



CITY OF HAMILTON

**COMMUNITY SERVICES DEPARTMENT
Hamilton Paramedic Service**

TO: Chair and Members Emergency & Community Services Committee	WARD(S) AFFECTED: CITY WIDE
COMMITTEE DATE: December 10, 2012	
SUBJECT/REPORT NO: Defibrillator Standardization and Single Source for the Hamilton Paramedic Service and Hamilton Fire Department and Standardization for the City-Wide Public Access Defibrillation Program (HES12020) (City Wide)	
SUBMITTED BY: Brent Browett Paramedic Chief - Director Hamilton Paramedic Service	PREPARED BY: Blaine Lucas (905) 546-2424 Ext. 7739 Justin Pyke (905) 546-2424 Ext. 7743
SIGNATURE:	

RECOMMENDATION

- (a) That paramedic and firefighter electrocardiogram (ECG) monitor-defibrillators be standardized to the Zoll Medical Corporation and that those products be a single source purchase directly from the manufacturer;
- (b) That the negotiation with the Zoll Medical Corporation as a single source be conducted by staff of the Hamilton Paramedic Service and the Hamilton Fire Department;
- (c) That staff be authorized to negotiate with the Zoll Medical Corporation as the single source for the supply of any replacement parts and accessory equipment associated with the standardized electrocardiogram monitor-defibrillators;
- (d) That staff be authorized to single source the maintenance and biomedical testing contracts for issues not otherwise captured by the warranty from the Zoll Medical Corporation;

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- (e) That staff be authorized to standardize the purchase of public access defibrillator units (AEDs) from the Zoll Medical Corporation in compliance with Procurement Policy # 5.1 – Low Dollar Value Procurements, Policy # 5.1 – Request for Quotations, Policy # 5.3 – Request for Tenders or Policy # 5.4 – Requests for Proposals, as applicable;
- (f) That the procurement of accessory equipment for the public access defibrillators be a single source directly from the Zoll Medical Corporation.

EXECUTIVE SUMMARY

As per the Corporate Procurement Policy (By-Law No. 11-297), Section 4.14, Policy # 14 – Standardization, it is recommended that the Hamilton Paramedic Service and the Hamilton Fire Department standardize the purchase of stock applicable defibrillators from Zoll Medical Corporation and reassess the market conditions every four years or sooner if they become aware of material change in market conditions and/or related technology. During this period, if the Paramedic Service has cause to purchase one (1) or more special purpose defibrillators for specialty use (i.e. critical care paramedics), the division may purchase such a unit from another vendor in the event that Zoll Medical Corporation does not have a suitable product, and procured in accordance with the City of Hamilton (City) Procurement Policy.

As per the Corporate Procurement Policy (By-Law No.11-297), Section 4.14 (3) “Policy # 14 – Standardization, it is recognized that the standard will result in a single source purchase of paramedic and firefighter electrocardiogram (ECG) monitor-defibrillators and Council approval is required.

As per the Corporate Procurement Policy (By-Law No.11-297), Section # 5 - Determining the Procurement Process, it is recognized that the standardization of the public access defibrillators (AED) would not result in a single source purchase as these devices are not available for procurement directly from the manufacturer, but from recognized distributors authorized by the Zoll Medical Corporation. The procurement of the standardized Zoll public access defibrillators would be the result of a Policy # 5.1 – Low Dollar Value Procurements, Policy # 5.1 – Request for Quotations, Policy # 5.3 – Request for Tenders or Policy # 5.4 – Requests for Proposals, as applicable. The applicable procurement would be utilized as these devices are not available for purchase directly from the manufacturer, but from distributors authorized by the Zoll Medical Corporation. The procurement of accessory equipment for the public access defibrillators would be a single source directly from the Zoll Medical Corporation.

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Currently the Hamilton Fire Department is using semi-automated external defibrillators manufactured by the Zoll Medical Corporation (AED-Pro). The Hamilton Paramedic Service currently uses Zoll electrocardiogram monitor-defibrillators and is coordinating the City-Wide public access defibrillator program using Zoll Medical Corporation automated defibrillation units.

Earlier this year, staff were authorized to continue purchasing paramedic, firefighter and public access defibrillators from the Zoll Medical Corporation, and related accessories through the authorized distributor as identified by Zoll Medical Canada (Standardization of Paramedic, Firefighter and Public Access Defibrillators (HES12011) (City Wide)). The primary reason staff requested to extend the period of investigation was to review recent and pending changes of various products that may provide material enhancements to the end user and the public (based on the most contemporary medical evidence related to cardiac resuscitation standards).

The Hamilton Paramedic Service and the Hamilton Fire Department have completed their review and recommend that paramedic, firefighter and public access defibrillation be standardized to Zoll Medical Corporation given benefits generally related to standardizing defibrillators across the system, and specifically to the Zoll units. Standardization including the public access defibrillators (PADs) supports an integrated approach to patient care, quality assurance, and data transfer.

The Hamilton Paramedic Service Municipal Medical Advisor and Specialist in Emergency Medicine, Dr. Michael Shuster, has reviewed the capabilities of the available electrocardiogram (ECG) monitor-defibrillator options on the market. The staff recommendations for standardization to the Zoll Medical Corporation were based on his medical input.

Based on the information available to the division through other paramedic services it is anticipated that the direct costs to the City of Hamilton to replace defibrillators would be similar capital costs regardless of the vendor. The anticipated operating costs of switching to a new vendor would include; the costs associated with doubling the class to train paramedics and firefighters (~ 1000 staff members) in the use of a new model and the disposal of defibrillation pad inventory that would no longer be compatible with new units and with the hospital defibrillators.

Table 1 highlights the key needs of the City of Hamilton and the capabilities of each of the main vendors that can supply devices for paramedics, firefighters and lay public. The section with a grey background highlights preferred features.

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Table 1. Key Features of Paramedic Defibrillators

Specifications	ZOLL X Series	Physio-Control LIFEPAK 15	Philips HeartStart MRx
<i>Size</i>	615 cubic inches (10,078 cc)	1797 cubic inches (29,364 cc)	1204 cubic inches (19,709 cc)
<i>Weight</i>	11.7 lbs. (5.1 kg)	20.1 lbs. (9.1 kg)	13.2 lbs. (5.99 kg)
<i>VF - First Shock Efficacy</i>	99% at 129 Joules	97% at 193 Joules	86% at 130 Joules
<i>AED Use In Children</i>	Yes	Not intended for children under 8 years of age	Not intended for children under 8 years of age
<i>View Patients Intrinsic Rhythm While Continuing To Pace</i>	Yes	Yes	No
<i>Carboxyhemoglobin (SpCO)</i>	Yes- Masimo	Yes - Masimo	No
<i>Wireless Communication</i>	WiFi (802.11 a/b/g/n), Integrated Bluetooth	Integrated Bluetooth	External Bluetooth Card
<i>GPS Clock</i>	Yes	No	No
<i>Single Cable Connection (one cable that connects to pads, paddles, & internal paddles)</i>	Yes	No - requires separate cable connections for each	No - requires separate cable connections for each
<i>CPR Assistance</i>	Yes - CPR Dashboard	Yes - cprMAX (Metronome Only)	Yes: Q-CPR
<i>Defibrillator Data synchronizes with RescueNet Software.</i>	Yes	No	No
<i>CPR Quality - instantaneous feedback provided on rate and depth of chest compressions</i>	Yes	Metronome - Rate Only	Yes
<i>Recorder Delay</i>	6 seconds	8 seconds	10 seconds
<i>Code Summary</i>	24 hours of trends, Up to 1000 events, 32 snapshots (24 sec ea.)	Two full-capacity patient records (100 single ECG waveforms or 45-minute continuous waveform)	Up to 60 Event Summaries
<i>Data Transfer Capabilities</i>	WiFi, USB and Bluetooth	Serial Cable, Bluetooth,	Compact Flash Card
<i>Battery Weight</i>	1.3 lbs. (2.86 kg)	1.3 lbs. (2.86 kg)	1.6 lbs. (3.52 kg)
<i>Battery Run Time (ECG Only)</i>	6 hours	3.5 hours	5 hours
<i>Battery Charge Time; fully depleted</i>	4 hours	5 hours	3 hours

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With respect to accessories and equipment related to electrocardiogram monitor-defibrillator and public access defibrillators, Council has previously approved participation in the MedBuy group purchasing organization on May 4, 2011 (Procedure for Procurement of Supplies HES11006 (City Wide)). Where overlap exists with items available through the MedBuy associate membership, the City will purchase from the contract which offers the greatest economic benefit. The products will be purchased directly from the manufacturer or contracts with the Zoll Medical Corporation negotiated by Medbuy as the group purchase organization representing the City of Hamilton.

Alternatives for Consideration – See Page 8

FINANCIAL / STAFFING / LEGAL IMPLICATIONS (for Recommendation(s) only)

Financial:

If the standardization is approved the funding for the purchase of electrocardiogram monitor-defibrillator will be sought in the annual capital project approval process.

Staffing:

The standardization and single source process is expected to:

1. Contain staff training time to learn the defibrillator features.
2. Contain the risk of operator error by maintaining Zoll familiarity.
3. Meet the health and safety requests of the paramedic Joint Occupational Health and Safety Committee to reduce the weight of portable medical equipment.

Legal:

The Zoll Medical Corporation electrocardiogram monitor-defibrillator is compliant with the Ministry of Health & Long Term Care Provincial Equipment Standards for Ontario Ambulance Services (version 2.0) and has received Health Canada Medical Device Licence for the electrocardiogram monitor-defibrillators for paramedic, firefighter and public access defibrillators to be standardized.

HISTORICAL BACKGROUND (Chronology of events)

The City of Hamilton currently is standardized to the Zoll defibrillators and if the recommendations are accepted the standardization will continue.

The Hamilton Paramedic Service and the Hamilton Fire Department utilize Zoll electrocardiogram monitor-defibrillators to provide emergency care to citizens in the

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community. In addition, the Hamilton Paramedic Service has distributed 244 Zoll public access defibrillators across the City.

The firefighters and public access units are basic defibrillators used to deliver a shock to a heart that has stopped beating in an effort to re-start it. The paramedics have additional training to utilize the device for defibrillation and other life-saving interventions. The paramedic device has many more functions, including but not limited to being used as an external mechanical pacemaker, 12 lead electrocardiogram to diagnose the presence of heart attack and to guide the appropriate patient care plan where the patient has regained a pulse. The additional information is also valuable in determining longer term treatment for patients

POLICY IMPLICATIONS

- Corporate Procurement Policy (By-Law No. 11-297), Section 4.14, Policy # 14 – Standardization.
- Corporate Procurement Policy (By-Law No.11-297), Section 4.14 (3) Policy # 14 – Standardization, it is recognized that the standard will result in a single source purchase of paramedic and firefighter electrocardiogram (ECG) monitor-defibrillators.
- Corporate Procurement Policy (By-Law No. 11-297), Section 4.11(c), Policy # 11 – Non Competitive Procurements when a single source for the supply of a particular Good and/or Service is being recommended because it is more cost effective or beneficial to the City (single source);
- Corporate Procurement Policy (By-Law No.11-297), Section # 5 - Determining the Procurement Process, it is recognized that the standardization of the public access defibrillators (AED) would not result in a single source purchase as these devices are not available for procurement directly from the manufacturer, but from recognized distributors. The procurement of the standardized Zoll public access defibrillators would be the result of a Policy # 5.1 – Low Dollar Value Procurements, Policy # 5.1 – Request for Quotations, Policy # 5.3 – Request for Tenders or Policy # 5.4 – Requests for Proposals, as applicable.

RELEVANT CONSULTATION

Corporate Services, Procurement Section – Consultation with procurement staff in regards to the application of the Procurement Policy.

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Corporate Services, Finance Section – Consultation with Lorraine Paddon, Corporate Services Business Administrator to review the application of financial practices.

Hamilton Fire Department – Consulted with Karen Roche, Assistant Deputy Chief, with respect to the standardization to the Zoll Medical Corporation.

Hamilton Fire Department – Consulted with Jim Doyle, Assistant Deputy Chief, with respect to the standardization to the Zoll Medical Corporation.

Hamilton Paramedic Service, Municipal Medical Advisor – Consultation with Dr. Michael Shuster, MD, FRCPC, to confirm supports the recommendations.

ANALYSIS / RATIONALE FOR RECOMMENDATION

(include Performance Measurement/Benchmarking Data, if applicable)

There are currently three (3) manufacturers of electrocardiogram monitor-defibrillators suitable for paramedic and firefighter utilization. They are Medtronic Physio-Control, Laerdal Philips and Zoll Medical Corporation. In reviewing the features, functions and options of these devices, there are several significant differences, including:

- √ CPR Feedback – According to the Ontario Heart and Stroke Foundation the quality of CPR performed on a sudden cardiac arrest victim impacts patient survival. The Heart and Stroke Foundation of Canada recently changed CPR standards and two (2) of the manufacturers, Laerdal Phillips and Zoll Medical Corporation have incorporated the ability measuring the speed and depth of CPR and provide real time CPR coaching the rescuer. Dr. Shuster has recommended that the Hamilton Paramedic Service include this function in the electrocardiogram monitor defibrillator. The Phillips device also offers this function, but the Medtronic Physio-Control device does not. The Zoll Medical Corporation devices also provide post arrest statistical analysis including numerical values for rate, depth, release and overall CPR quality. The Zoll Medical Corporation has proprietary technology to see through the CPR artifact, called “See Thru CPR”, so that CPR does not delay heart rhythm interpretation. The electrocardiogram monitor defibrillator from neither Laerdal Philips nor Medtronic Physio-Control has such technology.
- √ Weight – It was determined that the Zoll X-Series defibrillator for utilization by the paramedic service is six (6) kilograms. The device is approximately 1.5 kg lighter than the current model utilized in the paramedic service and .8 to 4 kg lighter than the defibrillators made by the other manufacturers.

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- √ Carbon Monoxide (SpCo) – Carboxyhemoglobin is a measurement that will allow paramedics to noninvasively and immediately detect elevated levels of carbon monoxide in the blood – facilitating earlier diagnosis and treatment for patients poisoned by carbon monoxide. The exposure to carbon monoxide (CO) is the leading cause of death by poisoning in industrialized countries. CO poisoning is often misdiagnosed because symptoms are similar to the flu. The timely diagnosis and treatment of CO poisoning is critical. The ability to monitor SpCO has been shown to identify 60% more carbon monoxide poisonings than traditional methods. This feature is currently offered by Zoll Medical and Physio-Control.
- √ Integrated, WiFi, Bluetooth & USB – The Hamilton Paramedic Service requires capabilities for data uploads and cell modem communication to enable the integration of electronic medical record data (ECG, SP02, Non Invasive Blood Pressure, SpCO) with the electronic patient record. Having Bluetooth technology will enable the transfer of this information at a faster rate and the WiFi capability will allow the defibrillator data to be connected to the hardware within the ambulance and by extension the City network to facilitate transfer of ECG data. The Medtronic Physio-Control device has Bluetooth. The Zoll Medical Corporation device has Bluetooth, WiFi and USB technology.
- √ Standardization of Patient Equipment in Hamilton – Currently all of the hospitals in the Hamilton area use Zoll Medical Corporation monitor defibrillators. The use of Zoll Medical Corporation monitor defibrillators by the City of Hamilton would allow the efficient transfer of patients with the hospital without the need to remove and replace proprietary patient care supplies, such as defibrillation and pacing pads. On a similar note, the City-wide PAD Program, managed by Hamilton Paramedic Service uses Zoll Medical Corporation defibrillators

ALTERNATIVES FOR CONSIDERATION

(include Financial, Staffing, Legal and Policy Implications and pros and cons for each alternative)

The alternative to standardizing to the Zoll Medical Corporation is to purchase defibrillators from another manufacturer following the Procurement Policy, (By-Law No.11-297), Section # 5.3 – Request for Tenders or # 5.4 – Request for Proposals.

Based on the following factors the Hamilton Paramedic Service, Hamilton Fire Department and the City-Wide Public Access Defibrillation Program do not recommend the tendering of defibrillators until all vendors have similar features that meet the functional requirements, such as CPR feedback, reduced weight and integrated WiFi for

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electronic ECG data transmission. The inter-operability of the defibrillator pads between the public access defibrillators, firefighter responders and paramedics has resulted in cost efficiencies. The standardization to the Zoll Medical Corporation units has the potential to reduce the training costs related to the transition to another brand of electrocardiogram monitor-defibrillator. The standardization with the local hospitals is also a consideration.

CORPORATE STRATEGIC PLAN (Linkage to Desired End Results)

Focus Areas: 1. Skilled, Innovative and Respectful Organization, 2. Financial Sustainability, 3. Intergovernmental Relationships, 4. Growing Our Economy, 5. Social Development, 6. Environmental Stewardship, 7. Healthy Community

Skilled, Innovative & Respectful Organization

- ◆ A culture of excellence
- ◆ More innovation, greater teamwork, better client focus
- ◆ Opportunity for employee input in management decision making

Financial Sustainability

- ◆ Financially Sustainable City by 2020
- ◆ Effective and sustainable Growth Management
- ◆ Delivery of municipal services and management capital assets/liabilities in a sustainable, innovative and cost effective manner

APPENDICES / SCHEDULES

Page 4 of this report provides a comparison of the performance characteristics of the manufacturers of electrocardiogram monitor defibrillators manufactured by Zoll Medical Corporation.