

Request for Decision

Purchase of Power Cots for EMS

Presented To: Community Services Committee

Presented: Monday, Jul 07, 2014

Report Date Wednesday, Jun 25, 2014

Type: Managers' Reports

Recommendation

THAT the City of Greater Sudbury approve the Emergency Services Department's request to utilize up to seven hundred thousand dollars (\$700,000) from the Capital Financing Reserve Fund - Emergency Medical Service for the purchase of power stretchers and load solutions for the Emergency Medical Services Divisions fleet of ambulances. The service will undertake a competitive bid solicitation to award this contract.

Finance Implications

If approved, the power cots would be funded from the Capital Financing Reserve Fund - Emergency Medical Service.

Executive Summary

Paramedic injury rates resulting from the cumulative effects of constant, repetitive, heavy lifting of patients, stretchers and equipment are a significant concern for the Paramedic Service. This coupled with the fact that our current manual stretchers have reached the end of their life cycle presents an opportunity for the Paramedic Service to replace the current manual stretchers with new power stretcher and load systems.

Current research has demonstrated that load type forces experienced by Paramedics lifting manual stretchers can be significantly reduced through the use of power stretchers and load systems. In addition, the experiences from several Ontario Paramedic Services indicate power stretchers and load systems have had a dramatic and positive impact on the well-being of Paramedics resulting in fewer injuries associated with the effects of heavy lifting. Emergency Services is seeking the City of Greater Sudbury's approval to access funds from the Land Ambulance Reserve in order to replace our current manual ambulance stretchers with a power stretcher/load solution as a key component in our overall strategy to reduce workplace injuries and improve employee wellness.

Background

Signed By

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The City of Greater Sudbury Emergency Medical Services transports over twenty thousand (20,000) patients annually with a fleet of twenty-two (22) ambulances. The Ambulance Act of Ontario legislates that every patient must be transported by stretcher, unless otherwise contraindicated. The Paramedic Division currently has thirty (30) manual ambulance stretchers (twenty-two (22) main, eight (8) spare) that have exceeded their life cycle and are in need of replacement at an approximate cost of one hundred and fifty thousand dollars (\$150,000).

Paramedics transport patients to destination facilities by placing them on an ambulance stretcher and loading them (stretcher, patient, and equipment) into the ambulance for transport to the patient's destination. In the course of a normal call Paramedics must raise or lower the height of the stretcher to facilitate moving the patient onto or off the stretcher and into and out of the ambulance. On a single call a Paramedic will average eight (8) lifts. The average estimated weight of a Sudbury patient in 2013 was 80 kgs.¹ (176.3 lbs). The combined weight including the stretcher and additional equipment (defibrillator, oxygen) normally carried on a call equals an average total weight² of 174.5 kgs (385 lbs). Based on eight (8) lifts in the course of a single call, Sudbury Paramedics will lift an average of 1,396 kgs or 1.5 tons per call.

The constant repetitive cycle of lifting can result in Paramedics lifting over 9.2 tons (cumulative) over the course of a single shift. The effects associated with the constant lifting of such heavy loads have an adverse effect on the well-being of Paramedics resulting in strain type injuries to their backs and joints, and lost productivity. Recently we have seen a couple of cases of hernia type injuries requiring surgical repair.

The Paramedic Services undertook an analysis of our injury rates from 2008 to 2013. In 2013, we experienced a total of eighty-nine (89) injuries. The leading cause of injury was attributed to stretchers accounting for 42% of total claims. In 2013, these claims resulted in three thousand, three hundred and thirty-nine (3,339) hours of lost productivity or two hundred and seventy-eight (278) days (based on 12 hour shifts) for a cost to the City of one hundred and fifty-one thousand, one hundred and forty-six dollars (\$151,146). In the first five months of 2014, the service has paid \$89,907 in modified work costs for stretcher related injuries, this number continues to grow.

The attached chart (See Attachment #1) demonstrates that although total injury claims are trending down slightly, the overall percentage of stretcher handling injuries (patient and equipment lifting) continues to trend up and has increased by 14% over the past six years, representing 42% of the total reported Paramedic injuries.

This increase in stretcher related claims can in part be attributed to:

- increase in call volume.
- increase in the total cumulative weight being lifted in any given shift.
- patients are getting heavier³, *“between 1981 and 2009, the average weight of a 45-year-old man ballooned by 20 pounds”*.
- Paramedics' physical fitness declines as they become older.
- Paramedics are carrying more medical equipment to meet their expanded scope of practice.

Injury rates resulting from the physically demanding work by Paramedics are a significant concern for the Service. Many Paramedics will not retire from the field, leaving the profession prematurely as the result of strain type injuries to shoulders, knees and backs. This concern has been identified by Emergency Services in our Strategic Plan with the intent to:

“find alternative powered solutions to reduce the accumulative effects of lifting, while improving patient safety.”

The Paramedic Division recognizes that technology is only one component of a more comprehensive

program. The Emergency Services Strategic Plan (2014 - 2019) identified Health & Safety as a key priority; one of our Health & Safety initiatives is a Back Care Program. This program looks at several initiatives such as technology, awareness, and education.

Over the past year, Paramedics have taken a couple of back care training programs including one developed in partnership with the Occupational Health Clinic for Ontario Workers Sudbury and our Paramedic Division. The program, entitled "Preventing back injuries in Paramedics: how to lift in a worst case scenario...", was developed to assist in the prevention of back injuries in Paramedics. The Division has also engaged the City's Health and Safety Facilitator, who is working with the Division, and is scheduled to deliver injury prevention training to all Paramedics during our upcoming fall training sessions.

Evidence indicates that power stretchers and load systems can have a positive impact on the well-being of Paramedics resulting in fewer injuries and prolonging careers by dramatically reducing the amount and frequency of lifting required by the Paramedic.

Power stretchers utilize onboard battery powered hydraulics to raise and lower the stretcher; one has a power load trolley-type arm that extends out of the ambulance engaging the stretcher during loading and unloading. This eliminates all manual lifting by the Paramedics.

A 2009 study⁴ looked at the financial impact of two different stretcher designs on an emergency medical service by comparing injury claim data using manual stretchers vs. power stretchers over a four-year period. The conclusion of the study states:

NOTE: The terms: stretcher, gurney and cot all refer to the same equipment.

"This study highlights the positive financial impact realized by an EMS Service after installing equipment that reduced the task demands on employees. More specifically, after installation of the battery powered gurney, which would raise and lower the gurney and patient hydraulically, a 41% decrease in claims paid and a 62% decrease in the amount of claims paid per transport for incidents involving gurneys were realized. Additionally, claims paid associated with raising and lowering gurneys decreased 69% and 96%, respectively.

Overall, the installation of the ergonomically improved gurney design resulted in significant savings while the frequency of calls for the studied service increased. This ergonomic intervention demonstrates that appropriately designed equipment may not only be good for the employee but makes sound financial sense."

A 2013 study⁵ to investigate potential biomechanical effects of different medical stretcher design features on EMS workers was undertaken, which concluded:

"In this study, decreases of compression forces on the L4/L5 disc of up to 50% were observed when raising a cot with a power lift feature over a manual cot and up to 60% over a European cot. The power lift feature also reduces compression forces when a cot is being held in preparation for loading into an ambulance, and an even greater reduction is possible when using a powered load system which eliminates the need for supporting the weight of a cot prior to loading."

Several Paramedic Services in Ontario have already transitioned to power stretcher load systems with positive results. Recently, York Region Paramedic Services reported the following reductions in injuries just eight (8) months after introducing a power stretcher/load solution:

- 71% reduction in reported stretcher related incidents causing injuries (38 in 2012, 7 in 2013)
- 39% reduction in repetitive task/motion incidents (18 in 2012, 7 in 2013)
- 11% reduction in overexertion/strain incidents (133 in 2012, 76 in 2013)

- 49% reduction in lost time hours (585 in 2012, 189 in 2013)
- average lost days per lost time incident in 2012 1.8, in 2013 0.4

York EMS' experience is comparable to the findings of the study published in 2009. The addition of power stretchers load devices reduce the amount of weight Paramedics must lift and the cumulative effects these types of loads can have over a long period. A recent employee survey by York Region Paramedic Services demonstrated that 86.7% of Paramedics after using the power stretcher load system indicated they felt "*much better*" after a set of shifts.

It is anticipated the implementation of a power stretcher load solution by the City could result in similar reductions in exertion type claims and lost productivity associated with lifting the ambulance stretcher as described in the *Impact of Gurney Design on EMS Personnel* study, and that experienced by the Region of York Paramedic Service. It is estimated the implementation of power cot and load systems could result in an estimated 50% reduction in modified work costs (\$75,000) per year associated with stretcher lifting injuries. Based on a stretcher life cycle of 7 to 10 years this could result in a cost avoidance of \$525,000 to \$750,000.

There are only two (2) manufacturers of ambulance power stretchers load systems available in Canada. The following video clips provide a brief demonstration of these two products:

[Stryker Medical](#)

[Ferno Canada](#)

In conclusion, the research and experience by Paramedic Services has demonstrated the replacement of manual stretchers with power stretchers and load solutions to decrease the significant physical weight paramedics are carrying every day and the effects on the Paramedics well being. There are also operational benefits that can be realized with power stretchers and load technology, which include:

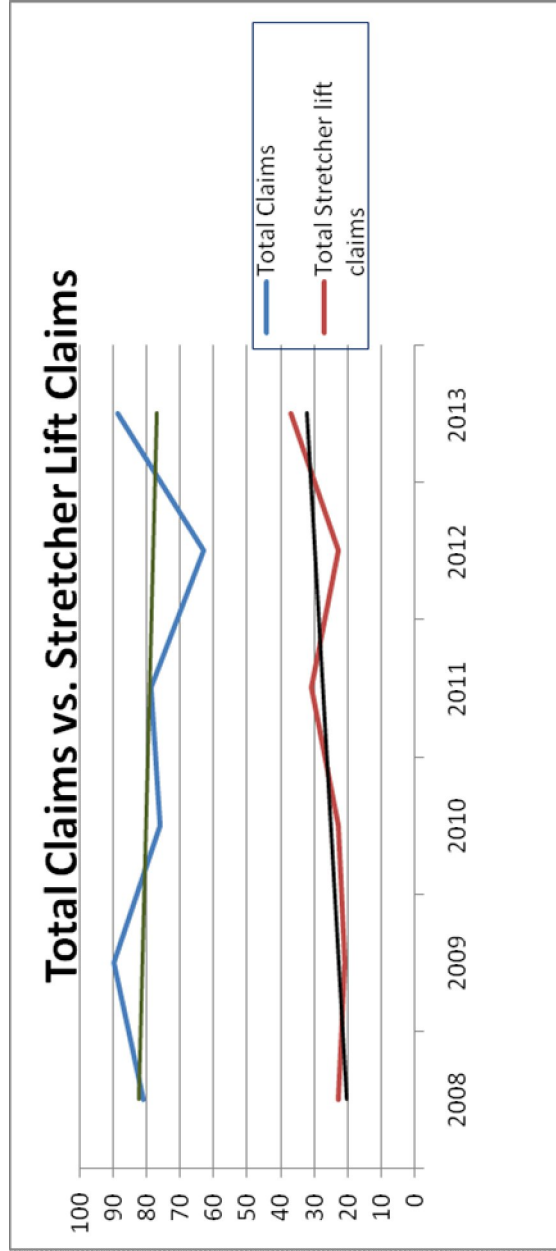
- The Paramedic Division current manual stretchers have exceeded their life cycle and require replacement at an approximate cost of one hundred and fifty thousand dollars (\$150,000).
- New generation stretchers have fewer parts, resulting in less down time for maintenance and repairs.
- Reducing the number of times Paramedic crews call for assistance from another crew for lifting only.
- As all power stretcher load equipped vehicles would now be bariatric capable, this option reduces on-scene times waiting for one of only the three bariatric vehicles, currently available in our fleet, to arrive.
- The smoother operation of a power stretcher when changing heights and loading can reduce the startle effect on patients, reducing their anxiety.

Recommendation

THAT the City of Greater Sudbury approve the Emergency Services Department's request to utilize up to seven hundred thousand dollars (\$700,000) from the Capital Financing Reserve Fund - Emergency Medical Service for the purchase of twenty-four (24) powered ambulance stretchers and power load solutions for the EMS Divisions fleet of ambulances. The service will undertake a competitive bid solicitation to award this contract.

1. 2013 Imedic , all patients over 18
2. Combined weight Ferno ProFlexx stretcher, Zoll E defibrillator, oxygen, and medical bags carried on a typical call.
3. Andre Picard (<http://www.theglobeandmail.com/authors/andre-picard>) Public Health Reporter - The Globe and Mail - January 13, 2010
4. The Impact Of Gurney Design On Ems Personnel Tycho K. Fredericks, Steven E. Butt, and Ashley Hovenkamp 2009
5. Evaluation of Medical Cot Design Considering the Biomechanical Impact on Emergency Response Personnel Tycho K. Fredericks, Steven E. Butt, Kimberly S.- Harms, and James D. Burns

Attachment #1



The chart above demonstrates that although total injury claims are trending down slightly, the overall percentage of stretcher handling injuries (patient and equipment lifting) continues to trend up and has increased by 14% over the past six years, representing 42% of the total reported Paramedic injuries.