The use of nitric oxide in acute respiratory distress syndrome: safety and efficacy of inhaled nitric oxide in the management of hypoxemic respiratory failure in adults with acute respiratory distress syndrome

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Record Status
This is a bibliographic record of a published health technology assessment from a member of INAHTA. No evaluation of the quality of this assessment has been made for the HTA database.

Citation

Authors' objectives
This report will examine the published scientific evidence regarding the safety and efficacy of inhaled nitric oxide (iNO) in the management of hypoxemic respiratory failure in adult ARDS patients. The goal of this project is to produce new insights on the use of this experimental therapy. Therefore, the information provided may provide the support for a more selective allocation of this therapy in the Calgary Health Region and in other healthcare jurisdictions.

Authors' conclusions
People with ARDS from a non-pulmonary infection source (such as sepsis) and those with multiorgan failure or an irreversible underlying condition have poor outcomes in general. iNO in this population does not appear to alter outcomes, and therefore its use should be reconsidered. A transient improvement in oxygenation can be expected in approximately 60% of people who receive iNO early in the progression of ARDS (within 72 hours). This improvement, when present, is typically evident within 10 minutes from initiation of the therapy, and may be present for up to 48 hours. Beyond this time, continued use should be re-evaluated on the basis of the patient's current condition, including an assessment for potential complications. iNO should be used in concentrations of less than 40 parts per million (ppm), with the best available evidence indicating a range of 5 to 10 ppm as being most effective (when there is a response in oxygenation present). Daily dose assessment or challenges should be conducted throughout the duration of use in order to re-establish optimal dosing. Discontinuation of iNO in a stepwise approach should be conducted if there is no ongoing positive response in oxygenation or in intensity of ventilation. The use of iNO is not without potential and serious complications. Although the incidence of serious complications was not clinically significant in the studies presented, one must not forget that even a slight complication in a critically ill ARDS patient can have serious results. While there have been suggestions that iNO may be considered as a last resort in the most severely refractory hypoxemic patients to obviate the need for more expensive therapeutic options such as extracorporeal membrane oxygenation; the degree of benefit in this population however has yet to be studied and therefore has not been established.

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