COMPARATIVE EFFECTIVENESS OF BANKED DONOR MILK FOR PREMATURE INFANTS: EFFICIENCY OF A MILK BANK MODEL INTEGRATED IN A BLOOD BANK SETTING

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Abstract

Objective: To evaluate the comparative effectiveness and economic impact of banked donor milk for premature infants and to support evidence-based decision-making for implementing a milk bank managed by a blood bank in Canada.

Methods: A systematic review of the literature was performed to identify clinical benefits of banked donor milk compared to formulas used to reduce complications in premature or very low birth weight (VLBW) infants. Epidemiology and costs of these complications were obtained from provincial databases (Ministère de la Santé et des Services Sociaux) to estimate the economic impact of using banked donor milk in this vulnerable population. The annual operating budget was estimated within the context of the established Québec blood bank.

Results: Available evidence indicates that the major benefit associated with the use of banked donor milk compared to formulas in premature and VLBW infants is a reduction in the rate of necrotizing enterocolitis (NEC). The evidence suggests that NEC is reduced by 40% and the number of fatalities by 10 annually, that the use of banked donor milk in neonatology would reduce the number of NEC cases by 70% in the province of Québec, Canada, was 70 cases during the one-year period between 2008 and 2009, which resulted in total direct costs of $70,575,450, or $49,090 in 2009 US dollars. It is estimated that the use of banked donor milk in neonatology would reduce the incidence of NEC by 50% and the number of NEC cases among preterm and VLBW infants. The annual operating budget was estimated at $612,975 in 2009 US dollars.

Expected costs and potential savings

- The budget for implementing a milk bank within a blood bank setting in the province of Québec was estimated at 2009 US $612,975

- The annual spending budget was estimated at 2009 US $512,975

- Savings on formula replaced by banked donor milk: US $116,146 (3691 L, 31.47$/L)

Conclusions

The use of banked donor milk to feed premature and VLBW infants is widely supported at several levels: international (WHO, UNICEF), national (Canadian Pediatric Society) and provincial (Québec government). The benefits collected and analyzed during the course of this study suggests that the implementation of a milk bank managed by a blood bank in the province of Québec would be financially sustainable for the province of Québec health system.

Perspectives

Héma-Québec is now aware of the results of this study. The Québec Ministry of Health and Social Services ( MSSS) will be analyzing these results over the next few months and will decide on the next steps regarding implementation of a milk bank within a blood bank setting in the province of Québec. Any reduction in the number of NEC cases among preterm and VLBW infants would benefit the population and would be financially sustainable for the province of Québec health system.

References


Savings from avoided NEC

- Potential effect

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<thead>
<tr>
<th>NEC in the province of Québec</th>
<th>NEC cases in 2008</th>
<th>NEC cases in 2010</th>
<th>NEC cases avoided</th>
<th>NEC cases avoided %</th>
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<tr>
<td>70 cases</td>
<td>133 cases</td>
<td>64 cases</td>
<td>68 cases</td>
<td>44%</td>
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<td>NEC cases avoided %</td>
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Volume required to meet Québec needs

- Based on number of NEC cases in the province of Quebec in 2010 (133 cases), the average weight at gestational age equivalence of 32 weeks and an average intake of 210 mL/kg/day in VLBW infants

- NEC cases avoided = 68 cases

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- Potentially avoided NEC cases and associated savings.

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Acknowledgements

The authors wish to thank Marc Germain MD, Marco Decelles PhD, and Louis-Philippe Gagné from Héma-Québec, Montréal, QC, Canada for their contribution to the development of this study.