are six common signs that can be used to evaluate ambulance service performance and to determine if the emergency medical service is in distress:

- An increase in investigations and inquiries about poor care, service complaints, hospital delays and poor response times;
- Response time inequities and failure to report response time troubles;
- Internal issues such as labour strife, ineffective leadership, inequities in compensation and difficulties recruiting or retaining workers;
- Turf battles between EMS agencies;
- Lack of transparency about goals and benchmarks;
- Financial distress.
### 2008-9 BCAS Health Condition Score Card

(Adapted from "EMS in Critical Condition: Meeting the Challenge" by J. Fitch, 2005)

<table>
<thead>
<tr>
<th>Indicator Type</th>
<th>Performance Measures</th>
<th>Light</th>
<th>Trend</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOAL 1: HIGH QUALITY TIMELY PATIENT CARE</td>
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<tr>
<td>Clinical Vital Signs</td>
<td>1.1 Clinical Quality Issues and Risks</td>
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<td></td>
<td>1.1.1 Clinical Practice Complaints</td>
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<td></td>
<td>Operational Vital Signs</td>
<td>1.2 Response Times</td>
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<td></td>
<td>1.2.1 Delta/Echo Compliance Rate</td>
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<td>1.2.2 Hospital Delays</td>
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<td>GOAL 2: PUBLIC AND PARTNER ORIENTATION</td>
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<td>Clinical Vital Signs</td>
<td>2.1 Services Provided</td>
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<td>2.1.1 ACP Capture Rate</td>
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<td>2.1.2 First Responder Utilization</td>
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<td>Operational Vital Signs</td>
<td>2.2 Communications</td>
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<td>2.2.1 Emergency Medical Dispatch</td>
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<td>GOAL 3: HEALTHY AND SUPPORTIVE WORKPLACE</td>
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<td>Clinical Vital Signs</td>
<td>3.1 Training and Certification</td>
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<td>3.1.1 Paramedic Licensure</td>
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<td>Operational Vital Signs</td>
<td>3.2 Staff Recruitment, Supervision and Development</td>
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<td>3.2.1 Paramedic Staff Mix</td>
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<td>3.2.2 WorkLoad</td>
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<td>3.2.3 Employee Health</td>
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<td>3.2.5 Working Conditions</td>
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<td>GOAL 4: CORPORATE GOVERNANCE AND FINANCIAL STEWARDSHIP</td>
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<td>4.1.1 Medical Oversight</td>
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<td></td>
<td>Operational Vital Signs</td>
<td>4.2 Finances</td>
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<td>4.2.1 Productivity &amp; Information Technology</td>
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<td>4.2.2 Cost per Response Request</td>
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### Rating System
A color-coded rating system is used to focus attention on critical issues. BCAS's current performance is compared to international, national, or provincial standards, compared to peers, or compared to its own performance over time.

- **Light**
  - Red: Performance outside acceptable range given established standard/benchmark/target. Take action and monitor progress.
  - Yellow: Performance outside standard/benchmark/target but showing an improving trend or performance is within standard/benchmark but showing a worsening trend. Continue to monitor.
  - Green: Performance within standard/benchmark/target.

- **Trend**
  - \(\uparrow\): Trend is improving
  - \(\Rightarrow\): Trend is stable
  - \(\downarrow\): Trend is worsening
Goal 1 HIGH QUALITY TIMELY PATIENT CARE

1.1 Clinical Quality Issues and Risks

1.1.1 Paramedic Clinical Error Complaints

WHAT IS BEING MEASURED?
The yearly pre-hospital care complaints are compared. These complaints represent the public and/or users concerns about inadequate care (ie. incomplete care provided or failed to transport), incompetent care (ie. failure to recognize seriousness, wrong judgment or wrong care) and inappropriate care (ie. misrepresentation, theft, criminal behaviour or out of scope treatment).

HOW ARE WE DOING?
- The rate of complaints has dropped by 61.5% between 2002 and 2007
- In 2007/8, 4 complaints (80%) have been closed-dismissed and 1 complaint (20%) remains pending.

WHY IS THIS OF INTEREST?
The number of complaints indicates how satisfied the public was with the care received. The number of complaints reflects on the quality of care, as perceived by the user of the system. Increasing complaints may reflect problems with resourcing, training, licensure, medical control and/or clinical guidelines.

WHAT IS THE IMPACT?
The tracking of trends within the complaints filed at EMA Licensing Branch may provide targets for performance and patient safety improvements.

Only through transparent reporting can the public be confident that licensure and continuing medical education are supporting good quality care. The Health Emergency Act 13(2) mandates that the EMALB will publish an annual report within 120 days of the end of the fiscal year.

The last annual report published by the EMALB was 2005/6.

WHAT IS THE TARGET?
In the perfect system, there would be no complaints and all users would feel that their care was adequate, appropriate and competent. A reduction in total number of complaints is desirable.

Data Source: EMA Licensing Branch Annual Reports 2004/5 & 2005/6 and EMAL Board Records
Goal 1  HIGH QUALITY TIMELY PATIENT CARE

1.2 Response Times
1.2.1 Delta/Echo Compliance Rate

WHAT IS BEING MEASURED?
Life threatening emergencies are designated as "Delta" and "Echo" responses, by the Ambulance Medical Priority Dispatch System (AMPDS). The percent compliance of Delta/Echo responses in metro/urban communities with paramedic response time less than 8.59 minutes, is compared. The average percent compliance for two years, 2006/7 and 2007/8, in the metro and urban communities is reported.

WHY IS THIS OF INTEREST?
Response times are used to assess the ambulance system's performance from the citizen's perspective. The public expects that the most severely injured and ill patients receive rapid appropriately skilled paramedic care. Measurement of response times provides an objective mechanism for determining when additional resources are required.

WHAT IS THE TARGET?
The recognized North American standard for arrival of a transport capable ambulance at the highest acuity emergencies, in urban and metro communities, is eight minutes and 59 seconds with 90% compliance. (Note: This standard is arbitrary and not tied to any scientific evidence.) See Appendix #1 for Community Designations.

HOW ARE WE DOING?
- The minimum standard of 90% compliance for <8.59 minute response time to high acuity emergencies in metro/urban areas is not being met.
- Metro compliance has declined 6.0%
- Urban compliance has declined 1.4%
- Rural compliance has declined 2.2%
- Remote compliance has declined 2.2%

WHAT IS THE IMPACT?
Response time performance is dependent on variables such as staffing levels, call volumes, unit availability and geographic proximity. The five fundamental strategies to improve response times include:
- Adding resources to match demand
- Harness technology and innovations to refine work processes
- Responding "lights & siren" only to emergencies
- Transparent accountability
- Management of component time and lost unit hours (ie call taking, dispatching & hospital delays)

Data Source: DataMart - Ranking 2006/7 & 2007/8 UU table
Goal 1  HIGH QUALITY TIMELY PATIENT CARE

1.2 Response Times
1.2.2 Hospital Delays

**WHAT IS BEING MEASURED?**
A hospital delay occurs when a patient cannot be transferred to an Emergency Department bed within 20 minutes of arrival. The annual number of hospital delays for each community designation are compared. The change in the number of hospital delays provides evaluation of initiatives designed to decrease delays.

**WHY IS THIS OF INTEREST?**
Delays in off-loading a patient causes a delay in utilizing the paramedics for another response. Hospital delays result in lost unit utilization hours, which negatively impacts response times. See Appendix #1 for Community Designations.

**WHAT IS THE TARGET?**
Ideally there would be no delays in down-loading patients in the Emergency Department. A reduction in the total number of hospital delays is desirable.

**HOW ARE WE DOING?**
- The total number of hospital delays decreased by 1797 between 2006/7-7/8, which represents a 6.6% total decrease.
- Urban delays increased 19%
- Rural delays increased 23%
- Remote delays increased 1%
- Metro delays declined 13%

**WHAT IS THE IMPACT?**
Emergency Room Attendants (ERA), which are Primary Care Paramedics hired by metropolitan health authorities, are being utilized in select Emergency Departments to improve access and flow. This may in part account for the decline in the metro delays.

Hospital delays not only reduce the availability of ambulances to respond to emergencies, they also negatively impact patient care through delay to Emergency Department care.

Urban and rural communities are in need of strategies to reduce hospital delays.

The use of ERA’s in Emergency Departments reduces the availability of paramedics to be scheduled for pre-hospital paramedic work.

**Data Source:** BCAS DM0010 Report 20067 & 2007/8

<table>
<thead>
<tr>
<th>Community Designation</th>
<th>Number of Delays 2006/7</th>
<th>Number of Delays 2007/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro</td>
<td>20,000</td>
<td>17,500</td>
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<tr>
<td>Urban</td>
<td>5,500</td>
<td>4,500</td>
</tr>
<tr>
<td>Rural</td>
<td>1,500</td>
<td>1,300</td>
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<tr>
<td>Remote</td>
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</tr>
</tbody>
</table>

**Total Number of Paramedic Hospital Delays 2007/8**

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>&lt; 27,252</td>
<td>25,455</td>
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</table>

**Hospital Delays**

![Hospital Delays Chart](attachment://hospital_delays_chart.png)
Goal 2   PUBLIC AND PARTNER ORIENTATION

2.1 Services Provided

2.1.1 Advanced Care Paramedic Capture Rate

WHAT IS BEING MEASURED?

High acuity requests for ambulance service, for example unconsciousness, shortness of breath and chest pain, require Advance Care Paramedic (ACP) attendance. The ACP capture rate measures how often the highest level of paramedic is available to respond to the life threatening requests for service.

WHY IS THIS OF INTEREST?

Getting the right paramedic to the right patient at the right time provides the best possible care while simultaneously maintaining cost efficiencies. The ACP capture rate is a measure of resource availability. It measures the emergency medical system's ability to provide the appropriate level of care when needed.

WHAT IS THE TARGET?

ACP care must be provided to select high acuity requests for ambulance service, as designated by the Advanced Medical Priority Dispatch System.

'The high acuity responses, known as Delta’ and ‘Echo’ responses, that require ACP pre-hospital care include chest pain, shortness of breath, loss of consciousness and cardiac arrest.

WHAT IS THE IMPACT?

Communities with ACP paramedics are:

- Interior - Kamloops & Kelowna
- Lower Mainland - Vancouver, Richmond, North Vancouver, Burnaby, Surrey, Abbotsford & Chilliwack
- Northern - Prince George
- Vancouver Island - Victoria & Nanaimo

19.0% of all ambulance calls in ACP staffed communities that are coded as requiring the highest level of paramedic care, do not receive that care, because an ACP ambulance is unavailable.

HOW ARE WE DOING?

- The provincial ACP capture rate has remained unchanged at 79.4%, between 2003/4 and 2006/7.
- The interior has improved by 2.0%
- The lower mainland has remained unchanged
- The north has declined by 3.3%

Data Source: BCAS DM0033 Report 2006/7 & BCAS Corporate Scorecard PPT 31Dec05
Goal 2  PUBLIC AND PARTNER ORIENTATION

2.1 Services Provided

2.1.2 Advanced Medical Priority Dispatch System (AMPDS) First Responder (FR) Utilization

**WHAT IS BEING MEASURED?**
There are 484 different Ambulance Medical Priority Dispatch System (AMPDS) codes that can be used to classify the nature and acuity of a request for ambulance service. The current (revised May 2008) and previous versions of the AMPDS Resource Allocation Plan determinants which indicate FR involvement are compared. A total of 104 resource determinants match the four identified areas of greatest effect for FR intervention.

**WHY IS THIS OF INTEREST?**
First Responders such as Police, Firefighters and Lifeguards, are quick responders who provide initial first aid until paramedics arrive on scene. Targeting responses appropriate for First Responders, ensures that patients receive appropriate assistance when paramedics are delayed.

**WHAT IS THE TARGET?**
First Responders have the greatest effect in four areas: stopping bleeding, opening blocked airways, restarting a stopped heart with automated defibrillation and assisting a patient to administer a prefilled automated syringe of epinephrine for an allergic reaction.

The target is to send FRs to the 104 most appropriate (21%) of the total 484 potential AMPDS codes.

**HOW ARE WE DOING?**
- 56 AMPDS resource determinants were recently changed by removal of First Responder involvement in May 2008.
- FR designated AMPDS determinants have dropped from 51% to 39% of all AMPDS determinants.
- 18% of the current AMPDS resource determinants for sending FRs do not match the 4 greatest effect areas for FR involvement.

**WHAT IS THE IMPACT?**
First Responders can make a measurable difference in life threatening situations, especially in rural and remote areas, because paramedics are more likely to be a greater distance from the patient and there is a greater number of First Responders distributed throughout each community. This is in comparison to urban/metro areas where the First Responders and Paramedics are more likely to be equidistance to the patient.

Efficient and effective use of First Responders balances the risk to the public of lights and siren responses, with the benefit of FR's actually arriving first at the patient's side where emergency interventions are required.
Goal 2 PUBLIC AND PARTNER ORIENTATION

2.2 Communications
2.2.1 Emergency Medical Dispatch Effectiveness

<table>
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<th>Medical Dispatch Protocols</th>
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<tr>
<td>Pre-arrival &amp; Post Dispatch Instructions</td>
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<tr>
<td>EMD Training</td>
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<tr>
<td>EMD Certification</td>
<td>✓</td>
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<tr>
<td>EMD Quality Control and Improvement Processes</td>
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</tbody>
</table>

**Elements of Effective Emergency Dispatch 2007/8**

<table>
<thead>
<tr>
<th>Trend</th>
<th>Performance within standard, benchmark or target.</th>
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</thead>
<tbody>
<tr>
<td>Improvement</td>
<td>Target</td>
</tr>
<tr>
<td>No Change</td>
<td>5</td>
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</tbody>
</table>

**WHAT IS BEING MEASURED?**
The role of the Emergency Medical Dispatcher (EMD) includes getting the right resources, to the right person, at the right time, in the right way and to provide emergency medical telephone instructions prior to the arrival of paramedics at the scene. The five elements of effective emergency medical communication are evaluated.

**WHY IS THIS OF INTEREST?**
Skilled EMD’s determine the appropriate acuity of the request for ambulance service and ensure adequate resources arrive to the correct location. Dispatch is the first point of contact for requests for emergency medical services and provides initial patient care instructions, until the ambulance arrives.

**WHAT IS THE TARGET?**
The goal is to provide the five key components of an effective medical dispatch system in all four BCAS dispatch centers.

**HOW ARE WE DOING?**
- The Advanced Medical Priority Dispatch System (AMPDS) is used as the response assessment and telephone instruction protocol by all four BCAS dispatch centers.
- A structured training program is provided
- BCAS EMD’s are certified in AMPDS
- Dispatch Quality Assurance Coordinators measure performance through compliance with AMPDS

**WHAT IS THE IMPACT?**
A well trained EMD acts as the first responder for the community and is critical to the smooth running of the Emergency Medical System. EMD’s are the vital link between the patient, community and paramedic.

EMD’s are certified in AMPDS during initial dispatch training.

Ongoing re-certification continues to be outstanding.

Goal 3  HEALTHY AND SUPPORTIVE WORKPLACE

3.1 Training and Certification

3.1.1 Paramedic Licensure

**WHAT IS BEING MEASURED?**
The number of licensed paramedics is compared by fiscal year. The Emergency Medical Assistant- First Responder (EMA-FR) designation is not a paramedic license. It is first-aid license for first responders such as firefighters, police officers and life-guards. The Emergency Medical Responder (EMR) is the pre-requisite for paramedic training.

**WHY IS THIS OF INTEREST?**
The quality and sophistication of pre-hospital care is directly related to licensure. Each type of paramedic license ensures competency at a specific level of care. As of April 2001, the PCP (Primary Care Paramedic) license has been designated as the first level of Paramedic practice. See Figure 12, page 16 & 17, for a full explanation of pre-hospital license levels.

**WHAT IS THE TARGET?**
The minimum standard of paramedic care is PCP, which is reflected in the National Occupational Competency Profile, established by the Paramedic Association of Canada. The target is for all paramedics to be licensed at the PCP level, with no paramedics practicing at the EMR level in the province of BC. This was to have been accomplished by March 31, 2005.

**HOW ARE WE DOING?**
- The number of licensed EMR's has increased by 247, a 48% increase, between 2004/5 and Sept 2008.
- The number of licensed PCP paramedics has increased by 785, which is a 34.7% increase.
- There were no licensed CCP's (Critical Care Paramedic) in BC in 2008.

**WHAT IS THE IMPACT?**
Ideally, every community in BC would be serviced by the highest level of licensed paramedic. However, to provide safe pre-hospital care, there must be a balance between providing the highest possible level of care and maintenance of competency.

Though there are no licensed CCP's in BC, the ACP (Advanced Care Paramedic) flight paramedics and Critical Care Transport (CCT) paramedics possess the majority of CCP skills.

Remote and rural areas of BC continue to be serviced by BCAS staff that are driver only (unlicensed) and EMR's.

Data Source: EMA Licensing Board Annual Reports 2004/5 & 2005/6, EMALB email.
Goal 3  HEALTHY AND SUPPORTIVE WORKPLACE

3.2 Staff Recruitment, Supervision and Development

3.2.1 Paramedic Staff Mix

WHAT IS BEING MEASURED?
The change in paramedic full time equivalents (FTE) is compared over 6 years. The part-time equivalents to fulltime work (PT FTE) do not represent the actual number of part-time employees working in BCAS. The PT FTE represents the equivalent number of full-time positions (FT FTE) actually staffed by part-timers. In 2008, there were ~2103 part-time and ~1443 full-time paramedics employed by BCAS and a total of 2533 FTEs.

WHY IS THIS OF INTEREST?
Recruitment and retention of paramedic staff depends in part on the availability of fulltime work and local career progression. Generally, full-time positions are located in metro and urban areas. Remote and Rural communities are staffed primarily by part-time employees. See Appendix #1, page 41, for Community Designations.

WHAT IS THE TARGET?
In 2004, Service Canada determined that 19% of all Canadian workers were employed part-time. Service Canada also found that 10% of Canadian paramedics were employed part-time and that there was a trend away from part-time staffing nationally. The national trend in staff mix is desirable.

WHAT IS THE IMPACT?
Many full-time positions throughout the province remained vacant for long periods.

Recently, 23 existing Unit Chief positions, were posted and filled after being left vacant for many years, however, many full-time positions remain vacant throughout the province.

Due to seniority posting rights, full-time positions are first offered to full-time staff. The result is that new fulltime positions are almost exclusively available in metro communities, which preclude local employees from being employed full-time in their rural/remote communities. A “trickle down effect” results in full-time staff moving from urban/metro to rural/remote communities and vacancies for new hires being created in metro communities.

Data Source: BCAS Seniority Lists - http://admin.moh.hnet.bc.ca/bcasinfo/hr/index.html#seniority, Service Canada Website www.jobfutures.ca/noc/3234p4.shtml
GOAL 3 HEALTHY AND SUPPORTIVE WORKPLACE

3.2 Staff Recruitment, Supervision and Development
3.2.2 Workload

WHAT IS BEING MEASURED?
The total number of ambulance requests for service, also known as ambulance responses, for each year is compared to the total number of full-time equivalent paramedic positions (FTE's). The total response volume includes emergent and non-emergent requests for service. The total FTE includes full-time and part-time employees.

WHY IS THIS OF INTEREST?
Increased workload per FTE translates into less availability of ambulances to respond to life threatening emergencies, resulting in increased response times. As the call volume increases, without a corresponding increase in FTEs, the time it will take for an ambulance to respond will be longer.

WHAT IS THE TARGET?
To maintain response time targets in an environment of increasing demand for service, the number of FTE's must stay ahead of the requests for service volume, such that appropriate response time targets can be met.

HOW ARE WE DOING?
- The number of ambulance responses per FTE has increased from 245 to 296 over 6 years.
- The total number of paramedic FTE's has increased by 33%, from 1911 to 2533 total FTE's.
- The call volume has increased by 60% between 2002-2008.
- The FTE increase is not proportional to the increase in ambulance response volume.
- The number of staff has not increased in proportion to the requests for service.

WHAT IS THE IMPACT?
To maintain the same workload and response times as 2002/3, there should be 3062 paramedic FTE's in BC. See 1.2.1 for Delta/Echo Compliance Rate.

A 21% increase above existing paramedic FTE's is required to maintain 2002/3 workload and response time standards.

Increased workload translates into increased short term illness and injury (STIIP) and Worksafe BC (WSBC) claims that result in increased overtime to cover vacancies. See 3.2.3 Employee Health, page 32.

Goal 3  HEALTHY AND SUPPORTIVE WORKPLACE

3.2 Staff Recruitment, Supervision & Development
3.2.3 Employee Wellness

WHAT IS BEING MEASURED?
The overtime (OT), Worksafe BC (WSBC) and Short Term Illness and Injury (STIIP) costs over the past five years are compared.

HOW ARE WE DOING?
Between 2002 and 2007 there has been a:

- 61.1% increase in STIIP costs
- 24.6% increase in overtime costs
- 3.6% increase in WSBC costs

WHY IS THIS OF INTEREST?
Rising employee costs may reflect an increase in total staffing, an aging workforce and increased workload. As increasing staff is off due to illness and injury, a concurrent rise in OT will be encountered, if there is not enough staff reserve built into the system.

WHAT IS THE IMPACT?
The decrease in WSBC costs in 2004/5 reflects a change in claim administration at BCAS, that deferred claim costs into subsequent fiscal periods.

STIIP is available to full-time staff only. The STIIP costs are disproportionate to the 10% increase in FT FTE’s over the same period.

WHAT IS THE TARGET?
Reductions in the amount of Overtime, WSBC and STIIP are desirable.

Data Source: Neg Cmte Briefing Note, 4Mar08.
Goal 3  HEALTHY AND SUPPORTIVE WORKPLACE

3.2 Staff Recruitment, Supervision & Development
3.2.4 Wage Compensation

WHAT IS BEING MEASURED?
The paramedic wages as of January 1, 2009 are compared for selected large cities across Canada.

WHY IS THIS OF INTEREST?
Wages and benefits are key factors in recruitment and retention of employees, and must be competitive to attract external applicants and retain current employees.

WHAT IS THE TARGET?
It is difficult to identify appropriate wage compensation across areas with different cost of living pressures. Historically in BC, wage parity has been between a 10 year Primary Care Paramedic (PCP) and a 10 year Vancouver City Police Constable with 10 years seniority. ($37.90/hr as of 1Jan 2009).

HOW ARE WE DOING?
- Paramedic wages in BC have fallen behind other similar jurisdictions and historical parity levels.
- BCAS has been actively recruiting Advanced Care Paramedics (ACP) paramedics from outside BC since 2004.
- Recruitment drives have resulted in: 5 external ACP's hired in 2005/6 1 external ACP hired in 2006/7 No external ACP's hired in 2007/8

WHAT IS THE IMPACT?
BCAS hires 225 part time Emergency Medical Responders (EMR) and Primary Care Paramedics each year. This correlates to a 10.7% turn over rate in 2008 for PT staff. BCAS estimates that each new PT recruit costs about $3500 to orient, or a total of $780,000 per year.

In 2006/7 approximately $8000 was spent on brochures, banners and displays targeting EMR and PCP recruitment.

The estimated average cost per external ACP recruit is $50,000. The external ACP applicant recruits have an attrition rate of 4 resignations for every 6 retained, or 67% attrition.

Data Source: CUPE Collective Agreements, Negotiating Cmte Briefing Note, Cliff 707631, 28Jan08
Goal 3  HEALTHY AND SUPPORTIVE WORKPLACE

3.2 Staff Recruitment, Supervision & Development

3.2.5 Working Conditions

<table>
<thead>
<tr>
<th>Question</th>
<th>% Responses Satisfactory</th>
<th>Question</th>
<th>% Responses Satisfactory</th>
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<tbody>
<tr>
<td>washroom facilities</td>
<td>64%</td>
<td>ambulance garage</td>
<td>74%</td>
</tr>
<tr>
<td>medical supply room adjacent to bay</td>
<td>78%</td>
<td>locking &amp; accessible electrical room</td>
<td>60%</td>
</tr>
<tr>
<td>safety lights &amp; fencing around station</td>
<td>68%</td>
<td>locking &amp; accessible mechanical room</td>
<td>41%</td>
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<tr>
<td>kitchenette &amp; computer space</td>
<td>73%</td>
<td>safe access &amp; egress to vehicle bays</td>
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<tr>
<td>Unit Chief office space</td>
<td>87%</td>
<td>private rest areas</td>
<td>75%</td>
</tr>
<tr>
<td>staff lockers</td>
<td>51%</td>
<td>staff parking</td>
<td>74%</td>
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<tr>
<td>crew quarters size</td>
<td>56%</td>
<td>outstanding WSBC</td>
<td>73%</td>
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</table>

WHAT IS BEING MEASURED?
A 14 question survey was used to request information about the current state of BCAS stations and dispatch centers. The 14 questions represent a sampling of the required stations standards. 179 of 192 possible respondents, or 92.7% of all facilities responded to the survey.

WHY IS THIS OF INTEREST?
An appealing, safe and restful work place is essential to enhance recruitment, retention and ongoing employee health. In a profession that is ever changing and filled with uncertainty, a consistent and comfortable home base is likely to reduce stress and burnout.

WHAT IS THE TARGET?
The goal is to have all worksites satisfactorily meet or exceed the station standards.

HOW ARE WE DOING?
- 26% of all ambulances are housed outdoors
- 25% of all worksites have inadequate rest areas.
- 14.5% of respondents indicated that there was a problem with mould, rodents or insects at their worksite.
- 36% of all worksites do not meet the minimum washroom/shower standards.
- 49% of worksites have inadequate staff lockers

WHAT IS THE IMPACT?
A worksite that meets the minimum agreed upon standards, contributes to positive workplace culture, morale and productivity. An appealing worksite environment helps to create a sense of pride and ownership, that provides a basis for a positive workplace community.

Employees feel more valued when the employer is concerned about the employees health and safety.

Inadequate stations standards contribute to increased operational costs through its negative effect on employee wellness.

Data Source: 14 Question Survey Sept/Oct 2008
Goal 4  CORPORATE GOVERNANCE AND FINANCIAL STEWARDSHIP

4.1 Medical Direction

4.1.1 Medical Oversight

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<thead>
<tr>
<th>Emergency Physician Oversight</th>
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<tr>
<td>Appropriate Time Commitment for Medical Oversight</td>
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</tr>
<tr>
<td>Effective use of Medical Oversight</td>
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</tr>
<tr>
<td>Clear Guidelines for Paramedic Scope and Clinical Errors</td>
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Elements of Effective Medical Oversight 2007/8

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<th>Performance within standard, benchmark or target.</th>
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<tbody>
<tr>
<td>Trend</td>
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<tr>
<td>No Change</td>
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WHAT IS BEING MEASURED?
The quality of medical oversight is evaluated based on 4 key determinants of effective medical direction.

Because pre-hospital care is most closely linked to Emergency Medicine, an interested Emergency Physician should be responsible for medical oversight and periodic random review of paramedic practice.

WHY IS THIS OF INTEREST?
Effective and accessible medical oversight provides for safe paramedic practice and protection of the public.

WHAT IS THE TARGET?
The targets for medical direction include an interested physician specializing in emergency medicine, appropriate and effective use of medical director’s time and clear patient care guidelines for paramedic scope of practice.

HOW ARE WE DOING?
- A system of Regional Medical Directors (RMD) and Local Medical Consultants (LMC) operates through the EHSC Medical Programs portfolio
- There has been a recent shift from structured protocol driven care to independent clinical judgment, through incorporation of practice guidelines.
- All RMD’s and LMC’s are Emergency Room Physicians

WHAT IS THE IMPACT?
The system of Medical Directors provide monthly “Interesting Case Rounds” in many regions of BC. These sessions are intended to assist paramedics to maintain competency and provide ongoing clinical education.

The regional and local Medical Directors are readily available to every paramedic to assist with continuing education and treatment decisions.

Current and evidence based guidelines provide the best, safest and most up-to-date treatment options for paramedic practice.

Goal 4 CORPORATE GOVERNANCE AND FINANCIAL STEWARDSHIP

4.2 Finances
4.2.1 Productivity & Information Technology

WHAT IS BEING MEASURED?
Four technologies that are thought to improve patient care through improved medical documentation and productivity are evaluated.

Technologies can improve the speed and efficiency of any organization.

WHY IS THIS OF INTEREST?
The presence of these 4 technological components signals a forward looking emergency medical system.

Paramedic documentation that is quickly and easily transcribed assists with billing turnover and quality surveillance.

WHAT IS THE TARGET?
It is desirable to use cost effective and evidence based treatments, medical devices and information technologies, so as to ensure appropriate and cost effective patient care. An electronic download or scannable system is desirable.

HOW ARE WE DOING?
- A fully integrated CAD system is not yet functional in all 4 dispatch centers.
- There is no capability to capture and trend data to anticipate an emerging epidemic or biological threat.
- The ability to transfer real time information such as 12 lead electrocardiograms, has not been fully implemented.

WHAT IS THE IMPACT?
Geographic information provided in a fully integrated CAD system contributes to appropriate and timely ambulance deployment.

Electronic technologies for capturing information recorded by paramedics is advantageous for rapid bill processing, research and quality improvement.

The PCIS (Patient Care Information System) documentation system was implemented in all stations in Oct 2008. It is too early to measure it’s impact.

Effective Use of Technology 2008

| Clinical & Communication Devices | ❌ |
| Computer Aided Dispatch (CAD) | ❌ |
| Documentation | ✔ |
| Biosurveillance | ❌ |

Trend Performance outside acceptable range given established standard, benchmark target.

Improvement No Target 4 Actual 1

Goal 4  CORPORATE GOVERNANCE AND FINACIAL STEWARDSHIP

4.2 Finances

4.2.2 Cost per Response Request

**WHAT IS BEING MEASURED?**

The cost to provide an ambulance response is compared. The yearly operating budget is divided by the yearly volume of response requests to determine the cost per ambulance response. This is not the cost to the user.

Currently, a user of the ground ambulance service who has Medical Services Plan (MSP) coverage pays $80 per transport or $530 without MSP coverage.

**WHY IS THIS OF INTEREST?**

The primary determinant of cost per call is the target response time. Similar systems will have significantly different costs if one is required to respond to 90% of life threatening emergencies in less than 8 minutes compared to a system that is required to respond to 90% of life threatening emergencies within 10 minutes.

**WHAT IS THE TARGET?**

BCAS is a provincial, not for profit service, funded by the taxpayer. The public expects an appropriate level of responsiveness and quality, at the best possible price. It is desirable that resources are adequate to achieve the targeted response time standards.

**HOW ARE WE DOING?**

- The cost to provide each ambulance request for service has increased by $76 over that last 4 years.
- The increased costs represent an 18% increase.
- BC has the lowest cost per ambulance response in Canada, compared to Edmonton Ottawa, Toronto and Nova Scotia. See Fig 14, page 21.

**WHAT IS THE IMPACT?**

In order to meet the North American response time standard of arrival at life threatening emergencies in < 8.59 minutes, 90% of the time, one or more of the following must occur:

- lower the response time target
- reduce the number of requested responses
- raise the operating budget to allow for increased resources

Conclusion

Fifteen independent factors, or benchmarks, have been used to evaluate the condition of BC Ambulance Service and pre-hospital care in BC today. Five clinical and nine operational vital signs were used to evaluate the quality of patient care, public focus, employee health, governance and financial stewardship, which are the stated goals of BCAS.

Of the 15 factors considered, ten did not meet the target, standard or benchmarks, three were improving but still below acceptable limits and two were in the acceptable range.

Much like the scale of patient conditions, an EMS system can be rated based on its clinical and operational vital signs:

*Undetermined (0-17%)* - Patient awaiting physician assessment.

*Good (18-33%)* - Vital signs are stable and within normal limits. Patient is conscious and comfortable. Indicators are good to excellent for recovery.

*Satisfactory (34 - 50%)* - Vital signs are stable and within normal limits. Patient is conscious and comfortable. Indicators are favorable. Making favorable progress.

*Fair (51-67%)* - Vital signs are stable and within or close to normal limits. The patient is conscious and may be uncomfortable. Patient may have minor complications. Indicators are favorable.

*Serious (68 - 83%)* - Acutely ill. Vital signs may be unstable and not within normal limits. The patient may be unconscious. There are major complications. Patient is acutely ill. Indicators are questionable. Indicators are questionable prognosis.

*Critical (84 –100%)* - Vital signs are unstable and not within normal limits. There are major complications and indications are unfavorable. Patient may be unconscious. The patient’s prognosis is questionable.

Thirteen of fifteen indicators, or 87% of the systems vital signs were below acceptable range, placing the BC pre-hospital emergency medical system in critical condition.
References

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British Columbia Ambulance Service DataMart Ranking Report 2006/7 & 2007/8 UU table
British Columbia Ambulance Service DataMart DM0033 Report 2006/7
British Columbia Ambulance Service Corporate Scorecard PPT Presentation, 31Dec05.
CUPE Collective Agreements
CUPE 873 Neg Cmte Briefing Note, 4Mar08.
CUPE 873 Neg Cmte Briefing Note, Cliff 707631, 28Jan08
CUPE 873 Station Survey, Sept/Oct 2008
EMA Licensing Branch Annual Reports 2004/5 & 2005/6 and EMAL Board Records
## Appendix 1 Community Designations

### Rural

<table>
<thead>
<tr>
<th>Community</th>
<th>Designation</th>
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<td>Ashcroft</td>
<td>Houston</td>
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<td>Keremeos</td>
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<td>Revelstoke</td>
<td>Kimberley</td>
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<td>Fruitvale</td>
<td>Port Clements</td>
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<td>Gabriola Island</td>
<td>Port Renfrew</td>
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<td>Galiano Island</td>
<td>Quadra Island</td>
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### Metropolitan

<table>
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<tr>
<th>Community</th>
<th>Designation</th>
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| Abbotsford    | North Vancou-
| Burnaby       | ver          |
| Colwood       | Port Coquitlam|
| Delta         | Port Moody   |
| Esquimalt     | Richmond     |
| Langley       | Surrey       |
| Maple Ridge   | Vancouver    |
| New Westminster| Victoria   |
|                | West Vancouver|

### Urban

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<td></td>
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OF BRITISH COLUMBIA
CUPE LOCAL 873
UNIT 2270, 21331 GORDON WAY
RICHMOND, B.C. V6W 1J9
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