



PEDIATRIC INTENSIVE CARE UNIT (PICU) AMBULANCE PROPOSAL

A partnership between Hamilton Paramedic Service,
McMaster Children's Hospital & the Ministry of Health

ABSTRACT

This proposal outlines the need for, requirements of and financial backing required for Hamilton Paramedic Service to provide a dedicated PICU ambulance for the safe and timely transport of McMaster Pediatric Transport Teams (PTT) and infants/children.

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EXECUTIVE SUMMARY

This implementation plan provides information for the addition of one ambulance and the required paramedic staff for Pediatric Intensive Care Unit (PICU) support 24 hours per day, 365 days of the year.

Implementation of the program for the 2023 calendar year will require one-time capital support in the amount of \$381,198.68 and annualized operational support in the amount of \$1,467,319.08 (pro-rated for the balance of the 2023 calendar year).

In years after 2023, inflationary wage and operating cost increases will be required.

The operationalization of the additional vehicle will take four to six weeks after confirmation of available funding and agreement on the operational aspects of this additional resource.

BACKGROUND

Pursuant to the Ambulance Act (the Act) the City of Hamilton is the “Designated Delivery Agent (DDA) for all land ambulance services provided in the City of Hamilton. This service is known, and operated under Certificate 718, as the Hamilton Paramedic Service (HPS). The HPS is the sole ambulance provider for the entire City of Hamilton, an area of approximately 1,117 square kilometres and a population of approximately 537,000 people.

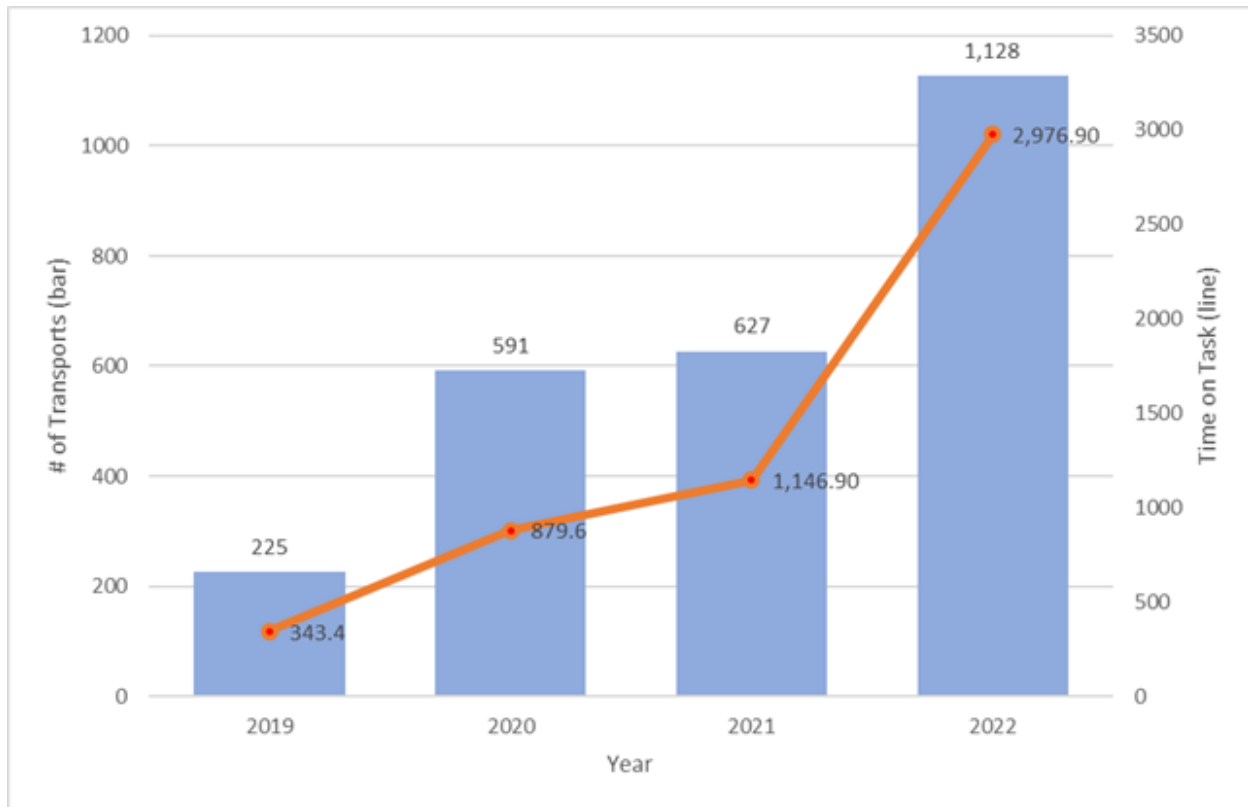
In accordance with the Act, the Regulations pursuant to the Act, and the various Directives and Standards pursuant to both the Act and the Regulations, the City of Hamilton, in part:

- Determines the level of land ambulance service required to provide an appropriate level of service to the public within the City of Hamilton; and
- Funds the cost of land ambulance service required to meet the needs of the public; and
- Receives a conditional grant from the Province of Ontario as subsidy for the cost of provision of land ambulance service; and
- Ensures their provision of land ambulance service meets the standards required by the Province of Ontario to achieve and to maintain certification; and
- Ensures the plan provided to the Ministry of Health and Long-Term Care (MOHLTC) Central Ambulance Communications Centre (CACC) for the deployment of the land ambulance resources it provides is approved in the manner designated by the MOHLTC.

At present, the Hamilton Paramedic Service (HPS) approved deployment plan does provide for the pick up by ambulance of both Neonatal Intensive Care Unit (NICU) and Pediatric Intensive Care Unit (PICU) teams and equipment at a hospital (the sending hospital) for transportation to another hospital (the receiving hospital). The NICU transport is funded 100% by the Ministry of Health to ensure responsive, timely and safe care of neonates between hospitals. The PICU transport is currently not funded by the Ministry of Health and is therefore provided as and where resources are available.

The benefit of the NICU agreement is the ability of the ambulance to wait for the NICU team, then either transport the team and neonate to a primary hospital, or back to MUMC for additional assignments. This model has been successful since its implementation, and has seen a 401.3% increase in events and 766.8% increase in time on task from 2019 to 2022. For a complete breakdown, please see Figure 1.

Figure 1 – NICU/PICU Events & Time on Task



In addition to the 47 bed, tertiary level, NICU operated at Hamilton Health Sciences McMaster Children’s Hospital (MCH), the Pediatric Intensive Care Unit (PICU) has the capacity to accommodate 12 patients from a catchment area of 2.2 million. The closest adjoining similar NICU and PICU programs are located in London and in Toronto. In response to this demand, MCH in addition to its NICU transport team, began its PICU transport team in December 2021, and allows the highest level of assessment, stabilization, and treatment at various outlying hospitals and to then provide care of the patient during transport by ambulance to the MCH.

With the success of the NICU transport program, HPS was contacted by MCH in mid 2021 to discuss options for the provision of an additional dedicated land ambulance resource, operated by the City of Hamilton, for the purpose of transporting not only NICU teams, but the addition of PICU medical teams. The objective would be to transport these medical teams and equipment to the sending hospitals, await the team and patient readiness to return to MCH, and to then transport the patient, team, and equipment back to MCH. Estimates on the frequency of use vary.

HPS, and the City of Hamilton, recognize the importance of both the MCH NICU and PICU programs, including the outreach of these programs to various sending hospitals

for treatment, stabilization, and transportation. In support of the Provincial PICU pressures exacerbated by the COVID pandemic the HPS has supported PICU transfers, in addition to the already funded NICU transfers, pending consideration of this funding request.

While HPS will continue supporting PICU transfers as a secondary priority pending consideration of funding the continued systems pressures that include hospital OLD's, the aging population, and the expectation of residents for timely paramedic response, make it very difficult to provide MCH with a second dedicated ambulance resource for PICU transfer absent funding from the MOH. The value of having an additional dedicated ambulance resource available to MCH for NICU/PICU is appreciated.

We support the need for, and are prepared to provide, a second dedicated ambulance in support of the MCH operations, and in support of various sending hospital needs, provided such costs are fully funded directly from the MCH or by the MOH through conditional grant funding.

IMPLEMENTATION PLAN

Assuming no specialized equipment other than what is currently being used, HPS can put into operation an additional dedicated NICU/PICU Transport Ambulance within approximately four (4) to six (6) weeks of achieving an agreement on funding and operation of the resource. Dependent on the complexity of any proposal an agreement may require various approvals including, but not limited to, legal services, risk management, senior leadership, and potentially Council approval. The language in the current NICU funding agreement has already been accepted by legal services and approved by Council. Duplication of that agreement should be quickly approved.

After achieving funding agreement, the implementation plan is expected to include a deployment plan agreement, staffing assignment agreement, and equipment procurement and activation. The processes for these will occur concurrently.

Deployment Plan

While there are various potential models for deployment of the NICU/PICU Ambulance they essentially revolve around whether the crew and ambulance will be exclusively assigned and available to the MCH and perform no other activities (dedicated assignment).

Based on the success of the NICU program currently operating, HPS proposes for the second NICU/PICU vehicle we use the current deployment model. This includes the following:

When an activation is received send the first or appropriate paramedic crew directly to MCH for team and equipment pick up. Their normally assigned ambulance, that they have been using for day to day activities, would be utilized for the transport. This model would be similar to what we are already doing for NICU team and equipment transports when they occur.

Local Operating Procedure (LOP) Adjustments Anticipated

The following would require insertion into the CACC LOP for the purpose of implementation:

1. On receipt of request for Pediatric Transport the CACC will determine the most appropriate vehicle that can arrive at McMaster within 15 minutes Code 4. In deciding the "most appropriate" vehicle, the following criteria will be considered in priority order:
 - End of shift consideration
 - Meal rest breaks consideration
 - PCP (preferred)

- ACP
 - ACP-P
2. Final PICU team transfer destinations may change as result of patient condition. Therefore, paramedics should **ensure the fuel tank is full** prior to departure.
 3. Where an ambulance is assigned to a PICU Transport the ACO will ensure the following:
 - a. In accordance with the MOH contract, an ambulance assigned to an urgent NICU response will not be reassigned to another call while enroute to MCH.

Where an ambulance is assigned to a PICU the paramedic crew on that ambulance will:

- Assist the PICU Transport team with the loading, unloading, and securing of all required equipment into the ambulance as appropriate;
- Transport the PICU Team to and from the pickup hospital location in a manner consistent with the urgency and priority of the call and in accordance with all related legislation and policy;
- Upon arrival at the sending hospital await the PICU transport team readiness to return to McMaster, ensuring that a method of contact is immediately available to the PICU team;
- Assist the PICU team in the operation of any ambulance specific equipment as requested;

Complete required documentation in accordance with the current Ontario Ambulance Documentation Standards.

Staffing Assignment

The existing NICU/PICU Transport Team, configured with hospital medical staff as appropriate for the situation, will maintain responsibility for all patient care. Paramedics assigned to the NICU/PICU ambulance are a resource intended to assist the NICU/PICU Transport Team with the related ambulance equipment, the transport environment, and where needed to provided patient care within their specific level of certification. Based on this analysis the paramedics assigned to a NICU/PICU ambulance response may be certified as either a Primary Care Paramedic (PCP) or Advanced Care Paramedic (ACP).

Wage and benefit costs for the additional paramedic staff required to support the dedicated NICU/PICU ambulance program is established at the PCP level and wage costs in the funding request are based on this criteria. In the event an ACP is assigned to the activity based on the proposed deployment model there will be no adjustment to the costs. The current Collective Agreement wage rates for a PCP are extracted for reference purposes below. The current Collective Bargaining Agreement (CBA) expired

March 31, 2020 and an arbitration date is set for May 31, 2023. Our 2023 budget anticipates a PCP top step of \$62.10 inclusive of salary, benefits, statutory holiday pay, and shift premiums.

The actual current salary schedule in the CBA pre-arbitration is copied below:

SALARY SCHEDULE

Primary Care Paramedics

	First Year	After 1 year	After 2 years
April 1, 2016 (1.5%)	\$35.65	\$36.77	\$37.94
April 1, 2017 (2.0%)	\$36.36	\$37.51	\$38.70
April 1, 2018 (2.0%)	\$37.09	\$38.26	\$39.47
April 1, 2019 (2.0%)	\$37.83	\$39.03	\$40.26

Figure 1 OPSEU PCP Wage Rates - Current CBA

In addition to the hourly wage, an additional 25% is added to the hourly salary, to cover negotiated employee benefits. This addition makes the total hourly wage, including benefits, of PCP's to be \$50.33/hour.

Staffing required to cover one ambulance 24 hours per day, 365 days of the year, a total of 10 Full Time Equivalent (FTE) are normally required. Our Collective Agreement provides for a 42-hour work week (2,184 hours per year). We utilize a four-platoon basic staffing model which requires eight (8) paramedics to sustain as visually represented below. In each two-week period each paramedic is assigned to seven 12-hour shifts (84 hours or an average of 42 hours per week)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Days	1	1	2	2	1	1	1	4	4	3	3	4	4	4
Nights	3	3	4	4	3	3	3	2	2	1	1	2	2	2
<i>Platoons 1, 2, 3, 4 - each has two paramedics per transport ambulance</i>														

Figure 2 Sample Platoon Staffing Schedule

In addition to the basic requirements sustaining coverage for absences requires additional staff. These absences typically include such items as Statutory Holiday Lieu Days, Vacation, Sick time, Bereavement, Education, and any other absences as outlined in the Collective Agreement or legislation. Historically this has worked out to an approximate 25% shift replacement requirement. A further two (2) FTE's of either Float

Full Time staff or Part Time Shift replacement are therefore required in addition to the eight (8) FTE's assigned to the ambulance.

With an existing part-time staff complement of approximately 70 paramedics we anticipate being able to post and fill the full-time positions within two-four weeks of confirmation of funding approval.

All education required for maintenance of certification, and to fulfil employment obligations, is provided by the HPS or, in the case of the performance of delegated medical acts, by the Base Hospital program (Centre for Paramedic Education and Research, or CPER).

Equipment Procurement and Activation

The additional NICU/PICU ambulance provided will meet the operational specifications as per the Ontario Provincial Land Ambulance and Emergency Response Vehicle Standard. The vehicle of choice for Hamilton is the same as the standardized vehicle currently in use across the entire City of Hamilton transport ambulance fleet (Demers MX164). The NICU/PICU ambulance will be fully equipped in accordance with the Land Ambulance Vehicle and Equipment Standards including the Stryker Power Lift system and Stryker Power Cot.

Due to logistical chain issues associated with the COVID19 pandemic, procurement and fit up timelines for the purchased vehicle and equipment is estimated at 12-18 months. However, as the Demers unit and specified equipment are already our standard operating unit, we have the ability for immediate implementation through short term utilization of a mechanical spare ambulance until the actual designated unit and equipment are procured. Further, in the event of repair or maintenance needs an existing ambulance can appropriately be used to ensure program continuity.

Capital equipment costing, and equipment provision, for the proposed NICU/PICU ambulance includes only the equipment specified in Appendix 1. The Transport Incubator, transport incubator deck, and any required specialized pumps, ventilators or NICU/PICU equipment will be provided and maintained by the MCH as needed and appropriate to the call details.

All required NICU/PICU Ambulance maintenance will be performed under the same Service Level Agreement (SLA) between the HPS and the City of Hamilton Fire Department Mechanical Services program. The mechanical staff in this program have extensive experience with the Demers MX164 vehicle, including participation in vendor specific training and orientation activities.

All required NICU/PICU Ambulance equipment maintenance will be performed in accordance with existing HPS programs. These consist of activities ranging from staff checks, logistics technician checks and repairs, through to vendor inspection and maintenance as appropriate to the individual piece of equipment.

FINANCIAL

The required financial support to implement the NICU/PICU Ambulance program as described, is identified as January 2023 which includes a 2% cost increase from the start-up NICU costs. An increase of 2.5% to cover for known cost increases, specifically the known CBA wage increase, has been added for 2024. For the 2024 calendar year the one-time capital costs are removed and a further 2.5% has been added to staffing and other related costs.

Description	Jan 2023 Annualized Estimate	2024	2025
Vehicle and Equipment (Capital - One Time Cost) (see Appendix 1) <i>(ongoing maintenance and future replacement costs to be managed as operating budget line item)</i>	\$381,198.68	N/A	N/A
Wages and Benefits 2 Paramedics, 24 hours per day, 365 days per year PCP Year 3 Rate All benefits as per CBA Inclusive of all anticipated backfill costs for absences	\$1,361,226.53	\$1,395,257.19	\$1,430,138.62
Vehicle Operating Costs Estimate based on 20,000 km/year, inclusive of vehicle maintenance, operating, and contribution to reserves (amortization) for life cycle replacement	\$100,679.55	\$103,196.54	\$105,776.45
Other Operating Costs Vehicle AVL, Cellular, Sim Cards, Vehicle Registration, etc.	\$5,413.00	\$5,548.33	\$5,687.03

Capital and Operating Budget Request	\$1,848,517.76	\$1,504,002.06	\$1,541,602.11
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Based on the expected operating parameters for the 2023 calendar year we anticipate a funding need, inclusive of one-time capital costs, of \$1,848,517.76. For subsequent operating years we will base operating requests on the operating experience and activities during the preceding year.

CONTACT INFORMATION

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APPENDIX Vehicle and Equipment Specifications

2023 Estimate Costs	Equipment	Ambulance	Total
Ambulance		\$210,487.00	
Load system - power	\$28,013.77		
Stretcher - power	\$30,808.55		
conversion costs		\$15,500.00	
Ambulance Communication Equipmment (bewhere install / AVL/ Garmin		\$2,120.00	
StrairChair	\$3,985.00		
Scoop Stretcher	\$1,403.00		
back boards	\$500.00		
Ked	\$400.00		
Suction units	\$650.00		
Pediamate	\$500.00		
response Bags	\$5,150.00		
Bins / Equipment	\$4,000.00		
Cardiac Monitor / Defib	\$39,031.36		
Zoll Autopulse	\$15,300.00		
Computers x 2 toughbooks	\$8,500.00		
Imedic x 2 Cadlinik licensing	\$6,200.00		
corporate Software costs	\$1,200.00		
Software support costs	\$3,700.00		
Misc Helments Life Jackets books etc	\$3,750.00		
Total	\$153,091.68	\$228,107.00	\$381,198.68



DEMERS MX 164 SPECS

Chassis	Chevrolet Express 3500/4500 Ford E350/E450
Drive Type	2x4
Overall Length	271" to 278"
Overall Width*	95"
Overall Height**	106"
Interior Headroom	72"
Wheelbase	158" to 159"
Avg. Payload Capacity	Up to 4,500 lbs.

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