



A PROVINCIAL NEONATAL TRANSPORT INCUBATOR FOR ONTARIO

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INTRODUCTION

Access to critical neonatal care in a regionalized system requires timely stabilization and transport from one facility to another supported by expert transport clinicians and life sustaining equipment. When a neonate requires critical care, the patient needs to be transported to one of the four designated Neonatal Centers; McMaster Children's Hospital (MCH) Hamilton Health Science Centre, The Children's Hospital of Eastern Ontario (CHEO), London Health Sciences Centre or The Hospital for Sick Children in Toronto (SickKids). When a transport is required to either of the mentioned hospitals, their transport team would get their transport incubator ready and have the ambulance and the air transport take them to the required hospital for transporting the neonate back to their Neonatal Intensive Care Unit. While the main Transport incubator system at each centre has the basic equipment, each Transport team has some differences in configuration that makes it challenging for the transport team, the ground ambulance and the air ambulance team to transport the patients in a safe and efficient manner. The need to have a standard Neonatal Transport Incubator was identified by the four Neonatal teams and was supported by the Provincial Council for Maternal and Child Health (PCMCH). To this end, the PCMCH established a Task Force to develop a standard configuration for the Transport System that will be used by the four Transport teams. A Standardized Neonatal Transport Deck Work Group (SNTDWG) was established consisting of a multi-disciplinary team from all four hospitals including neonatologists, transport nurses, respiratory therapists, medical engineering, emergency medical services workers and the air/land transport representatives. This paper describes the process that was followed to arrive to a

Standard Transport Deck that will be used by all the Transport Teams in the four designated Hospitals. This is the first provincial Neonatal Transport System in Ontario that will ensure the safe transport of neonates while at the same time ensuring the safety of the transport team.

BACKGROUND

Critical care services for pregnant women, newborns and children are highly specialized services regionalized across the province. Access to critical care in a regionalized system requires timely stabilization and transfer from one facility to another supported by expert transport clinicians.

In 2009 CHEO and SickKids were at various stages for the replacement of their existing Transport Systems. In consultation with each other, it was discussed the opportunity to develop a common system that could assist both institutions in issuing a common RFP for the Transport System. As a result of these initial talks, the Provincial Council for Maternal and Child Health (PCMCH) decided that there was an opportunity to create a provincial Neonatal Transport Incubator that could be used by all the Neonatal centres. To this end, PCMCH convened a Transport Work Group with a mandate to recommend a streamlined transport system for mothers, newborns and children. The main objective of the Transport Task Group was: To develop standardized specifications for a neonatal transport deck for Ontario. PCMCH indicated that the Transport Task Group had an opportunity to develop standard specifications for a neonatal transport deck that meets the safety and regulatory standards for land and air transport in Ontario

THE TRANSPORT TASK GROUP

The PCMCH appointed two co-chairs to lead the Transport Task Group. In consultation with the PCMCH and the four transport teams, a multi-disciplinary team was established consisting of representatives from the four institutions. Members of the Task Group included Transport Neonatologists, Transport Nurses, Medical Engineering, Infection Control Ambulance Transport Services, and the Provincial Land and Air ambulance services, Ornge.

The Task group's reviewed the exiting Transport Incubators that each institution had. While there were some common elements, there were also some inconsistencies on the transport systems. The following table shows the different weights for the four units:

Table 1: Transport Systems – Weight comparison

Weight comparison between different Transport Teams			
CHEO	McMaster	SickKids	London Health Science Centre
138.4 Kg	149 Kg	147- 170 Kg	145 Kg

Standards/specifications

After a few initial face to face meetings in Toronto, numerous conference calls were held among the members of the Task Group to come up with the standard for the new Transport system. Standardized specifications were developed for the following items:

- Temperature Support /Warming System
- Control Panel/ Display
- Alarms
- Storage and Transfer of Data
- Hood Design
- Interface between transport Incubator system and Ambulance Incubator Compartment
- Incubator Compartment
- Gas Supply and Blender/ Nitric Oxide Delivery System
- Humidification Control

- Power requirements
- Neonatal Transport ventilator
- Neonatal Transport monitor
- Transport Infusion Pumps,
- Transcutaneous monitor and
- Adapter Deck

Transport Safety

Above all, the new proposed Neonatal Transport Incubator had to meet the appropriate CSA standards and Transport Canada standards for land and air ambulance. The Neonatal Transport Incubator had to be mounted on the Incubator Adapter Deck (IAD) approved for use in the Ontario Ministry of Health transport vehicles.

For user safety, it was decided that the Neonatal Transport Incubator should not exceed 136.4 Kg (300 lbs). This weight restriction was in line with recommendations from the Occupational Health and Safety officers from the ambulance group. In addition, the limitation in weight offers the possibility of having only two ambulance attendants lift the Transport system into the ambulance if necessary.

When discussing the Transport IV pumps and the Drug Error Reduction System (DERS), the Task Group decided that the Transport Incubator should be able to hold minimum four syringe modules with the possibility of two additional modules. The only small compact current IV device on the market is B Braun Syringe Pumps. All Neonatal transport teams agreed to standardize with the B Braun IV Pumps.

During the development of the specifications and standards, each group held individual meetings within their own Transport Team to ensure that all were in agreement with the specifications and standards.

The agreed upon standards and specifications were presented to the Provincial Council for Maternal and Child Health on January 2013 who in turn approved the Specifications/Standards for the Provincial Neonatal Transport Incubator. The PCMCH also approved the development of an RFP for the

new Transport Incubator. A subgroup of the Transport Task Group continued to work on the RFP which was published in mid 2013. The four institutions are currently reviewing the responses to the RFP and are in the middle of presentations for the preferred vendor and system.

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