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WORKING TOGETHER FOR HEALTHY BRAINS



Magnesium sulphate protects infants from cerebral palsy

Dane De Silva^{1,2} and Dr. Laura A. Magee^{3,4}

¹Department of Obstetrics and Gynaecology, University of British Columbia

²School of Population and Public Health, University of British Columbia

³Department of Medicine, University of British Columbia

⁴Department of Specialized Women's Health, BC Women's Hospital & Health Centre

Research Trials

Recent randomized controlled trials have demonstrated that Magnesium Sulphate (MgSO₄) can protect the brain of the fetus ('fetal neuroprotection'), and thus, improve the developmental outcomes of children born preterm.

Relevant meta-analyses of trials have also concluded that use of magnesium sulphate specifically to protect the brain of the fetus significantly decreases the risk of

childhood 'CP' or 'infant death or CP' by 15-30%. As such, the Society of Obstetricians and Gynaecologists of Canada (SOGC) published guidelines recommending use of MgSO₄ for fetal neuroprotection in the situation of imminent preterm birth at <32 weeks. It is recommended that this be given intravenously ideally four hours before birth until delivery, and should be discontinued if delivery is no longer deemed imminent or for a maximum of 24 hours of therapy.

Preterm birth is the leading cause of infant death, illness, and disability in Canada and worldwide. Despite marked improvements in survival rates of preterm infants, the risk of neurodevelopmental impairment, including cerebral palsy (CP), is substantial and not improving. The overall prevalence of CP is 2-2.5 per 1000 live births, but the risk is up to 80-fold higher for babies born at <28 weeks. Strategies to reduce CP are urgently needed.



Research on MgSO₄

While MgSO₄ is inexpensive and used routinely in Canada for eclampsia (hypertensive disorder of pregnancy) prevention and treatment, there are ongoing controversies preventing widespread implementation and administration of MgSO₄ into clinical practice. For example, there is a



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known effect of higher doses of MgSO₄ on newborn breathing and possibly an increased need for a respirator. Furthermore, there is a lack of information on long-term outcomes (such as overall functioning beyond 2 years of age), and a lack of understanding about how MgSO₄ works to prevent brain injury.

Knowledge Translation & Clinical Practice

Unfortunately, dissemination of results through practice guidelines and articles in scientific journals is not usually enough to change clinical practice. **MAG-CP** is the first knowledge translation (KT) project aimed at more effectively disseminating the SOGC Clinical Practice Guidelines across Canada.

MAG-CP aims to conduct managed KT, with the support of the KT core from NeuroDevNet (www.neurodevnet.ca), by providing maternity care practitioners across Canada with:

- essential knowledge about MgSO₄, to include an understanding of potential barriers and facilitators for the use of MgSO₄ for fetal brain protection;
- educational tools, such as informational posters, pre-printed orders, pocket cards, decision algorithms; and
- feedback on use (and potential overuse) of MgSO₄ for fetal brain protection in practice as well as the associated benefits to mother and infant outcomes.

Audit of practice and outcomes will be accomplished through the database of the Canadian Perinatal Network (CPN), a national network consisting of Canadian health care researchers in tertiary perinatal centres and its linkages with the Canadian Neonatal Follow-Up Network (CNFUN). For babies born at <29 weeks, this is an internationally unique opportunity to translate MgSO₄ for fetal neuroprotection into practice, monitor its use and outcomes, and address some important controversies.

More information

An e-learning module is available that

- summarizes the relevant evidence based on the SOGC guidelines,
- includes questions and answers to test your knowledge
- includes reference materials and educational tools
- introduces barriers to practice change to initiate discussion.

The MAG-CP webpage also serves as an important tool, and can be found at

<http://cpnrpc.org/MAGCP>

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