

REGION OF OTTAWA-CARLETON
RÉGION D'OTTAWA-CARLETON

REPORT
RAPPORT

Our File/N/Réf.
 Your File/V/Réf.

DATE 14 July 2000

TO/DEST. Co-ordinator, Community Services Committee

FROM/EXP. Medical Officer of Health

SUBJECT/OBJET **NEW AMBULANCE SYSTEM DESIGN**

DEPARTMENTAL RECOMMENDATIONS

That Community Services Committee recommend Council:

1. **Receive the update on the new ambulance / paramedic service including the system design report conducted by Fitch & Associates;**
2. **Approve the system design strategy to increase the ambulance fleet by 55%, increase paramedic staffing by 50%, increase the peak deployment of ambulances by 29% in high-density areas and quadruple the peak deployment of ambulances in low-density areas;**
3. **Approve the budget estimates to implement the system design commencing 1 January 2001 and approve the attached high-level system design and its goal to cut high-density response times between 4:46 and 9:04 minutes and low-density response times between 1:10 and 12:38 minutes;**
4. **Support the Ottawa Transition Board in its efforts to secure 50% provincial funding for these expenditures, as the funding of the ambulance service was promised to be 50/50 provincial-municipal by the Minister of Finance in 1999 and work with other regions and counties in Ontario on a priority basis to secure the necessary 50/50 funding;**
5. **Approve the implementation and associated funding of \$1.97 million for a Public Access Defibrillation Program, based on North American best practices and designed to increase cardiac arrest survivor rates;**
6. **Direct staff to accept the Ministry of Health and Long-Term Care's revisions to the short-term action plan to bolster service between 15 August 2000 and 31 December 2000, with a total expenditure of \$780,000, with the balance of \$1.02 million previously approved for the short-term action plan be allocated to public access defibrillation;**

7. Approve:

- a) The system design and the additional capital funding for the start-up plan, short term action and PAD program of \$8.729 million;**
- b) An addition to the 2000 Operating Budget of \$1.991 million;**
- c) That the Finance Commissioner be directed to identify alternative funding sources for the amounts identified above prior to the Council consideration of these recommendations.**

PURPOSE

Over the past several months, staff have been preparing for the transition to a new performance based ambulance/paramedic service for the soon to be created City of Ottawa. The fundamental principles endorsed by Regional Council have continued to guide staff activities. Internationally renowned EMS consultant Fitch & Associates had been authorized to begin system design work for implementation of a new ambulance. Under the Board' supervision, Fitch & Associates analyzed the existing provincial service and provided a recommended system design for the new municipality. The purpose of this report is to present the system design findings and to seek capital and operating authority to create the new system necessary to be ready for the start date.

BACKGROUND*Current System*

As part of their review, Fitch & Associates confirmed the ongoing principle that the current 'level of effort' system - based on activities rather than outcomes - is in dire need of upgrading. Response times and survival rates have continued to deteriorate. No additional resources have been added to the system over the past eight years. Call volume increased by more than 20 percent and hospital restructuring has placed additional pressure on the ambulance/paramedic system.

A careful review of the existing system and its performance level was undertaken and a plan has been outlined to put in place a new ambulance service that can make a real difference in survival rates. A large number of substantial changes are needed to improve the performance of the emergency medical system and to equip Ottawa-Carleton's highly-skilled paramedics with the tools they need to do the best job possible.

Fitch & Associates' study finds that the existing provincial system comes with severely limited resources, primitive technology and a history of chronic under-funding. The existing system only meets the accepted industry standard (8:59 minutes at the 90th percentile) in about 51 percent of cases, in high-density areas. This results in response times up to 50 percent longer (or 14 to 16 minutes at the 90th percentile) than other urban areas in Ontario.

The system offers even worse response times in the rural areas. Low-density areas are expected to be harder to serve, due to land area size and low call density. Despite this, rural residents experience grossly excessive response times to life threatening calls (up to 28 minutes at the 90th percentile) in the current system. Indeed, the current Ministry system does not meet its own response time requirements anywhere in the region.

Despite the failure of the system, the current system does possess high quality and dedicated personnel. It has also benefited from participation in the Ministry's OPALS study to introduce 78 Advanced Life Support paramedics and features strong, physician-based, clinical oversight.

In partnership with the existing paramedic force, the new City of Ottawa ambulance service will require a major overhaul and change to its system design in order to adequately meet the needs and expectations of the community and be accountable to its residents.

Actions to Date

The Region of Ottawa-Carleton has been preparing for the assumption of responsibility for ambulance / paramedic services for the past two years. Regional Council adopted the principles of a performance based ambulance system early in the planning process, obtained and first publicly reported response times (1997 to 1999) and undertook planning for the provision of services commencing 01 January 2001. Council also resolved that due to the value of the existing work force that the new system was to be designed so that the currently employed paramedics continue to be employed regardless of how the service is delivered.

Regional Council directed staff to develop a system design for an in-house service. Council also included the approval for a \$1.8M allocation in the 2000 Capital transition budget to cover the cost of defibrillators, 7 additional ambulances and the associated medical equipment. It had been expected that the province would match this amount in accordance with the 50/50 funding principle for public health and ambulance costs.

The Ministry responded by providing funding of only \$0.232M or 25 percent, instead of the 50/50 funding expected, for the replacement of the current defibrillators.

A Short Term Action Plan in the amount of \$3.6M was also developed in early 2000 in response to new information regarding slow response times, declining survival rates, and the emerging need to bolster a failing system. This plan also anticipated a 50/50 funding arrangement (or \$1.8M) with the Province. Council committed its share of this action plan for extra service on the road between now and 1 January 2000. Unfortunately, the Ministry has since advised that the current system's limited physical and human resources mean they will only be able to take advantage of \$780,000 of the budgeted amount. It should be noted that the entire cost of the additional service is funded by the Region and that the province refused all funding of improved service. These regional dollars will nevertheless be allocated towards putting on extra shifts of paramedics and will have an impact in our community as of 15 August 2000.

The current status of transition and short-term action funding is shown below:

<i>Item</i>	<i>Funding Request</i>	<i>Approved/Granted</i>	<i>Status</i>
Short Term Action Plan (Proposed increase in unit hours for emergency/non-emergency, supervision, other)	50% MOH of \$3.6 M	(\$0)	Denied
	50% ROC of \$3.6 M	\$1.8 M	Pending OTB approval
Y2K Capital Transition Budget (Defibrillators/ambulances)	50% MOH of \$3.6 M	\$0.23 M	
	50% ROC of \$3.6 M	\$1.8 M	OTB approval

The Ottawa Transition Board obtained approval from the Minister of Health and Long-Term Care in May 2000 for the transfer of responsibility for dispatch to the new City, conditional upon support of the neighbouring Counties. Fitch & Associates were retained to independently design the new ambulance / paramedic system, in keeping with Regional Council's directions to date.

System Design

Fitch & Associates undertook Phase I and Phase 2 of system design. These included a background review of the current system (Phase 1) to conduct a needs assessment and to conduct a preliminary high level system design, initial deployment methodology, resource and infrastructure requirements (Phase 2). This step outlines the architecture of the system necessary to meet established performance criteria as well as setting out the required operating and capital budget to implement the new system design.

Fitch & Associates confirmed the findings of Regional staff - the current system is not meeting acceptable service levels for a large emergency medical service. The independent study also confirmed that the current system faces serious challenges due to its large urban size and large rural area. Other barriers, such as the presence of rivers and other transportation impediments, further complicate reaching acceptable performance levels in Ottawa-Carleton. The magnitude of change necessary to meet acceptable North American industry standards is daunting.

Preliminary / high-level design for a performance-based system includes the following five elements:

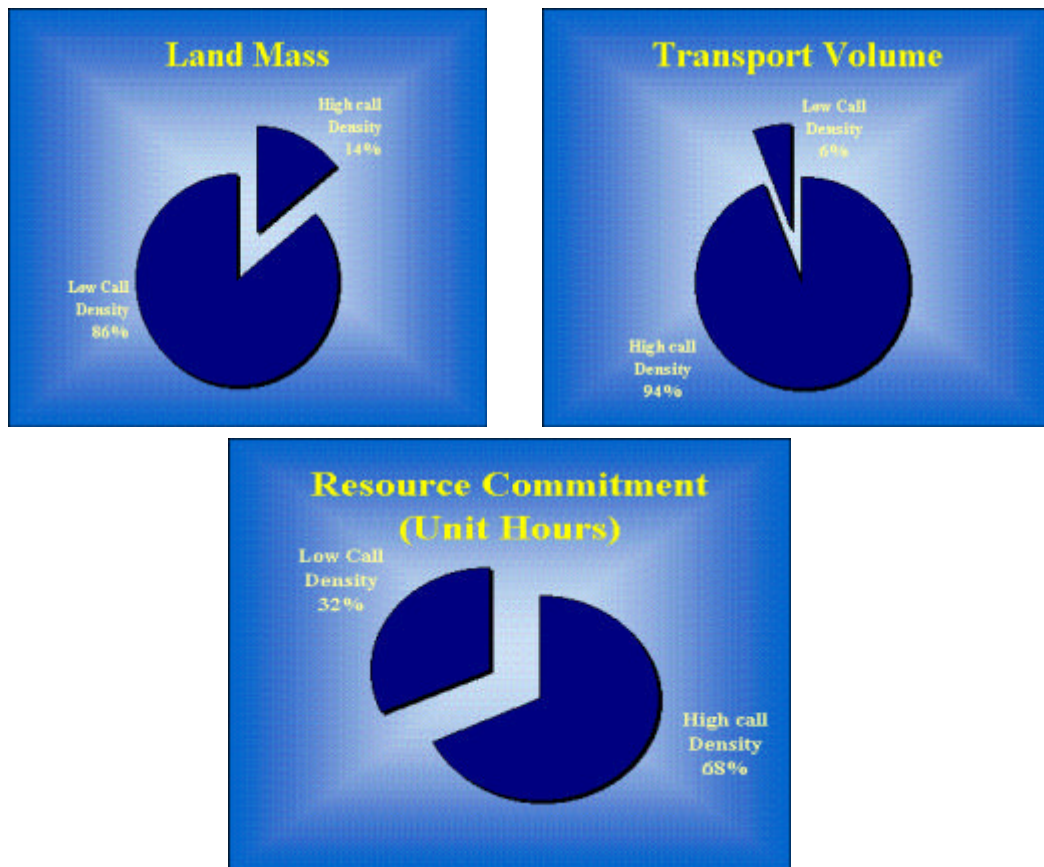
- Clinical sophistication – *transition to all ALS; prevention and education; physician involvement; quality assurance process;*
- Operational reliability – *response time reliability; fire and police service first responders; evaluation of response times; managed deployment via dispatch;*
- Consumer satisfaction – *linked to improved performance; prevention and education activities; external review of complaints/resolutions;*

- Financial value for money – *predetermined funding levels for stability; entrepreneurial culture; future bid/benchmarking process to ensure best value; and*
- Performance accountability – *business structure; system specifications defined expected performance; fiscal accountability; future competitive process encourages focus on achieving standards and good value for money, public accountability through performance monitoring and public reporting.*

The new ambulance service will be aligned with Emergency and Protective Services within the new organizational structure of the single municipality. It will have a close clinical alignment to the Medical Officer of Health and an independent Medical Director. The service would have 4 functional areas: Operations; Communications; Clinical Programs and Quality Improvement and; Support Services and Logistics (see attached organizational chart). Much of the operating funds recommended are needed this year so these individuals can be hired and working no later than the end of September. That will leave them with 90 days to gear up for the transition.

The new system will be divided into two areas – one high density or urban area and one low density or rural area. The distinction is not based on municipal boundaries, rather on historical call demand patterns. Therefore, communities like Stittsville, are part of the high-density service area even though it is currently in rural townships. Conversely, parts of the current cities of Kanata or Gloucester are part of the low-density call area. Because the rural areas represent 86% of the land area and only 6% of the calls for ambulance service, properly serving the rural areas will require disproportionately more resources. Meeting the goal of dramatically cutting rural response times will mean investing significant dollars in this part of our community. For example, approximately one-third of the deployed ambulances and about 30% of the ambulance bases will be located in the low density areas, even though they comprise just 6% of the total call volume.

In the new City of Ottawa, 94 percent of the call volume originates in the high-call density area, while accounting for only 14 percent of the land area. Currently (1999), high call density response times to life threatening calls range from 13:45 to 18:03 minutes at the 90th percentile.

Land Mass vs. Transports

Dedicating nearly one-third of the system's total ambulances to the low-density areas will attain an excellent low-density performance level of arriving within 15:59 minutes at the 90th percentile. While this level of funding represents a significant contribution from the new city's urban tax base to support a vastly-enhanced rural ambulance system, this is a necessary investment in the health and safety of those residents. The presence in the rural areas must be quadrupled from the present level of two vehicles to a new minimum of eight to ten ambulances.

Achieving better survival rates in cases of cardiac arrest will also be possible through equipping municipal police with defibrillators as described latter in this report. In addition to the eight to ten ambulances deployed in the low-density area, eight police vehicles service that region as well.

Currently (1999), response times to life threatening calls in low density areas range from 17:09 to 28:37 minutes at the 90th percentile. With additional resources the goal will be to achieve a consistent response time of 15:59 throughout the rural areas.

Key Challenges

Currently the Ministry of Health and Long-Term Care administered ambulance system and will do so until the end of the year. MOHLTC employs a two-tier system which utilizes “Patient Transfer Vehicles” to perform inter-facility transfers. Single purpose transfer vehicles are unable to respond to emergency medical calls. This approach is intended to provide timely service to sending facilities (i.e. hospitals), however the effect is a decrease in resources in the emergency system. As a result, the practice will be discontinued.

In addition, the current system has a mix of Primary Care Units and Advanced Care Units. Where a crew is made up of two Primary Care Paramedics, a second crew that has an Advanced Care Paramedic is often dispatched to a life-threatening call, thereby using two ambulances for a single call rather than one. This duplication further depletes the resources available to respond to emergencies.

There is a direct correlation between rapid response times combined with advanced paramedic care, and the survival of cardiac arrest victims. Local cardiac survival rates are extremely low (3.8% in 1999) compared to other urban centers such as Toronto or Calgary which are about 25%.

Time on task (TOT) is defined as the time it takes from the point a call for assistance is received by dispatch, until the ambulance/paramedic crew is again available for assignment. The North American industry urban standard for TOT is approximately one hour. Based on the data from the Ministry of Health and Long-Term Care, the time on task in Ottawa-Carleton is reported as two (2) hours in the current system – double the TOT experienced in Calgary and Toronto.

Numerous factors influence time on task locally including poor supervision, hospital restructuring/bed shortages, available resources, increased travel time due to facility specialization and relocation of trauma centers and diagnostic tools. Reducing TOT is crucial to balancing overall service and value for money.

Improved technology and management practices are expected to decrease the current time on task significantly. Good communication and cooperation with the medical community will be necessary to facilitate the needed changes and reduce time spent waiting when delivering non-critical patients. The TOT for Ottawa should be an average of one hour. In the low-density area, a two-hour time on task target has been used due to increased travel time from outlying areas.

Improving the quality of the care available from the ambulance service is also a critical factor in improving survival rates. In keeping with this patient care principle, the system design calls for moving to a full Advanced Life Support (ALS) paramedic service. The goal of progressing to an all ALS, or single-tier system, is based on all crews and vehicles on duty being capable of attending to all medical calls thereby expediting calls and minimizing the resources necessary. Realizing the goal of a 60:40 ratio of Advanced Care to Primary Care paramedics however, will be a challenge as ‘competition’ or demand for qualified and fully trained personnel intensifies across Ontario. Indeed, training capacity, whether through community colleges and private institutions, or in-house is a critical implementation hurdle.

It is important to note that most regions and counties in Ontario are making significant investments in paramedic training and paramedic pay. If we are to be successful in recruiting and retaining the kind of highly-skilled talent required to make this whole new system work, the new city of Ottawa will need to make the kind of commitment outlined in this plan.

Rural coverage today is provided in great measure by neighbouring county ambulance systems. Through a system of charge backs, these services answer many calls in the far-east and west of the municipality. After 1 January 2000 the responsibility for serving all of these rural calls will fall to the new Ottawa ambulance service and back-up from adjacent counties will not be as readily available.

Other features of the proposed system design include:

- Expanded fleet;
- Continuation of first responder program;
- Single work start reporting location in high density area, with multiple stations strategically placed for optimum resource placement;
- Full control of dispatch, using Advanced Medical Dispatch Protocol, Automatic Vehicle Locator system, and other current technology common in performance-based systems;
- Structural alignment within Protective and Emergency Services, with linkages to the Medical Officer of Health;
- Shared resources/strategic alliances as mutually beneficial;
- Regular and independent measurement and reporting;
- Additional ongoing training to ensure the clinical and operational competency of the staff delivering patient care;
- Variable deployment methodology based upon historic call demand patterns and geographic coverage;
- Improved operational management and monitoring to improve production capacity and meet call demand more effectively; and
- Flexible staffing to call demand and emergency reserves to manage large scale incidents and peak demand.

By way of comparison, the proposed and current systems are illustrated below. It is not a 'Cadillac' version, but a system that is required to correct the current flaws and to deliver the current best practices and accepted industry standard to the citizens of the new City of Ottawa. The overall objective is to implement a system not unlike that currently in place in Toronto and Calgary.

<i>System Features</i>	<i>Existing MOH System</i>	<i>New Ottawa System</i>		<i>Change (2000 - 2003)</i>
		<i>2001</i>	<i>2003</i>	
<i>Response Time @ 90% (Code 4)</i>				
High Density Zone	13:45-18:03	11:59	8:59	(4:46-9:04)
Low Density Zone	17:09-28:37	18:59	15:59	(1:10-12:38)
<i>Unit Hours</i>	141,000	195,040	220,464	+56%
<i>Fleet</i>				
Ambulances	31	43	48	+55%
Other	10	10	10	---
<i>Peak Ambulance Deployment</i>				
High Density	18	23	27	+29%
Low Density	2	8	8	+300%
<i>Paramedics (FTEs)</i>				
Primary Care Support	83	126	98	
Advanced Life Support	74	90	146	
	<u>157</u>	<u>216</u>	<u>244</u>	+55%
<i>Facilities (Bases / Posts)</i>				
High Density	7	17 - 24	17 - 24	
Low Density	2	8 - 10	8 - 10	

System Start Up

The new City of Ottawa must be up and running on 1 January 2000. The new city must launch an effective and professional new ambulance system at the same time. With the number of business days between now and system start-up rapidly shrinking, a number of critical issues remain to be resolved and concrete steps need to be taken to build the infrastructure necessary to be ready.

Immediate needs for both operational and capital requirements have been identified to implement the new system design. The funding of these requirements must be in place in time to have filled all of key positions no later than the end of September.

The funding of the new service, including the 4 organizational units, will need to be available over the remaining months of 2000. These resources are required for the staffing up, the development of the programs, policy and procedures, the transfer of existing and purchasing of additional fleet, equipment, supplies and refurbishment of base facilities in order to be ready at start up.

Start up technology includes items such as computer aided dispatch upgrades, a new Advanced Medical Priority Dispatch System, automatic vehicle locator system and improved radio system. Technology upgrades must provide enhanced performance, replace or develop infrastructure, improve clinical care, improve deployment and enhance safety.

Funding Requirement of the Performance-based system

The cost of a performance-based system has previously been estimated at up to \$25 million. At that time the system was clearly underfunded, the question was how large was the funding gap. More detailed costs estimates are now available with the detailed system design. Start-up costs are expected to be \$2.7 million in operating costs and \$9.6 million in one-time capital costs. The operating start-up costs include the hiring of management, field support and administrative staff as well as other operating expenses prior to 1 January 2001. Capital start-up expenditures provide for additional vehicles and equipment, base stations, headquarters and technology required to improve response times and provide sound clinical care.

For 2001 to 2003, operating costs are estimated between \$27.3 million to \$29.9 million; capital expenditures will be \$3.3 million in 2001 and will be \$3.8 million by 2003. The three-year initiative of training Primary Care Paramedics to the Advanced Care Paramedics level will cost \$1.9 million in 2001 and just over \$2.0 million in 2003. By the end of 2003, the new City of Ottawa will be in a position to provide full Advanced Life Support care and meet predefined performance targets to ensure the health and well being of our community.

**New City of Ottawa
Ambulance Services
Cost Estimates (in millions)**

	2000 Start-up	2001	2002	2003
Total Operating Costs	\$ 2.73	\$ 27.32	\$ 28.18	\$ 29.86
Capital	\$ 9.57	\$ 3.32	\$ 4.17	\$ 3.79
3 Year Start-up ALS Training		\$ 1.95	\$ 1.99	\$ 2.03

To date, the MOHLTC has not approved any expenditure on a 50/50 cost-sharing basis beyond the established ambulance budget downloaded to the Upper Tier Municipalities. There has been no clear definition provided as to what comprises 'approved' costs since the new cost sharing was announcement made in March 1999.

The provincial system has been chronically under funded resulting in equipment and technology that lags behind industry advances. The system design has been developed to, not only correct the current state of the ambulance system, but to measure and report on it.

Public Access Defibrillation (PAD)

In addition an investment in a Public Access Defibrillator program will allow for additional improvement in survival rates from sudden cardiac arrest above those possible through the Emergency Medical System. This is particularly true in rural areas where the 8-10 ambulances available will be matched by 8 police units equipped with PADs.

When a person has a cardiac arrest, the most common rhythm disturbance is ventricular fibrillation. The most effective treatment is rapid defibrillation, a shock that is delivered to restart the heart. Without this intervention the heart becomes resistant to treatment over a few minutes and within minutes the heart dies.

At one time defibrillators were only found in ambulances. As these units have become smaller, more durable, less expensive and simpler to operate they have become available for use by first responders such as firefighters. This generation of defibrillators are so simple to operate that communities throughout Canada and the US are placing them in public places so they can be accessed quickly if needed in medical emergencies.

Public access defibrillators are a class of public health equipment now in use in the United States and in other jurisdictions in Canada. These devices allow non-medical personnel including the public and first responders to use an automatic defibrillator to restart an arrested heart rhythm. With recent technology, manufacturers have been able to ensure that safeguards are built in, to protect both the patient and the user, making truly public access defibrillators widely available for the first time. These devices are enabling victims of cardiac arrest to have a significantly greater chance of survival.

Public Access Defibrillators are easy to use. Anyone who certifies in CPR can be trained a step further to use them effectively. The units use voice prompts to assist throughout defibrillation.

There are many public access / police defibrillation program initiatives going on throughout North America. Improvements in survival for victims of sudden cardiac arrest strongly endorse development of these programs. Some examples of programs are listed below:

- Rochester, Minnesota has achieved a 45% survival rate
- Seattle, Washington has achieved a 30% survival rate
- Las Vegas Casino project has achieved a 55% survival rate
- Windsor Casino has achieved a 65% survival rate
- Chicago O'Hare Airport has to date 9 of 11 victims surviving cardiac arrest since the program's inception just over 6 months ago.
- Miami Dade Police have recently incorporated AEDs into its police response equipping over 2000 police vehicles
- New York City Police Department AED Program
- New York State Police Department AED Program
- Suffolk County Police Department AED Program
- Utah Highway Patrol AED Program

Non-medical first responders such as police, security guards, bus drivers, lifeguards, hotel and health club staff are being trained to use these machines in the same situations they might offer CPR. EMS have a greatly enhanced chance of saving a life when a first responder is able to apply a defibrillator.

The Heart and Stroke Foundation of Canada (Appendix A), the American Heart Association and the Canadian Association of Emergency Physicians have urged communities to implement PAD programs. Given the current survival rates, a Public Access Defibrillation program is a priority.

By equipping municipal police with PADs, as well as institutions and agencies, the Region and the new city of Ottawa will get tremendous return for a modest investment.

The PAD Program

1. Equip police vehicles with PADs and train the police force to respond to cardiac arrests.
2. Equip and train targeted responders in key locations in the region characterized by significant people gathering or large human traffic areas. PADs would be mounted in wall cabinets.
3. Encourage private sector and not for profit organizations to actively participate in this program through a high profile campaign to provide a safer workplace for employees and customers.

The municipal facilities which are proposed to have PAD's are:

Police

• HQ	1
• Community Police Offices	28
• All police patrol units	120

Major municipal buildings

• City Halls	3
• All community centres, arenas, pools, recreation complexes	119
• Other community locations	66

Total	337
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Equipment

In order to evaluate the PAD equipment available in the marketplace, a committee was formed comprised of Dr. Geoff Dunkley, Deputy Medical Officer of Health, Dr. Justin Maloney, Medical Director of the Base Hospital Program, and Dr. Graham Nichol, of the Ottawa Heart Institute. Dr. Nichol is an internationally recognized authority on the effectiveness of PAD programs.

Evaluating the equipment available for a PAD program entails mostly medical consideration. As it happens the two primary PAD units available are approximately the same cost. Recommendation of the preferred equipment was therefore not as price dependant as it was functionality dependant. The track records of the vendor companies and their maintenance provider were also factors for consideration.

The report of the group recommended the Lifepack 500 by Medtronic. The list price of the preferred unit, with all of the required hardware is \$6060.00 each. The Life Pack 500 is a biphasic deliberator which are much more effective than previous PADs. The units also record the audio of incident while the PAD is in operation. These recordings are of great assistance in analyzing and incident.

By dealing directly with the manufacturer of the selected PAD a 35% volume discount has been obtained. On a per unit basis – each Life Pack 500 will cost \$3939.00. This price includes all necessary hardware for mounting the unit. It also includes the provision of heated storage bags for use in police vehicles. The total equipment cost will require a capital commitment of \$1,367,266.00 including applicable taxes. This will provide for 337 PADs with associated hardware. The training and maintenance aspect of the PAD program should be the subject of a competition in early August 2000 for an appropriate supplier.

Training

The training program associated with the delivery of the PAD program will be offered for competition. There are several excellent training companies in Ottawa-Carleton. The St. Johns Ambulance also offers training in PADs. Competitive bids should be sought for a single supplier to install the units, train the staff who will use the unit, train instructors and conduct routine inspections of the PADs.

Recommended training requirements include approximately 6-8 hours for laypersons. Training is done in groups and includes didactic and scenario based training designed to ensure confidence in responding to victims of sudden cardiac arrest. Certification is by a physician medical director. Annual re-certification / refresher training is recommended.

Initial training of police personnel will be required though outsourcing. The training of police instructors will allow for subsequent training for police officers and will take place in conjunction with existing CPR training. Experience in other jurisdictions has proven this to be the most effective method of implementing a successful police defibrillation program.

A further capital allocation of \$600,000 above the purchase price for should be made for the initial cost of training, the overall medical authority and routine inspection.

Service / Maintenance Requirements

The Lifepak 500 is designed to be used in a low maintenance environment. The battery will last approximately 5 years without charging required. Automatic internal verification systems initiate a system check every 24 hours and will alert to any service requirements or low battery indicator.

Storage temperature range of the Lifepak 500 is -30°C to +65°C (with battery & electrodes maximum exposure time=1 week).

The Lifepak 500 has a 5-year warranty with purchase. Medtronic Physio-Control is extremely well regarded for the technical service and support it provides via a dedicated Canadian service team. The technical service operations provide 24 hours emergency coverage.

Charitable and Private Sector Participation

By using its buying power the municipality will also make it a condition of purchase that the volume discount offered to the program is also made available to the community for a six-month period. The PAD supplier has agreed to extend the 35% volume discount available to the region to the private sector (malls, golf courses, private nursing homes, etc.) and to not for profit groups (churches and synagogues, large community meeting halls, non-profit group homes).

A community based group, working with service clubs, have been fundraising to purchase PADs. The boost of a 35% discount will allow the group to help community groups participate as well as the private sector

Indemnification

PADs now have so many failsafe mechanisms that any incremental liability for the municipality or the user is negligible. In addition the maker of the PAD indemnifies the anyone who receives training against any liability in using the unit, including police officers.

Data Management

The comprehensive CodeStat Suite software transfers event data captured in the AED to a central location (ie. Base Hospital) to link with the ambulance record and provide post event review and quality assurance program data. Data would be sent via modem from any remote sites to Base Hospital. This would ensure an essential link to Base Hospital and coordination with local paramedics in transfer of care.

FINANCIAL COMMENT

Operating Budget

The Provincial funding amount is based on the on the 2000 Annual Estimate from the Province. The additional funding requirement identifies a requirement for start-up costs as part of assuming responsibility for ambulance services. Of the \$2,046,000 identified, \$1,991,000 will result in additional funding to the 2000 Operating Budget.

Capital Budget

The Provincial funding represents the Provincial decision to only fund \$232,000 for badly needed defibrillators. The additional funding requirement of \$7,782,000 represents the capital start-up costs (vehicles and equipment, base station, headquarters and technology requirements) required to assume the delivery the ambulance services to the new City of Ottawa effective 1 January 2001.

Short Term Action Plan

On 14 June 2000, Regional Council approved \$1,800,000 to provide additional unit hours to the existing services in Ottawa-Carleton, which was subject to the Ottawa Transition Board approval. Based on the information from the Ministry of Health and Long Term Care, the current system can only accommodate \$780,000 of additional unit hours. The balance of the

funding, \$1,020,000 will be used towards the acquisition of Public Access Defibrillators. The additional funding requirement of \$947,000 represents the balance required to purchase (including training) the Public Access Defibrillators.

FINANCIAL STATEMENT AND APPROVAL

	Operating Budget 151713 \$	Capital Budget 900453 \$	Short Term Action Plan *
Total Budget Requirement	17,047,000	9,799,000	2,747,000
Provincial Funding	<u>(7,157,000)</u>	<u>(232,000)</u>	<u>0</u>
Net Budget Requirement	9,890,000	9,567,000	2,747,000
Approved Budget to Date	<u>(7,899,000)</u>	<u>(1,785,000)</u>	<u>(1,800,000)</u>
ADDITIONAL FUNDING REQUIRED	<u>1,991,000</u>	<u>7,782,000</u>	<u>947,000</u>

* The approved portion (\$1,800,000) of the Short Term Action Plan capital budget represents approval by Regional Council at its meeting of 14 June 2000 which was subject to the Ottawa Transition Board approval which has not occurred as of 14 July 2000.

Additional budgetary authority of \$1,991,000 is required for the 2000 Operating Budget, Order No. 151713, Land Ambulance, Reference page 287; \$7,782,000 is required for the Capital Budget, Order No. 900453, Land Ambulance Transition, Reference page 117 and \$947,000 is required for the Short Term Action Plan.

CONCLUSION

Restructuring ambulance / paramedic services for the new City of Ottawa requires more than a change in employers if the ambulance system is to properly serve patients, to provide good value for money, and to improve response times and survival rates accordingly.

The initial findings arising from the system design work undertaken by Fitch & Associates indicates a greater level of resources required to meet the performance expectations for the new City of Ottawa ambulance service. In order to be prepared to implement the new system by 1 January 2001, approval must be obtained to proceed with the start up plan based on the high-level system design.

*Approved by
Robert Cushman, MD, FRCPC*

New City of Ottawa Ambulance Service Proposed Organizational Structure



Draft Summary Report – July 2000

Overview

Land Ambulance Service is an extremely visible public health service typically delivered in sub-optimal environmental and emotional situations. The objective is to implement a performance driven system including the provision of medically required emergency and non-emergency ambulance services for the new City of Ottawa that balances clinical care, innovation, customer satisfaction and cost. The design implemented must provide good value for money and be sustainable.

High-Level Business Plan

A performance driven system, guided by detailed written specifications, to maintain its performance despite changing demographics, provides response time reliability, advanced care levels, and appropriate utilization of resources to ensure economic efficiency is required. A competitive procurement or performance benchmarking can be conducted at a predefined future point in the system's development to ensure that it continues to represent best value over time.

Our Findings

The system has been under resourced. It is devoid of day-to-day supervision. The system requires, on average, twice as long to complete each transport as does comparable Canadian and American systems. The design must facilitate reduction of this "time-on-task" performance, decreasing it in the high-density call area from greater than two hours on average to an average of one hour. Failure to do so will dramatically impact system performance and will likely have staggering cost consequences. We concur with staff's finding that the system is underserved and has excessively long response times.

Implementation Timetable

The transition to a fully staffed and performing system is anticipated to take three years. This three-year process is primarily due to the time required to recruit and train staff.

The actual implementation process needs to become aggressive no later than August 2000 to achieve a smooth and successful transition. Outside resources will likely be required to implement and manage the system during its start-up phase.

Defining Service Areas

Response time performance measurement is a key indicator of system performance. The measurement of performance is accomplished by defining geographical areas. For this purpose, the City of Ottawa will be divided into two areas. High-density areas have been designated when twenty-four or more responses in a square kilometer occur annually, in blocks of not less than six square kilometers. Areas of high-density (to the extent practical) will remain contiguous. Areas of lesser call demand are considered low-density areas. The determinates of historic response volume and population density conform the validity of this process.

The following chart demonstrates the relationship with land mass and transport

Area	Transport Percentage	Land Mass Percentage
High-density	94.2% of transports	14.3% of land mass
Low-density	5.8% of transports	85.7% of land mass

Responses time criteria High-density Priority 4 (Emergency)

Current	Industry Standard	Today's Compliance
14:45 min. @ 90%	8:59 min. @ 90%	51.0% @ 8:59 min.

Responses time criteria Low-density Priority 4 (Emergency)

Current	Industry Standard	Today's Compliance
22:41 min. @ 90%	15:59 min. @ 90%	60.4% @ 15:59 min.

Unit hours in the new City of Ottawa

Area	Existing	Proposed
High-density	123,480	144,543
Low-density	17,560	70,080

Staffing

Advanced Life Support Systems (ALS) is the benchmark for quality and sophisticated pre-hospital care in North America. The all Advanced Life Support system is consistent with cities of Ottawa's size throughout North America. The transition towards an ALS system has effectively been underway for the past five years. This transition should be accomplished in not more than three years. Competition for ALS staff is increasing as other communities are moving to ALS systems. Today there are fewer than 50% of the ALS trained personnel in the system that will be needed to accomplish this requirement.

Ambulance Vehicles

The initial review of the vehicles indicated too few ambulance vehicles. The existing ambulances are marginally equipped and configured to accomplish the required mission. As vehicles are acquired and replaced, the new vehicles should be designed to meet the mission. The following chart compares existing and needed ambulances. The ability to initiate service on January 1, 2001 necessitates acquisition of additional ambulances by December 1, 2000. The ambulance fleet will grow from its existing size of thirty-one to forty-eight over the initial three-year period using an industry standard fleet size ratio of 125% of peak load staffing.

The following graph demonstrates the initial peak load staffing verses existing peak load staffing

Area	Current Peak Ambulance Staffing	Proposed Peak Ambulance Staffing
High-density	18 ambulances	23 ambulances
Low-density	2 ambulances	8 ambulances

Facilities

A single “report-to-work” base is needed to increase productivity in the high-density area. There is currently no facility of this type in the system. Five “report-to-work” locations currently are utilized. Crews starting shifts are often dependent on a crew ending their shift to receive an ambulance ready for service. This approach has two specific disadvantages: vehicle exchange processes and coverage. When a crew catches a “late” call at the end of their shift it places that crew in an overtime situation. Oncoming crews wait at the report station, on the clock, and cannot go in service because they have no ambulance. The second issue is the challenge of providing proper deployment coverage when there are multiple report locations. Coverage is commonly compromised to get units on and off duty.

The single report station allows for efficient use of supervisory staff, vehicle maintenance and support staff. It minimizes movement during the shift period while allowing for maximum coverage and improved response times. The fleet size can reasonably be reduced to a 125% of peak load staffing verses the industry standard for multiple start locations of 135% to 140% of peak load staffing. Today the fleet is at 155% of peak load staffing.

Paramedics in the low-density area will continue to utilize “report-to-work” base stations due to geography and coverage requirements.

Base Stations

The system's ability to meet response times will in part be dependent on appropriate geographical base station locations. The current base station locations are inadequate in quantity and in some circumstances poorly located. The following chart depicts the anticipated needs.

Area	Current Number of Stations	Recommended Number of Stations
High-density	5 stations	17 - 22 stations
Low-density	2 stations	8 - 10 stations

Technology Upgrades

Technology is an integral component of efficiency and performance. It is highly unlikely that response times will be achieved without an investment in upgrading these tools. Known technology upgrades will include: Automated Vehicle Location and Global Positioning System (AVL/GPS), the City's trunked radio component, Computer Aided Dispatch (CAD) related enhancement and interfaces, Advanced Medical Priority Dispatch System (AMPDS) and a driving monitoring safety program.

Funding

The true cost of ambulance operations has been unknown due to the manner in which the costs have been allocated. Provincial cost estimates were for a level of effort system that does not meet performance standards. The significant difference in cost is primarily based on the new system requiring more staffed ambulance unit hours to achieve acceptable performance.

Previous local cost estimates, prior to system design and a detailed unit hour analysis were in the range of \$20-25 M. Fitch & Associates has estimated the first year operating costs at \$27.3 M. These are "activity based" cost estimates and are inclusive of some shared service costs that may ultimately be allocated to corporate departments in accordance with municipal policy.

**New City of Ottawa
Ambulance Services
Cost Estimates (in millions)**

	2000	2001	2002	2003
	Start-up*			
Operating	\$ 2.7	\$ 27.3	\$ 28.2	\$ 29.9
Capital	\$ 9.6	\$ 3.3	\$ 4.2	\$ 3.8
Vehicles & Equipment (New)				
Additional Equipment (Existing Fleet)				
Base Station Equipment				
Headquarters Equipment				
Technology Equipment				

3 Year Start-Up ALS Training	\$	1.9	\$	2.0	\$	2.0
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* Excludes Existing 2000 Operating Budget Amounts